ROLE OF UNIVERSITY LIBRARIES IN RESEARCH IN KERALA: A CASE STUDY

Thesis Submitted to the University of Calicut
for the Degree of

DOCTOR OF PHILOSOPHY

in

LIBRARY AND INFORMATION SCIENCE

By

SHEEJA N.K.

Under the Supervision of
Dr. JALAJA V.

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
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DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
UNIVERSITY OF CALICUT

Dr. JALAJA V.
Reader

CERTIFICATE

This is to certify that the thesis "**ROLE OF UNIVERSITY LIBRARIES IN RESEARCH IN KERALA: A CASE STUDY**" is a record of the bona fide research work done by Sheeja N.K., under my supervision and guidance.

This thesis is the outcome of her original work and has not formed the basis for the award of any degree, diploma, associateship, fellowship or any other similar title and is worth submitting for the award of the degree of Doctor of Philosophy in Library and Information Science.

Calicut University
24th January 2007

Dr. Jalaja V.

Dr. JALAJA. V.
Reader, Dept of Library Science
University of Calicut
Calicut University P.O. - 673 635

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DECLARATION

I, Sheeja N.K., hereby declare that the dissertation entitled "**ROLE OF UNIVERSITY LIBRARIES IN RESEARCH IN KERALA: A CASE STUDY**" is a record of the bona fide research work done by me and that it has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or any other title of recognition.

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LIST OF ABBREVIATIONS

AAU	Association of American Universities
ACRL	Association of College and Research Libraries
B.Tech	Bachelor of Technology
CAS	Current Awareness Service
CD-ROM	Compact Disc Read Only Memory
CHMK	C.H. Mohammed Koya
CSIR	Council for Scientific and Industrial Research
CUSAT	Cochin University of Science and Technology
DELNET	Developing Library Network
DOAJ	Directory of Open Access Journals
ICT	Information and Communication Technology
IEEE	Institution of Electrical and Electronic Engineers
INDEST	Indian National Digital Library in Engineering Sciences and Technology
INFLIBNET	Information and Library Network
INSDOC	Indian National Scientific Documentation Centre
INSPEC	Information Service for Physics, Electronics and Computing
IR	Institutional Repositories
ISSN	International Standard Serial Number
IUC	Inter University Center
KGS	Kerala Granthasala Sangham

MA	Master of Arts
MCom	Master of Commerce
MGU	Mahatma Gandhi University
MIT	Massachusetts Institute of Technology
M.Phil	Master of Philosophy
MSc	Master of Science
M.Tech	Master of Technology
NASSDOC	National Social Science Documentation Centre
OA	Open Access
PhD	Doctor of Philosophy
R & D	Research and Development
SDI	Selective Dissemination of Information
SPSS	Statistical Package for Social Scientists
SOUL	Software for University Libraries
UC	University of Calicut
UGC	University Grants Commission
UK	University of Kerala
UN	United Nations

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Chapter 1

INTRODUCTION

Chapter 1

INTRODUCTION

The march of human beings from the hunting and gathering society to the present knowledge society passing through, horticultural, agricultural and industrial societies is a saga of great significance. For 99 percent of human history, our ancestors were hunters and gatherers who neither produced nor preserved food. About 10,000 years ago, human beings became food producers. Around 6000 years ago, they improved productivity through intensive agriculture (Gelles 186-90)[1]. Some 250 years ago, the Industrial Revolution gave birth to new productive and economic systems based on machines (Wander 87)[2]. The emergence of so-called knowledge society is traced back to the second half of the twentieth century.

The postindustrial society is called knowledge society because of the increased use of knowledge as a resource and a source of power. Knowledge has replaced land, labour, capital and machines and become the chief source of production (Drucker 6)[3]. Knowledge also serves as a wealth and force multiplier. It can be used to augment the available force or wealth or, alternatively, to reduce the amount needed to achieve any given purpose (Toffler 16)[4]. For unlike land or machines, which can be used by only one person or firm at a time, the same knowledge can be applied by many different users at the same time - and if used cleverly, by them, it can generate even more knowledge. It is inherently inexhaustible and nonexclusive (Toffler 61)[5]. It is the truly revolutionary

characteristic of knowledge that it can be grasped by the weak and poor as well. Knowledge is the most democratic source of power (Toffler 20)[6].

Knowledge is critical for development, because everything we do depends on it. In the knowledge society, access to opportunities to acquire needed knowledge, skills, and competencies is essential for social progress and economic growth. Nations of the world are trying to build their economy on knowledge. Knowledge, ideas, innovation, understanding, adaptability and creativity are the foundations of economies.

The World Development Report 1998/99 examined the role of knowledge in advancing economic and social well being with the realization that economies are built not merely through the accumulation of physical capital and human skill, but on a foundation of information, learning and adaptation. Knowledge has become perhaps the most important factor determining the standard of living- more than lands, than tools, than labour. Today's most technologically advanced economies are truly knowledge based (World Bank 16)[7].

The systematic acquisition, creation, and diffusion of knowledge of all kinds and its application to all fields of human activity have become the fundamental pursuit of every society. The process of knowledge creation and its application is not an easy task for nations. It depends on the availability of various factors. The system of higher education and research existing in a country is the most important factor for not only creating new knowledge but also selecting and absorbing knowledge from all over the world. The role of universities is highly important in this regard.

1.1 Universities as Knowledge Creators

Universities function as the focal centre of higher education. They are dynamic and innovative institutions of advanced learning and scholarship, committed to higher quality research across all disciplines. They play a key role in the generation, transfer and application of new knowledge and provide trained manpower for industry, agriculture, administration, services and all other sectors. The intellectual dynamism, resourcefulness and economic prosperity of a country are reflected in the quality of university education. The role of universities in societal formation, nation building and scientific development is very big and all pervasive. Universities are widely regarded not only as teaching establishments but also as organizations that create new knowledge and innovation through research. University research is the most powerful way of opening new frontiers as the world over universities are regarded as cradles of invention (Sharma 19)[8]. In most developing countries, university research units are the main organizations that create new knowledge (Chataway and Wield 803–24)[9].

University research findings have transformed our lives over the last century. New medicines and therapies, changes to transport systems and machinery, new materials and energy sources, and previously undreamed of channels of communication have increased life expectancy and hugely improved the quality of our lives. Most of the technological advances in the second half of the twentieth century including new biotechnological industries, information technologies, telecommunications, and advanced materials such as fiber optics

and semiconductors have their origin in university research. In addition, research has given us a growing appreciation of our place in the natural environment, and a better understanding of social, economic and cultural forces. The Universities UK, the umbrella group representing universities of United Kingdom, has published a long list of discoveries made through research at British universities. Association of American Universities has also compiled and published a lengthy list of research findings illustrating the breadth and depth of the contributions that have been made by America's universities (AAU)[10].

Given the important role played by universities in knowledge creation through research, all nations put much emphasis on their universities. The most advanced countries have more number of universities. Japan for its 12.7 crore people has 684 universities. USA with 27.6 crore population has 2364 universities. UK with 5.58 crore population has 104 universities and 231 autonomous institutes. Germany for its 8.2 crore population has 330 universities. The developing countries have less number of universities compared to the developed ones. For 100 crore people India has 345 universities. (Kale 1-11)[11].

The number of universities does not guarantee the quality and speed of university education and research. Among various factors that ensure the value and vigor of university research, the information support deserves much attention. The success of research carried out at universities depends very much on the accessibility to high quality and relevant literature in all formats with the support of a dedicated team of professionals in an environment conducive to learning and absorbing. The role of university libraries and the services they

offer are highly important in this perspective. The advanced economies have not only established a sound system of universities but also attached well-resourced libraries to them.

1.2 University Libraries

University libraries are the major components of university education system that support and sustain the mission and vision of universities. University libraries advance learning, research, scholarly inquiry and open exchange of information and ideas by building, preserving, interpreting, and providing access to rich and diverse collections; by teaching the effective use and critical evaluation of information sources; by developing creative and responsive services for individual user communities; and by capitalising on innovative technologies to foster intellectual growth.

1.3 Need and Significance of the Study

University libraries have an important role in the knowledge society. The mission of university libraries in supporting the process of learning, teaching and research has been widely recognised by different commissions and committees from time to time. It is a fact that the value of research is very much dependant on the availability of a sound document collection, innovative information services, inspiring learning and reflecting environment, information and communication technology infrastructure, and continuing support of the library staff. The present study is an attempt to investigate the role of university libraries in supporting research in universities in Kerala.

The study focuses to examine the existing resources, services and facilities in university libraries in Kerala. Since university libraries stand mainly for supporting research, the research scholars are the essential component of university library system. The response of research scholars on the system is important for its evaluation. Hence, the study tried to evaluate the functioning of university libraries through the feed back of research scholars. The present study is expected to examine in detail the performance of university libraries in supporting research. The facts revealed through the study would help the university libraries in Kerala to identify the real strength and weakness of their collection, effectiveness of their services, competency of their staff and other supporting factors. As university libraries are essential for research excellence, this kind of understanding is very much important. The study also expects to help the university libraries to adopt right strategies towards implementation of new services and facilities. The study is significant in the sense that it attempts to understand the current position of university libraries in Kerala. Since the absence of a creative university library system shall adversely affect the prospects of research and knowledge creation process in the state and the country at large, such an understanding is highly essential.

1.4 Statement of the Problem

The problem of the present study is entitled as "ROLE OF UNIVERSITY LIBRARIES IN RESEARCH IN KERALA: A CASE STUDY"

1.5 Definition of Key Terms

The following are the definitions of key terms used in the study.

Role: Role is a function performed by someone or something in a particular situation, process, or operation (Webster's Third New International Dictionary 1968)[12]. The International Encyclopedia of the Social Sciences describes "role" as representing "the behavior expected of the occupant of a given position or status" with emphasis on expectations (beliefs and cognitions) and enactment (conduct) (Sills 546)[13].

University Libraries: According to International Encyclopaedia of Information Technology and Library Science, university library refers to a library or group of libraries, which are established, maintained, and administered by a university to meet the information needs of its research scholars, students and the faculty members (Rawat and Kumar 1367)[14]. For this study, university libraries mean central libraries at the four universities in Kerala being taken for the study.

Research: Research is a search or investigation directed to the discovery of some fact by careful consideration or study of a subject; a course of critical or scientific inquiry (The Oxford English dictionary 507)[15]. Research is the systematic and objective analysis and recording of controlled observations that may lead to the development of generalizations, principles, or theories, resulting in prediction and possibly ultimate control of events (Best and Khan 20)[16]. In this study research means research undergoing in university departments in Kerala.

Case study: A case study in librarianship or information science is a descriptive record of circumstances and events relating to the emergence of a particular issue or problem in a specific library or information center (Kent and Lancour 241)[17].

Kerala: Represents the state of Kerala in the Republic of India as a geographical entity selected for the study.

1.6 Objectives of the Study

1. To study the university libraries in Kerala with regard to information sources, user services, infrastructures and human resources.
2. To ascertain research scholars perception of the information sources and their organisation in university libraries in Kerala.
3. To investigate whether the existing library services in university libraries are meeting the information requirements of research scholars.
4. To examine the library use pattern of research scholars.
5. To find out whether the infrastructures available in the university libraries in Kerala are conducive to research process.

1.7 Hypotheses

1. Science research scholars and social science research scholars are similar in their satisfaction on primary sources available in university libraries in Kerala.
2. Research scholars of science and social science differ in their satisfaction on the adequacy of electronic sources.

3. The level of satisfaction of research scholars on personalised services provided by the university libraries in Kerala differs from university to university.
4. The effectiveness of Internet based services varies from university to university.

1.8 Methodology in Brief

There are seven universities in Kerala. However, the investigator has selected four universities for the present study. Data on the existing resources, services and facilities of the university libraries in Kerala were collected from the university librarians through structured interview supplemented by physical verification through personal visit. A random sample of 50 full time research scholars was selected from each of the four universities for obtaining their response on the system. Questionnaires were administered to obtain data. The data collected through questionnaires were analysed electronically using SPSS (Statistical Package for Social Scientists).

1.9 Scope and Coverage

The scope of the study extends to cover the four university libraries in the state of Kerala. It focuses on a detailed analysis of the existing resources, services and facilities that are aimed at supporting the research scholars for the successful completion of their study. The study also covers the research scholars from the four university libraries for their response on the system. Therefore, the study provides:

i) Information on existing sources, services and evaluation of their effectiveness, which is vital for formulation of viable development plans for university libraries in Kerala.

ii) Identifies some of the reasons for the existing gap between expected roles and actual performance.

iii) Offers some practical solutions to problems facing university libraries in Kerala.

1.10 Limitations of the Study

Though there are seven universities in the State of Kerala, the present study is limited to the four universities namely the University of Kerala, Mahatma Gandhi University, Cochin University of Science and Technology and the University of Calicut. The rest of the universities were excluded from the study due to the following reasons. The university library system was in the initial stages of development at Sree Sankaracharya University of Sanskrit, Kalady and Kannur University, Kannur. The Agricultural University offers research in the field of agriculture and related fields. The sample selected from such an environment may affect the result of the study. The study was carried out during the period of five years from 2001- 2006. The study is limited to the full time research scholars working in the four Universities in Kerala.

1.11 Organisation of the Report

The report of the study is organised under seven chapters as follows:

Chapter 1 - Introduction.

It sketches the emergence of knowledge society, the worth of knowledge as a resource and a raw material for socio economic development, the significance of knowledge creation, the role of universities in the process of creating knowledge through research and the role of university libraries in supporting the process of research. It also outlines the significance of the study, operational definitions, objectives, hypotheses, scope and limitations and organisation of the study.

Chapter 2 - Reviews of Related Studies

A chronologically arranged reviews of related studies are presented in the second chapter.

Chapter 3 - Methodology

The third chapter describes the methodology adopted for the study.

Chapter 4 - Role of University Libraries in Research

The theoretical explanations and foundation of the study, the role of university libraries in research and the review of library websites of top ranking universities that focus research oriented information sources and services are discussed in fourth chapter.

Chapter 5 - University Libraries in Kerala

This chapter provides background information on the state of Kerala, origin and development of universities, and detailed study of university libraries obtained through interview schedule.

Chapter 6 - Analysis and Presentation of Data

The sixth chapter provides the analysis of data obtained through the questionnaire to research scholars.

Chapter 7 - Summary, Conclusions and Suggestions

The last chapter, seven sketches major findings, conclusion, recommendations and suggestions for further research.

The dissertation ends with a general bibliography listing books, articles and websites consulted and accessed by the researcher for the preparation of this work.

REFERENCES

1. Gelles, Richard, and Levine, Ann. Sociology: An Introduction. 6th ed. Boston: McGraw-Hill, 1999.

2. Wander Zanden, James. The Social Experience: An Introduction to Sociology. 2nd ed. New York: McGraw-Hill, 1990.

3. Drucker, Peter F. The Post Capitalist Society. Oxford: Butterworth Heinemann, 1993.

4. Toffler, Alvin. Power Shift: Knowledge Wealth and Violence at the Edge of the 21st Century. London: Bantam Book, 1992.

5. *Ibid.*, p.61.

6. *Ibid.*, p.20.

7. The World Bank. World Development Report 1998/99: Knowledge for Development. New York: Oxford University Press, 1999.

8. Sharma, M.M. "Scientific Research and Economic Growth." University News 44.35 (2006): 19-20.

9. Chataway, J., and Wield, D. "Industrialization, Innovation and Development: What Does Knowledge Management Change?" Journal of International Development 12 (2000): 803–824.

10. Association of American Universities 2006 Association of American Universities October 16 2006. <http://www.aau.edu/resuniv/SocContr.html>

11. Kale, R.K. "Higher Education and Development of the Nation." University News 44.33 (2006): 1-11.

12. Webster's Third New International Dictionary of the English Language and Seven Languages. Vol. 2. Chicago: Encyclopedia Inc., 1768.

13. Sills, D.R. ed. International Encyclopedia of Social Sciences. New York: Macmillan, 1968.

14. Rawat, P. P., and Kumar T. ed. International Encyclopaedia of Information Technology and Library Science. Vol. 4. New Delhi: Castle Books, 1992.

15. The Oxford English Dictionary. Vol.8. Oxford: The Clarendon Press, 1933.

16. Best, John W., and Khan, James V. Research in Education.7th ed. New Delhi: Prentice-Hall of India, 1995.

17. Kent, Allen, and Lancour, Harold ed. Encyclopedia of Library and Information Science Vol. 4. New York: Marcel Dekker, 1970.

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Chapter 2

REVIEW OF RELATED STUDIES

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REVIEW OF RELATED STUDIES

This chapter presents review of related studies conducted in India and abroad. Literature review can help the researcher to formulate research design and appropriate tools for the successful completion of the study. The review includes papers presented in seminars, conferences, articles published in scholarly journals, research abstracts, books and library websites. The studies under review have offered insights on issues related to the organisation and administration of university libraries, different kinds of materials and level of user satisfaction. They are arranged chronologically.

2.1 Related Studies

Line (1963)[1] conducted a study on the attitude of students to Southampton University library. The study revealed that women users used the library more than the male users did. The study also exposed that there were several deficiencies and problems in the university library policy.

Line (1966)[2] carried out a survey of the attitude of the students to the library of Southampton University with questionnaire on a sample of three hundred and twenty two undergraduates. The survey revealed that the attitude of the students had changed for the better. Women students used the library more than their male counterparts did. The social science students showed remarkable improvements in the use of the library.

Krishan Kumar (1968)[3] conducted a survey concerning teachers and research scholars in the department of Chemistry, University of Delhi. Questionnaire method was used for the study. The important finding of this survey was that quite a large percentage of research scholars did not use the library as much as they ought to. The survey underlined the importance of communication between the librarians and the users.

Bhushan (1972)[4] conducted a survey among two hundred and fifty-two undergraduate and postgraduate students of IIT Delhi by means of questionnaire. The study revealed that senior students used the library more. The library collection was insufficient to the senior students. However, the majority of junior students opined that the collection was very adequate.

Panwar and Vyas (1976)[5] carried out a survey on the users of the libraries of Indraprastha College and Laxmi Bai College, Delhi by distributing questionnaires to 340 users. The study also used interview method to selected users. The study revealed that the textbook and periodical collections were adequate in both the libraries but the reference collections were inadequate.

Rout (1982)[6] presented a study measuring the user satisfaction on the important services by the central library, Sambalpur University. Sample population was collected from the faculty members of the postgraduate teaching departments. The analysis revealed that the users were partially satisfied over the strength of the book collection of the library in their respective subject fields. The users responded that the reference and documentation services provided by the library were not satisfactory. Users

were also dissatisfied with the services like housekeeping services, document delivery services and reading facilities.

Olankun (1983)[7] attempted to examine the attitudes of major interest groups in Nigerian University on library policy, use and services, specifically the attitude of the faculty, students and librarians on the adequacy of resources, quality of library collection and library services. The study revealed that there was a difference in the pattern of library use by the faculty members and in the pattern of library use by the students. Majority of the faculty and student respondents indicated that they were in need of more assistance from the library staff.

Onadiran and Onadiran (1986)[8] conducted a study to assess the opinion of the 1842 students on the Ahmadu Dello University library. The aspects examined include user's characteristics, frequency of library use, reasons for using the library, user's satisfaction and reasons for dissatisfaction. The study revealed that user dissatisfaction centred on the inadequacy of required materials.

Kawatra (1988)[9] conducted a study with a sample of one hundred and nine research scholars of three universities in Rajasthan using questionnaire method. The study attempted to identify the impressions of scholars towards the adequacy of library resources, their use of the library and their view on library services. The study revealed that there was significant difference in the attitude of scholars towards the use of periodicals in different universities.

Scholars viewed that the resources and services of the library were inadequate to meet their needs.

Lahiri (1988)[10] conducted a survey among the users of the periodical section of Manipur University library to identify their information seeking behavior and their accessibility to the holdings. The data were collected through questionnaire. The analysis revealed that majority of the respondents were not satisfied with physical factors relating to building, noise, uncomfortable and insufficient seating. The respondents also expressed dissatisfaction with non-availability of current journals and their poor display. However, 81 percent of the respondents reported that staff members were helpful.

Surya et al. (1988)[11] conducted a case study to evaluate the collection effectiveness in university libraries with special reference to Annamalai University library. The study involved analysis of data relating to book expenditure, book collection and user population. The data were collected from the Annamalai University budget estimates, annual reports and the accession registers of the library for a period of thirty six years from 1951-1952 to 1986-1987. The study exposed that collection policy of the Annamalai University library had been scientific and practical. Regarding the periodical collection, Annamalai University library had built up a striking stock. A three-fold increase of periodical collection from first plan to fourth plan was identified. The study also revealed that the collection of books and periodicals were

comprehensive in all faculties to cope up with the wide range of teaching and research progrmmes.

Decor (1989)[12] conducted a study in the library of the Rivers State University of Science and Technology, Port Harcourt on the attitudes and perceptions of student patrons. Questionnaire method was used to collect data. From the analysis of data, the investigator concluded that user education was so essential in university libraries. The study also pointed out the abuse of library facilities.

Devarajan (1989)[13] made a study on information need and use pattern of research scholars in the University of Kerala. The main goal of the study was to understand the information needs, information-gathering behavior and use pattern of information of the research scholars in Humanities. Questionnaire method was mainly adopted for collecting primary data. The survey arrived at the following conclusions:

a) Majority of the scholars preferred to use books as their first choice whereas their second and third choices were reference books and periodicals respectively.

b) The existing collection in the Kerala University library system in the field of Humanities was inadequate to meet the research potentials of the scholars.

c) The services provided by the University library systems were highly adequate.

Gopal Reddy and Pulla Reddy (1989)[14] made a survey through questionnaire to know the opinion of users on different aspects of library services of Kendriya Sanskrit Vidya Peeth library. The study revealed that the collection, services and facilities were not satisfactory. The authors suggested that the funds, collection of documents and number of staff should be increased in order to improve the services.

Rajagopal (1989)[15] made a survey among the users of Sri Krishna Devaraya University Library, Andhra Pradesh. The survey was confined to research scholars (M.Phil and PhD) only. The objective of the study was to examine the adequacy of library collection, purpose of library visit, usefulness of library catalogue, up-to-datedness of the library resources, usefulness of library services and suggestions for purchase of books. The study also examined the reading habits of users. It concluded with the following findings:

a) 83.33 percent users indicated that the book collection was inadequate for their research work

b) 52.38 percent indicated that the library was not satisfying 40-60 percent of their research requirements.

c) Compared to M.Phil scholars, majority of PhD scholars replied that they were not able to keep up-to-date with the latest literature in their area.

d) Majority of the users found the user orientation programme useful and demanded such programmes in future.

e) Majority of the users indicated that the library should provide SDI service.

L`o`nnqvist (1990)[16] examined the information seeking behavior and information needs of scholars in Humanities from a holistic perspective. The selection of sample was made among those disciplines represented at the Nordic Universities. Interview method was adopted for the data collection. The method of qualitative subject analysis was used to analyse data. The results of the investigation showed that the scholars in the humanities do not have homogenous information seeking behavior.

Ashoor (1992)[17] conducted an evaluative study of the collections of Saudi University libraries based on ACRL standards. The study was conducted through questionnaires to Deans of library affairs to provide information on library holdings and collection development programme. The study revealed that the library holdings of six university libraries in Saudi Arabia were much below the standards of ACRL. The study identified the following reasons for this shortage: Lack of collection building plans, managerial problems, insufficient financial support, low participation of faculty members, absence of inter library loan and online searching facilities.

Somaraju (1992)[18] conducted a study to analyse and identify the role of Andhra university library in supporting research. A survey was conducted among the full time and part time research scholars enrolled in the university. Census method was adopted and the response rate was 50 percent. The study revealed that research scholars expressed dissatisfaction with primary sources which were more relevant to research scholars. The scholars of different disciplines pointed out dissatisfaction on the library services being provided.

The investigator made recommendations to improve library services relevant to researchers.

Jasmir and Hari (1993)[19] conducted a survey to discover the needs and expectations of users of Punjab University library. Questionnaire method was used to collect data among the postgraduate students, research scholars and teachers of science, social science faculties. The study revealed that most of the users were not satisfied with the service in the journal section because of the delay in the procurement of journals and lack of support from the staff. About seventy-four percent of the users were satisfied with the lending services and about sixty percent made use of the indexing and abstracting services.

Mallaiah and Badami (1993)[20] conducted a survey to find out the use of information services and facilities of the Mangalore University library. Questionnaire was distributed to collect data from the selected research scholars of the university. Interview was also conducted to supplement the questionnaire. The study concluded that the majority of respondents visited the library with purposes of consulting periodicals, books, newspapers, magazines and reference documents. The survey identified that textbooks, dictionaries, encyclopedias, newspapers and magazines were sufficient to meet the academic and research needs. However, the periodicals and reports collection were found inadequate. It was also revealed that CAS, Inter library loan and reprographic service were not effective.

Marghalani and Hafez (1993)[21] attempted a survey on online search service at King Abdul Aziz University library, Jeddah, Saudi Arabia. The

survey mainly aimed to investigate the perception of faculty members in the Jeddah main campus of the university. The data was collected by a specially designed questionnaire to all the chairmen of departments with each faculty. Personal interviews were also conducted with library staff responsible for the online service at the central library. The examination of all request forms presented to King Abdul Aziz University library for online search by faculty members during 1989 and 1990 exposed that 139 requests were made by 11 faculties and institutions. Forty five percent of respondents used online search service to conduct personal research.

Mgaywa (1993)[22] carried out a survey at University of Dar-es-Slam on the use of foreign language journals by social science faculty. The objective of the study was to find out the actual use of one segment of the library stock of social science foreign language serial collection. A self-administrated questionnaire was distributed among the members of the faculty of arts and social science to collect data. Findings of the study revealed that all the respondents made regular use of journals in the serial collection and majority of the respondents reported that they were unable to comprehend scholarly paper in foreign language

Pangannaya and Rao (1993)[23] presented a study on information gathering habits of R& D personnel in selected large-scale industries in Mysore district. The main objectives of the study were to identify the information requirements of R & D personnel and the existing pattern of information gathering behavior of them. Questionnaire method was adopted for data

collection. The study revealed that most of the respondents gathered information keeping more than one purpose in mind; books were one of the widely used sources for gathering information. Majority of the respondents felt the absence of good library that provide adequate collection and modern services.

Abifarain (1994)[24] examined the information seeking behavior of Agricultural students in selected Nigerian Universities. Data were collected through the use of questionnaire distributed to students in five universities offering agricultural courses including an agricultural university. Analysis of the questionnaire showed that students made less use of the library than expected. Over 58.5 percent of respondents indicated that after attending formal lectures, they first turned to their lecturer for further information rather than going to the library. The study recommended library orientation programs strongly focused on information needs of the students.

Agrawal and Chakraborty (1995)[25] conducted a survey on information needs and use pattern of earth science scholars utilizing literature at the Banarus Hindu University. Questionnaire was adopted to collect data. The study examined the use pattern of different type of materials, adequacy of library collection, services and related aspects. The result of the study indicated that there was a need for increasing existing collection in the library; implementation of various services like SDI, CAS, resource sharing; organising user education programmes; and introduction of sophisticated services by making use of computers.

Erens (1995)[26] shared the results of the study that examined how recent developments in university libraries affected research. A postal survey was carried out on a random sample of over 2,500 university academics selected from the 1995 Commonwealth University Yearbook. All universities in the United Kingdom were included. This study was a continuation of the first study of this kind which was carried out between November 1989 and February 1990.

The main objective was to look at how well university libraries met research needs. Completed questionnaires were returned from 2,330 academics, which represented a 58 percent response rate. The results revealed that library collections were perceived by their users to be deteriorating, getting access to important journals was becoming increasingly difficult and, as a result, satisfaction with libraries was declining. Academics were relying more now on inter-library loan and on purchasing their own materials. The growing use of electronic services has, to some extent, mitigated the potentially detrimental effects for research of deteriorating collections. Electronic services permitted easier access to a wide range of information. However, views varied by university and by discipline, and it appeared that a significant minority of academics perceived that recent research was being suffered.

Maheswarappa and Hosamani (1996)[27] made a study on the social scientists working at different postgraduate departments of Karnataka University, Dharward on awareness and usefulness of information services provided by NASSDOC, New Delhi. For data collection questionnaire was

distributed personally to social science teachers and research scholars. The study concluded that there was need for user education programme to create awareness and to promote the use of information services of NASSDOC among Indian scientists.

Chaya Devi (1997)[28] assessed the attitudes of users towards the online information services in the National Ship Design Centre, Vishakapatanam. Survey method was adopted for the study and the questionnaires were distributed to the employees who performed online searching for their information requirements. The investigator concluded that the users were following both computer assisted and manual methods to access information.

Devi and Lahiri (1997)[29] assessed the information seeking behavior of agricultural scientists in Manipur. The objectives of the study were to identify the basic area of research conducted by the scientists, various sources used by the scientists for dissemination of research results and their view about the availability of agricultural information in the state. To obtain necessary information from the users questionnaire was used. The study concluded that the agricultural information available in the state was not sufficient. Information relating to latest development in the field remained unknown and beyond the reach of the scientists because of poor acquisition, storage, and retrieval and dissemination mechanism of the library system in the state.

John (1997)[30] investigated the information needs, use pattern and use behavior of social science research scholars. The objectives of the study were to examine the nature of search for the current information. In order to

understand the information needs, use pattern and use behavior. A survey was conducted by the investigator by using questionnaire. It was observed that information requirements differed among different groups of social scientists working in different environments.

Kanungo (1997)[31] made an attempt to investigate the methods of seeking information by the women researchers in the disciplines of History and Political Science in the University of Delhi and Jawaharlal Nehru University. The investigator attempted to make a comparative analysis of the methods adopted by these researchers in finding, accessing and acquiring information.

The study was conducted in the form of a user survey using questionnaire and interview methods. Two separate questionnaires were distributed among one hundred and thirty women researchers (65 in each subject) engaged in M.Phil or PhD. A total number of 70 (53.84%) filled questionnaires were received back. The study revealed that the women researchers in the disciplines of History and Political science deployed almost identical methods for accessing information. They used both formal and informal methods. Both groups showed more inclination towards informal methods.

Mallaiah and Sumangala (1997)[32] attempted to elicit opinions from the postgraduate students of the Mangalore University library. The primary objective of the study was to investigate the library and information service facilities in the university library of Mangalore. The required data was collected through questionnaire method, supplemented by informal discussions

with the students. Questionnaires were distributed among the selected group of 775 out of 896 students. 82.32 percent students responded to the survey. The study identified that the facilities and services were inadequate in some of the areas. The investigator suggested for the availability of advanced books and journals in all disciplines to support study, teaching and research work.

Prodhani and Gautam (1997)[33] conducted a study, on organisational structure, bibliographic organisation, size and strength of collection, processing of materials and co-operative activities of ten university libraries in North East India. The main objective of the study was to investigate the status of these libraries. The investigators used a questionnaire to collect data. The study revealed that the ten university libraries had variety of organisational structures depending upon the size of the library. The study found that trends in the procurement of books and subscriptions to journals were decreasing with respect to older libraries and at the same time budgets of these libraries were being pruned every year. The study also revealed that the libraries in the region did not pay enough attention to collection development in regional languages.

Rajesh (1997)[34] conducted a user survey to evaluate the services provided by Banarus Hindu University central library and its subsystems from the users point of view. The study was made using questionnaire method, supported by interview. The study revealed the following results:

a) There was lack of sufficient documents in almost all sections.

b) Books were of older editions and researchers were not able to cope up with their requirements for research.

c) Periodical section was rated excellent by 60.94 percent of research scholars.

d) Most of the users preferred to access the catalogue by subject.

e) The percentage of users being assisted by library staff differed at different levels.

Zehery (1997)[35] examined the development of six state university libraries in the Arab Gulf countries of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates. The study was employed by a survey questionnaire. The findings suggested further research to examine and evaluate collections, service activities and instructional programs, staff development and training, co-operation among Arab Gulf universities, and library education programs in the region.

Singh (1997)[36] conducted a survey among the users of Indian Institute of Technology library, Delhi. The study covered various aspects such as working hours, physical facilities, membership, purpose of visit to the library, use of library catalogue and document collection. It also examined the different aspects of library administration and management. Data was collected through two set of questionnaires, one for librarian and another for users. The result of the study revealed that majority of the users considered the physical facilities, collections and its organisation, services and attitude of the library staff as good. Most of the readers pointed out that the discontinuity in acquisition of periodicals affected their research work.

Maheswarappa and Havanur (1998)[37] conducted a study to determine the relative importance of different sources of information and to know whether the personal attributes of biological scientists such as designation, qualifications, sex, age, experience, nature of work and nature of research in a university environment had any bearing on the use of information sources or not. The study revealed that reprints/preprints, abstracting and indexing journals, primary periodicals, research reports and subject bibliographies were the most frequently used sources of information. The personal attributes such as designation, experience and nature of research work had bearing on the use of information sources, while qualifications, sex, age and nature of work had no bearing on the use of information sources among the biological scientists in a university environment.

Prasad and Tripathi (1998)[38] conducted a study on information seeking behavior of physical scientists and social scientists working in Banarus Hindu University. The main aim of the study was to find out the way scientists sought information and the extent of use of the existing library and information services. Data were colleted using questionnaire. The study revealed that there were significant differences in the information seeking behavior of physical scientists and social scientists. There were differences in their approach, information needs and sources used for satisfying their information requirements.

Raina and Dayal (1998)[39] carried out a study on student's feedback on the utilisation of library and its resource at the Indian Institute of Management

Lucknow. The investigators used questionnaire for data collection. Most of the students had appreciated the helpful and professional attitude of the library staff, flexibility of the rules, good collection and accessibility of documents. On the other hand, delays in photocopying, introduction of the ten cards based book issuing system, inadequacy of reading space, poor book preservation facility were some of the issues that had annoyed the students. In spite of this, the majority of students found the resources meeting their academic needs.

Saraf et al. (1998)[40] made a study to identify the relationship among the information needs, channels, sources and the influence of background variables such as age, gender, qualifications and status in scientists and technologists in two scientific and technological research institutions in Bangladesh. Data was collected using questionnaires. The result revealed that, background variables had influenced scientists and technologists in the use of information channels and sources.

Boakye (1999)[41] conducted a survey, at the University of Science and Technology, Ghana (UST), to determine the extent of awareness and use of science and technology collections by students, lecturers and research fellows. Of three set of questionnaires, one was administered to 582 (12.1%) out of 4846 students pursuing science and technology related courses, another to 60 lecturers and research fellows in the science and technology faculties and the third to the librarians concerned. The University Librarian was interviewed for further data.

The study revealed that 24.9 percent of students and 7.4 percent of lecturers and research fellows were not aware of the availability of some collections relevant to their studies, teaching and research. In addition, 21.6 percent of the students and 14.8 percent of lecturers and research fellows did not use the libraries at all. The study also reviewed the following factors affecting awareness and use of library collections: competence in library use skills; library promotion strategies; current awareness services; and attitudes of library staff towards users. The study forwarded a comprehensive range of recommendations to improve user awareness, including a well-planned library-training programme; better shelf labeling; and automation of library functions.

Sehgal and Navalani (1999)[42] conducted an evaluative study on the growth and development of Punjabi University library in thirty years with respect to the working of library, finance, staff, membership, collection, services and automation. The data for the study was collected by verifying official records and personal observation. The study exposed that Punjabi University library had witnessed all round growth and development during the three decades, but it was uneven and slackened in some areas particularly in the field of collection building. There was decline in acquisition of books and journals due to shortage of budget.

Sudharani and Veeranjaneyulu (1999)[43] conducted a study on the faculty members at Sri Padmavati Mahila Visvavidyalayam, Thirupathi, Andhra Pradesh. Questionnaire method was used to collect data. The study revealed that most of the faculty members visited the library for using current

periodicals. More number of respondents were dissatisfied with the books collection. Most of the respondents made favorable remarks on the adequacy of reference collection, abstracts, indexes, dissertations, conference proceedings government publications and services offered by the university library.

Veeranjaneyulu and Ramesh (1999)[44] conducted a survey on information requirements of Agricultural scientists in Andhra Pradesh adopting stratified random sampling technique for data collection. The purpose of the study was to:

a) Know the opinion of Agricultural scientists about the adequacy of agricultural information sources

b) Know what extend the agricultural libraries were meeting the information requirements of agricultural scientists

The analysis of data using chi-square test brought out that majority of the agricultural scientists found the books and periodicals in agricultural libraries inadequate. The scientists expressed the agricultural information sources were insufficient to meet their information requirements.

Biradar and Sampath (2000)[45] attempted to identify the periodical use pattern of teachers and research scholars in Kuvembu University. The investigators tried to find out the use pattern of periodicals by teachers and research scholars, the relative importance of different sources of information, the personal attributes such as designation, qualification, sex, age, nature of work and their impact on the use of periodicals and the respondents opinion about the availability of sources in parent organization. Questionnaire was used

to collect necessary data. The analysis of the data showed that large number of teachers and research scholars used the subject periodicals most frequently. It was also observed that good number of users expressed their opinion about the lack of secondary periodicals and lack of online and CD-ROM database search facility in the library. The study also identified that personal attributes had impact on use of periodicals.

Crawford and Daye (2000)[46] conducted a survey of the use of the electronic information floor (EIF) located in Glasgow Caledonian University's Caledonian Library and Information Centre. The survey used both observational and questionnaire methods. The observational study found word processing, sending and receiving E-mail, and Web browsing to be the most common activities. The more substantial part of the study was questionnaire based, administered both on paper and electronic form. The study revealed that only about 13 percent used online databases. About a three percent had problems in using the electronic information floor. The study concluded that information searching was a minority activity.

Kaur and Nandan (2000)[47] studied the impact of Information Technology (IT) on university libraries with reference to Bhai Gurudas library of Guru Nanak Dev University, Amritsar. Personal observation and verification of official records were applied for the collection of data. The study reveled that almost all house keeping operations had automated. The library had installed LAN within the library. For the Internet based service the library acquired user terminals and printers. The study concluded that with the use of

Information Technology, the library could computerize all in house activities and provide CAS, E-mail and Internet based services.

Tumba and Daya (2000)[48] conducted a study to examine the information environment of practicing geologists in Maiduguri metropolitan area. They tried to identify the information needs, information seeking behavior, adequacy of available information resources and the frequency with which the geologists used information centres or libraries. A combination of questionnaire and interview were the major instruments used by the researchers to elicit information. The findings of the study revealed that the geologists got their information resources mostly from journal articles and the newsletters of various associations. The study also reported that only very few geologists made frequent use of the library resources to meet their information needs.

Ammini (2001)[49] conducted a study on the information needs of students in the department of Ship Technology, Cochin University of Science and Technology. The main objectives of the study were:

a) To assess the information requirements of users

b) To identify the sources of information that students used for getting the required information and the type of materials that they preferred.

c) To reveal the areas of inadequacy in the document resources

d) To evaluate the services provided by the library and to invite suggestion for better service.

Questionnaire was distributed to 94 users of the department comprising B.Tech, M.Tech students, and Research scholars. Response rate was 93

percent. The study revealed that library collection was inadequate except periodical collection. Most of the students expressed difficulty in preparing papers for seminars and dissertations as the required material was not available in the library.

Mutula (2001)[50] conducted a study on status of IT development in Kenya and its implications in libraries of public universities in the country. The study revealed that the IT adoption and use in the public universities in Kenya joined with political interference in the running of these institutions had far-reaching implications. Libraries were not paying attention to emerging information technologies such as Internet, full text of journals, and online services.

Siddiqui (2001)[51] conducted a survey regarding the users opinion on different aspects of collection and its use in the Jawaharlal Nehru University library, New Delhi. The survey was conducted using questionnaire. Stratified random sampling was used for the purpose. The user group of the university library were divided in to five categories; teaching and non-teaching staff, research scholars, postgraduate students, undergraduate students and others. The result of the study revealed that the library was located in an easily accessible place. The atmosphere of the library was conducive for the study and research. Journals were not up to date. Editions of books were too old. Users were not satisfied with the number of library cards being provided and they demanded for more.

Tadasad (2001)[52] conducted a study on the use pattern of information sources by postgraduate students in Gulberga University, Karnataka. Survey method was followed for the collection of data. A questionnaire was designed keeping in view of the objectives and hypothesis of the study and it was distributed randomly to two hundred and twenty nine postgraduate students in the main campus of the University. The study revealed that books, newspapers, popular magazines, class notes, notes of seniors, were the most used sources of information. Based on the statistical tests the study concluded that the personal attributes, vise gender, year of study, medium of instruction at graduate level, area of habitation, stay at hostels, marital status, and frequency of visits to university library had no bearing on the use of specific source of information.

Ahmed (2002)[53] conducted an E-mail survey of seven Arabian Gulf university libraries in order to ascertain the types of Web-based services offered to users. The study specifically looked at the provision of access to Web-based services. Findings showed that almost all libraries were offering Web-based services to users in one way or the other. The study also discussed ways to improve and reinforce provision of such Web-based services, including effective methods of creating awareness and delivering the orientation and training necessary to create a positive environment for change. The study provided helpful measures to librarians of the Arabian Gulf libraries in enhancing or developing quality web-based services.

Dulle and others (2002)[54] conducted a study on the use of information technology for research in Tanzania through assessing the feedback of

agricultural researchers. The investigators tried to examine as to what extend the application of information technology helped to access scientific information. Data were collected through questionnaire survey to 321 agricultural researchers selected randomly from 13 research centers throughout the country. The response rate was 76.3 percent.

Out of 244 respondents, 69.7 percent reported having access to Internet or E-mail facilities. 79.3 percent of the respondents had access to Internet facility. The E-mail facility was not popularly used for information requests for sources outside the centre. CD-ROM technology was found not to be readily available to many users. The study concluded that, along with a low level of information technology development in the country, the available information technology facilities had not been fully exploited to facilitate access to agriculture information. The study put some measures to improve information technology infrastructure and its use for improvement of research productivity.

Monopoli (2002)[55] evaluated the use of electronic journals service of the library in the University of Patras, Greece. An online questionnaire was used to collect data on electronic journal use. The questionnaire was made available on e-journal service website for a period of one month. It was intended only for research staff, teaching staff and students. Two hundred and forty six e-journal service users responded to the survey, of which fifty two percent were students. 7.3 percent research fellows, 5.3 percent research associates and 32.5 percent faculty members. Regarding the users of e-journals, they prefered to browse by keywords rather than searching for a specific article. According to the results of

this study, a Greek user of an e-journals service was more likely to be a male researcher or academic staff member aged 35 year old or under. The study also revealed that more than two thirds of the respondents 69.5 percent considered the electronic version as the most favorable method of reading a journal.

Washington-Hoagland and Clougherty (2002)[56] conducted a survey in University of Iowa to identify the resources and services the faculty and staff currently used for research, teaching, study, and work, in addition to planning for their future needs. For the purpose of study, questionnaire was used with objective of finding faculty and staff satisfaction on library resources and services and identifying unmet needs and areas for improvement. The study population included three groups: faculty, professional and scientific staff (P&S) and merit staff. Questionnaires were mailed to 1929 faculty, 591 P&S and 515 merit staff. Overall, 1414 questionnaires were returned, which represented an overall response rate of 46.6 percent.

The results revealed that faculty and staff would like the libraries to invest more in the acquisition of print books and journals, in addition to electronic journals. Faculty and staff relied on and preferred human contact and individual assistance. The study also revealed that faculty and staff underutilized many of the libraries' resources and services simply because of lack of awareness. Like undergraduates and professional students, faculty and staff want expanded study space and improved physical facilities. The study also revealed that even though faculties were satisfied with current print and

electronic resources, the findings identified a need for additional resources to support faculty research.

Amusa and Adekunnisi (2003)[57] studied the collection development policies of Olabisi Onabanjo University library, Ago-Iwaye. The study was descriptive and had employed quantitative technique to collect the data. Interview was also carried out. The study identified that the library struggled towards ensuring wide and in-depth acquisition of resources for all the academic programmes in the university based on library principles, recommendations from faculty, careful selection and placement of order with reputed publishers and book sellers. The study also identified some barriers in the library collection development practices, among which were inadequate funding, absence of information and communication technology, unreliable power supply, inadequate staffing and scarcity of space and equipment required for collection building.

Ho and Gwyneth (2003)[58] conducted a study on student perceptions of dependability and accuracy of the Texas A&M University libraries' services. For the purpose of the study, a series of focus group interviews with students were conducted in the spring of 2001.This method used a series of small group interviews where individuals discussed their views and experiences in response to open-ended questions posed by a trained moderator. These questions were designed to elicit student perceptions of the accuracy and dependability of various library services. The users reported difficulty in locating materials, found inaccurate catalog and circulation records, encountered inadequate

signage, and received late notifications. The results of the study helped the library identify the areas for improvement.

Lombardo and Miree (2003)[59] studied the impact of library instruction on business students perceptions and use of print and online resources. The study was designed to measure business students' initial perceptions and use of three information formats: the Web, online bibliographic and full-text databases, and print reference resources. The study also indented to explore the impact of library instruction on students' attitudes. The study sample was drawn from three sections of business class during the fall of 2001. Questionnaires were employed to collect data. The results indicated that after library instruction, students held more favorable attitudes toward print resources and used them in their research more than they had initially expected.

Noushad Ali and Hasan (2003)[60] conducted a survey of the use of electronic information service by the users of IIT library, Delhi by distributing questionnaires to 450 users of the library out of which 396 responded. The study exposed that most of the users visited the library for borrowing books, searching CD-ROM and browsing Internet. Majority of the students used Internet for study or research purpose. Most of the students were satisfied with the CD-ROM service, photocopying service, Internet and OPAC

Simon Fraser University Library (2003)[61] conducted a survey of its faculty with an objective of soliciting feedback from faculty to ensure the library was meeting their needs and to seek ways to provide them with satisfactory facilities and a high level of service. Questionnaire was mailed to

658 faculty members. The response rate was 32 percent. The survey revealed that virtually all SFU faculties (99.5%) had used the SFU Library services or facilities; 93 percent had visited an SFU Library facility in person and 96 percent had done so from outside the library building. Although access to online articles was the most important collection item to faculty, access to print periodicals and the book collection were almost as important. Nearly 80 percent of respondents indicated that these three collections were meeting their teaching or research needs to a great extent or moderate extent. At least two-thirds of the SFU faculties were satisfied to a great extent or moderate extent with each of the facilities, with the exception of comfort of the library building. The SFU library web site was widely used by faculty and they found it relatively easy to use.

Jankowska (2004)[62] conducted a web-based survey in the University of Idaho (UI), Moscow to determine the usage of information and communication technologies by faculty for research and teaching. The study also aimed to identify the information needs and future priorities of the faculty and evaluate existing electronic resources and services in the library. For the purpose of the survey, stratified sampling method was used to collect data from the UI faculty population and a 100 percent response rate was achieved. Respondents expressed their preferences regarding electronic materials and services of the library.

Survey results highlighted solutions to help faculty in this era of information overload and rapid development of technologies. Constraints

preventing the library from efficient services were discussed, and recommendations for improving existing library services and developing new ones were presented.

Leeds University Library (2004)[63] conducted a customer satisfaction survey to establish how to improve library services for staff and researchers. The Library wished to find out which services were the most important to staff and researchers and to ascertain levels of satisfaction with the services provided. An online survey method was used to collect data. The results revealed the demand of users to increase the range of online journals. They also demanded to expand the number of web databases.

Amekuedee, (2005)[64] undertook an evaluative study of library automation in Some Ghanaian university libraries with an objective to find out the library processes that were automated in Ghana's three older public university libraries namely, the Balme Library, the Kwame Nkrumah University of Science and Technology (KNUST) Library and the University of Cape Coast (UCC) Library. Data was obtained with questionnaires. The study examined areas of general automation, automation of specific library processes, networking, internet connectivity, training, and major constraints to library automation. It was found out that even though the university libraries realised the importance of library automation, they were hampered by lack of funds, lack of support from the university administrations, and lack of skilled staff to embark on automation of all library processes. It was also revealed that none of the libraries had OPAC facility to search and retrieve library holdings online.

Ani et al (2005)[65] investigated the extent of adoption of information and communication technology (ICT) in university libraries in Nigeria. Postal survey was the instrument used for data collection. Almost sixty percent of the university librarians out of the twenty-nine university libraries surveyed completed questionnaires. The findings of the survey illustrated that only six university libraries were fully computerized, nine were about to be computerized, seven had installed local area networks, five had online public access catalogue and only four libraries provided internet service. The study found that the major obstacles that influenced effective adoption of ICT in university libraries were inadequate funds and the poor state of electricity in Nigeria.

Asemi (2005)[66] attempted to study the status of familiarity and use of digital resources of the central library and CD-ROM databases available in the academic libraries of Medical Science University of Isfahan (MUI). The study was conducted by survey method. Questionnaire was distributed to a random sample of 250 students. The study revealed that even though majority of the students were aware of digital resources, use of digital resources found to be poor among the medical students of the university.

Rajeswari (2005)[67] conducted an analytical study on the use of electronic resources and services by faculty, research scholars and students of Sri Padmavathi Mahila University (SPMU), Tirupati. Questionnaire was distributed to stratified random samples. The sample group consisted three groups namely teaching staff, research scholars and postgraduate students. The

response rate was 82 percent. The study revealed majority of the teaching staffs used Internet, E-mail and OPAC facilities. Most (36.2%) of the research scholars had the opinion that INFLIBNET services met their information needs.

Suku and Pillai (2005)[68] conducted a study on status and problems of library automation in university libraries in Kerala. This study discussed the present scenario of automation activities of university libraries in Kerala. The study briefly described the role of INFLIBNET Centre in accelerating the automation activities of university libraries, especially in the context of UGC-Infonet programme. A structured questionnaire was used as the tool for the survey. It covered all the seven university libraries in Kerala, instead of limiting to a sample. The study was confined only to the central libraries of universities. The questionnaires were sent to the chief librarian/librarian-in charge of the automation program of the library and the response rate was 100 percent.

The survey findings mainly covered various aspects of library automation such as information technology infrastructure, in-house activities, information services and their usage, manpower development, and budget. The study revealed that all university libraries in Kerala were using computers for their services and provided Internet and E-mail services to its users. LAN facility was available in all university libraries. Only 50 percent of university libraries in Kerala had introduced comprehensive automation of housekeeping activities.

2.2 Conclusion

The studies reviewed in this chapter revealed that majority of them were surveys conducted on research scholars, scientists and postgraduate students working in university environment. Major objectives of the studies were oriented to explore the attitudes towards library resources and services, usage, the information needs and use pattern. It was observed that there was scarcity of literature on the role of university libraries in research. Most of the studies reviewed do not focus on the information sources and service aspects of the university libraries with regard to supporting research. As the investigator found no worthwhile study on university libraries in Kerala, it was hoped that the present study shall be a valuable contribution in the field of library and information science in Kerala.

REFERENCES

1. Line, Maurice B. "Students Attitude to the University Library: A Survey at Southampton University." Journal of Documentation 19.3(1963): 100 -117.

2. Line, Maurice B. "Students Attitude to the University Library: A Second Survey at Southampton University." Journal of Documentation 22.2 (1966): 123-135.

3. Krishan Kumar. "User's Survey Concerning Teachers and Research Scholars in the Department of Chemistry, University of Delhi." Annals of Library Science and Documentation 15.4 (1968): 175-207.

4. Bushan, Ved. "User's Survey of IIT (Delhi) Library." Annals of Library Science and Documentation 19.4 (1972): 194-199.

5. Panwar, B.S., and Vyas, S.D. "Users Survey of the Women College Libraries." Herald of Library Science 15.1 (1976): 13-25.

6. Rout, R.K. "Measuring User's Satisfaction a Quantitative Model." IASLIC Bulletin 27.1 (1982): 1-8.

7. Olankun, Simenon Olajire. "A Survey of the Attitudes of Nigerian University Faculty, Students, and Librarians towards Library Policy, Use and Service." Dissertation Abstracts International 44.4 (1983): 900A.

8. Onadiran, G.T., and Onadiran, R.W. "Nigerian University Library Services Students Opinion." Journal of Library and Information Science 11.1 (1986): 45-60.

9. Kawatra, P.S. "Attitude of Research Scholars towards the Resources and Services of University Libraries in Rajasthan: A Study." Annals of Library scienceand Documentation 35.4 (1988): 17-25.

10. Lahiri, Ramansu. "A Study on the Users of a University Library." IASLIC Bulletin 33.2-3 (1988): 81-91.

11. Surya, M. et al. "Evaluation of Collection Effectiveness in University Libraries: A Case Study." Proceedings of the Thirty-Fourth All India Library Conference, Calcutta, 1988.141-161.

12. Decor, Sunday K. "Attitude and Perceptions of Student Patrons." International Library Review 21.4 (1989): 373-386.

13. Devarajan, G. User Approach to Information in Libraries. New Delhi: ESS ESS, 1989.

14. Gopal Reddy, and Pulla Reddy, V. "User's Survey of Kendriya Sanskrit Vidyapeetha Library: A Case Study." Indian Journal of Information Library and Society 2.3-4 (1989): 244-256.

15. Rajagopal, B. "User Survey of Sri Krishna Devaraya University Library." Library Herald 28.1-2 (1989): 17-25.

16. L'o'nnqvist, Harriet. "Scholars Seek Information: Information Seeking Behavior and Information Needs of Humanities Scholar's." International Journal of Information and Library Research 2.3 (1990): 195-204.

17. Ashoor, Mohammed Saleh. "Evaluation of the Collections of Saudi University Libraries Based on ACRL Standards." Information and Library Review 24.1 (1992): 3-14.

18. Somaraju, P. Role of University Libraries in Support of Research: A Case Study of Andhra University Library. Vishakapatanam: A.V. Preess, 1992.

19. Jasmer Singh, and Hari Singh. "Needs and Expectations from a University Library." Indian Journal of Information Library and Society 66.3-4 (1993): 193- 230.

20. Mallaiah, T.Y., and Badami K.K. "Library and Information Service Facilities in Mangalore University form Research Scholar's Point of View: A Survey". Annals of Library Science and Documentation 40.4 (1993): 155-165.

21. Marghalani, Mohammed Amin, and Hafez, Abdul Rashid. "Online Search Service in the King Abdul Aziz University Library, Jeddah, Saudi Arabia." International Information and Library Review 25.1 (1993): 27-41.

22. Mgaywa, Robert M. "The Use of Foreign Language Journals by Social Science Faculty of the University of Dar-es- Slam." International Library Movement 15.1 (1993): 26-32.

23. Pangannaya, N.B., and Ramakrishna Rao, R. "Information Gathering Habits of R & D Personnel's of Selected Large Scale Industries." INICAE 12.1 (1993): 25-42.

24. Abifarain, Abimbala. "Information Seeking Behavior of Agricultural Students in Nigerian Universities." Journal of Library and Information Science 19.20 (1994): 140-147.

25. Agrawal, Anil, and Chakraborty, K. "Information Use Pattern of Earth Science Scholars of Banarus Hindu University." IJLIS 8.3-4 (1995): 219-227.

26. Erens, Bob. "How Recent Developments in University Libraries Affect Research." Library Management 17.8 (1996): 5–16.

27. Maheswarappa, B.S., and Hosamani, H.G. "The Awareness and Usefulness of Information Services of NASSDOC, New Delhi, and Among Indian Social Scientists in a University Environment." ILA Bulletin 41.4 (1996): 167-172.

28. Chaya Devi, V. "Attitude of the End User's towards On-line Information Retrieval: A Case Study of NSDRC Library

Vishakapatanam." Annals of Library Science and Documentation 44.1 (1997): 18-311.

29. Devi, A.S., and Lahiri, Ramansu. "Information Seeking Behavior of the Agricultural Scientists in Manipur." Indian Journal of Information Library and Society 10.1-2 (1997): 78-86.

30. Jhon, Jessy. "Information Needs, Use Pattern and Use Behavior of Social Science Researchers." Indian Journal of Library and Society 10.1-2 (1997): 78-86.

31. Kanungo, Neena Talwar. "Methods of Searching Information by Women Research Scholars in History and Political Science: A Case Study of University of Delhi and Jawahar Lal Nehru University." Library Herald 35.1-2 (1997): 37-43.

32. Mallaiah, T.Y., and Sumangala, K.S. "Library and Information Service Facilities in Mangalore University Library Postgraduate Students Point of View: A Survey." Indian Journal of Information, Library and Society 12.3 (1999): 198-213.

33. Prodhani, M.A., and Gautam, J.N. "Study of Current Status of University Libraries in North Eastern India." Annals of Library Science and Documentation 44.4 (1997): 126-137.

34. Rajesh, Singh. "User Survey: Findings and Suggestions." IASLIC Bulletin 42.4 (1997): 179-184.

35. Zehery, M.H. "University Library Development in the Arab Gulf Region: A Survey and Analysis of Six State University Libraries." The International Information & Library Review 29.1 (1997): 13-44.

36. Singh, S.P. "Survey of IIT Library, Delhi." Library Herald 35.3-4 (1997-98): 79-114.

37. Maheswarappa, B.S., and Havanur, Bagyashree, K. "Use of Information Sources Versus the Personal Attributes of Biological Scientists in a University Environment in India." Annals of Library Science and Documentation 45.3 (1998): 85-105.

38. Prasad, H.N., and Tripathi, Manorama. "Information Seeking Behavior of Physical Scientists and Social Scientists." Annals of Library Science and Documentation 45.2 (1998): 41-48.

39. Raina, Roshan, and Dayal, Kavita. "An Analysis of Students Feed Back on the Library Utilization and Resource Evaluation at IIML" ILA Bulletin 23.3-4 (1998): 39-46.

40. Saraf, Veena et al. "A Study of Relationship Among Information Needs, Channels and Sources." Library Herald 35.3-4 (1998): 115-125.

41. Boakye, Joseph. "Users' Awareness and Use of Science and Technology Collections at the University of Science and Technology (UST) Libraries." Journal of Librarianship and Information Science 31.4 (1999): 204-211.

42. Sehgal, Premchand, and Navalani, K. "Growth and Development of Punjabi University Library, Patiala." ILA Bulletin 35.3-4 (1999-2000): 46-53.

43. Sudharani, D.V., and Veeranjaneeulu, K. "Information Use: A Survey of the Faculty Members of Sri Padmavati Mahila Visvavidyalayam (SPMVV) Thirupathi, A.P." Indian Journal of Information Library and Society 12.3-4 (1999): 219-226.

44. Veeranjaneyulu, K., and Ramesh, L.S.R.C.V. "Useful Information Requirements of Agricultural Scientists an Opinion Survey in Andrapredesh." Indian Journal of Information Library and Society 12.3-4 (1999): 253-261.

45. Biradar, B.S., and Sampath Kumar, B.T. "Periodicals Use Pattern by Teachers, Research Scholars of Kuvempu University: A Case Study." SRELS Journal of Information Management 37.4 (2000): 301-314.

46. Crawford, John C., and Daye, Andrew. "A survey of the Use of Electronic Services at Glasgow Caledonian University Library." The Electronic Library 18.4 (2000): 255- 265.

47. Kaur, Amritpal, and Nandan, Naresh. "Impact of IT and University Libraries: A Case Study of Bhai Gurudas Library, Guru Nanak Dev University, Amritsar." Library Herald 38.1 (2000): 124-128.

48. Tumba, Joseph, and Daya, A. "Information Needs of Geologists in Maiduguri Metropolitan, Borno State, Nigeria." International Library Movement 22 .1 (2000): 39-49.

49. Ammini, V.K. "Information Needs of the Students of Ship Technology, Cochin University of Science and Technology, Cochin: A Survey." International Library Movement 23.2 (2001): 77-84.

50. Mutula, Stephen M. "The IT Environment in Kenya: Implications for Libraries in Public Universities" Library Hi-Tech 19.2 (2001): 155-166.

51. Siddiqui, Asif Fareed. "Use of Library Collection in the JNU University Library, New Delhi." IASLIC Bulletin 46.4 (2001): 184-196.

52. Tadasad, P.G., and Meteseela, D. "Use Pattern of Information Sources by Post Graduates in a University Environment: A Case Study of Gulberga University, Gulberga." SRELS Journal of information Management 38.3 (2001): 231-254.

53. Ahmed, S.S. "Managing Change to Enhance Web-based Services in the Arabian Gulf Libraries" Online Information Review 26.4 (2002): 265-270.

54. Dulle, F.W. et al. "Application of Information Technology for Researchers in Tanzania: A Feed Back From Agricultural Researchers." Journal of Information Science 28.2 (2002): 157-162.

55. Monopoli, Maria et al. "A User Oriented Evaluation of Digital Libraries: Case Study of the Electronic Journals Service of the Library and Information Service of the University of Patras, Greece." Aslib Proceedings 54.2 (2002): 103-117.

56. Washington-Hoagland, Carlette, and Clougherty, Leo. "Faculty and Staff Use of Academic Library Resources and Services: A University of Iowa Libraries Perspective." Libraries and the Academy 2.4 (2002): 627–646.

57. Amusa, O.I., and Adekunnisi S.R. "Collection Development Practices in a Nigerian Third Generation University Library." Library Herald 4.1 (2003): 38-49.

58. Ho, Jeannette, and Crowley, Gwyneth H. "User Perceptions of the Reliability of Library Services at Texas A&M University: A Focus Group Study." The Journal of Academic Librarianship 29. 2 (2003): 82–87.

59. Lombardo, Shawn V., and Miree, Cynthia E. "Caught in the Web: The Impact of Library Instruction on Business Students' Perceptions and Use of Print and Online Resources." College & Research Libraries 64.1 (2003): 6-21.

60. Noushad Ali, P.M. and Hasan, Md Ehsan. "The Use of Electronic Services at IIT library Delhi: A Case Study of User's Opinion." IASLIC Bulletin 48.2 (2003): 71-82.

61. Simon Fraser University Library "Faculty Survey Report". 2005.12 Dec 2006 <http://www.lib.sfu.ca/about/reports/survey2003/FacultySurvey Report2003.pdf>

62. Jankowska, Maria Anna. "Identifying University Professors' Information Needs in the Challenging Environment of Information and Communication Technologies." The Journal of Academic Librarianship 30.1 (2004): 51-66.

63. Leeds University Library 2004 "How Can We Improve Library Services for You: Staff and Researchers' Satisfaction Survey Report 2004". 12 December 2006. <http://www.leeds.ac.uk/library/survey/2004report 04.pdf>

64. Amekuedee, J.O. "An Evaluation of Library Automation in Some Ghanaian University Libraries." Electronic Library 23.4 (2005): 442-452

65. Ani, O.E., Esin, J.E., and Edem, N. "Adoption of Information and Communication Technology (ICT) in Academic Libraries: A Strategy for Library Networking in Nigeria" Electronic Library 23.6 (2005): 701-708.

66. Asemi, Asefeh. "Familiarity and Use by the Students' of Digital Resources Available in the Academic Libraries of Medical Science University of Isfahan (MUI), Iran". Proceedings of the Third International CALIBER, 2-4, 2005: Multilingual Computing and Information Management in Networked Digital Environment. Ed. T.A.V. Murthy et al. Ahmedabad: INFLIBNET Centre, 2005. 648- 657.

67. Rajeswari, D. "Use of Information Sources in Digital Environment: a Case Study". Proceedings of the Third International CALIBER, 2-4, 2005: Multilingual Computing and Information Management in Networked Digital Environment. Ed. T.A.V. Murthy et al. Ahmedabad: INFLIBNET Centre, 2005.705-711.

68. Suku, J., and Pillai, G. Mini. "Automation of University Libraries in Kerala Status, Problems and Prospects." The Journal of Academic Librarianship 31.2 (2005): 151–159.

ROLE OF UNIVERSITY LIBRARIES IN RESEARCH IN KERALA: A CASE STUDY

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By

SHEEJA N.K.

Under the Supervision of
Dr. JALAJA V.

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
UNIVERSITY OF CALICUT
KERALA
2007

Chapter 3

METHODOLOGY

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The present study was an investigation of research role of university libraries in Kerala. The study focused on the potentialities of research-oriented services, resources and facilities of the university libraries and the level of satisfaction of research scholars on these elements. Hence, the study has two major components. The first being the assessment of university libraries and the second being the analysis of the response of research scholars.

The methodology adopted for the study is described under the following subheadings; Sample used for the study; Sources of data; Research instruments; Data collection procedure and Statistical methods used.

3.1 Sample Used for the Study

There are seven universities in Kerala established by the Acts of legislative assembly. Out of these seven universities, one -Kerala Agricultural university- is a technical university not falling within the sphere of general universities. Its field of study and sources of finance are different and hence comparison with other university libraries will be difficult and unbalanced. The other two Sri Sankaracharya University of Sanskrit and Kannur University are recently established universities where full-fledged university libraries are not yet functioning. Hence, it was decided to concentrate on the remaining four universities to produce a case study of university libraries in Kerala. It was

hoped that from the data collected it would be possible to generalize the conditions of university libraries in Kerala.

Therefore, this study was based on the data collected from the four university libraries in Kerala chosen for their range of size and mission for the provision of high quality information over a substantial period. These are libraries of the following universities:

i) University of Kerala (UK)

ii) University of Calicut (UC)

iii) Cochin University of Science and Technology (CUSAT)

iv) Mahatma Gandhi University (MGU)

The information regarding sources, services and facilities of the four university libraries under study were obtained through a structured interview with university librarians. Questionnaires were administered to the research scholars in the four universities to obtain their response on library system.

The following subjects were involved in the research.

i) Four university librarians

ii) 200 research scholars

Therefore, the total sample size was 204 subjects.

For user survey, the investigator selected only the full time research scholars, as they are more likely to use the library and therefore supply more useful information for the study than part time research scholars do. At the time of the study, 1497 students were enrolled as full time research scholars in the four universities in Kerala. A random sample of 50 research scholars was

selected from each university constituting a total population of 200. Since there was diversity of subjects, and the perception of scholars may vary according to their subject background it was decided to divide the sample broadly into two strata as science and social science. Moreover, effort was made to ensure that there was equal number of scholars from both fields. The break up of the sample is as follows:

Number of groups = 2 (Science and Social Science)

Samples in each group = 25

Samples from each university = 50 (25 × 2)

Number of universities = 4

Total sample = 200 (50 ×4).

3.2 Sources of Data

Both primary and secondary data were collected for the present study. Primary data were collected thorough questionnaire administered to research scholars in the four universities and structured interview with the four university librarians. Besides this, for personal observation, the investigator visited the university libraries and discussions were made with library professionals in charge of different sections.

The secondary data were collected from library brochures, handbooks, annual reports of universities, university Websites, university diaries, periodicals, published and unpublished research reports.

3.3 Research Instruments

Two research instruments were used in this study.

1) Interview schedule

2) Questionnaire

An interview schedule is a written list of questions, open-ended or closed-ended, prepared for use by an interviewer in a person-to-person interaction (Kumar 126)[1]. The Interview schedule used in this study can be found in Appendix-I.

A questionnaire is written list of questions, the answers to which are recorded by respondents (Kumar 126)[2]. Questionnaires are extremely flexible and can be used to gather information on almost any topic from large or small numbers of people (Moore 15)[3]. The questionnaire used in this study can be found in Appendix-II.

The interview schedule was used to obtain the views of university librarians. It was divided mainly into twelve parts.

Part 1) General information, 2) Collection Development and Preservation, 3) Library Resources, 4) Library Funding, 5) Human Resources, 6) Library automation, 7) ICT Infrastructures, 8) User population, 9) Information Services, 10) Technical Processing, 11) Networking and consortia, and 12) Library Building and Environment.

Part 1 of the schedule, General information, was aimed at obtaining the name of the library, year of establishment and working hours.

Part 2 of the schedule, Collection Development and Preservation, was designed to acquire data on collection development policies, selection procedure, use of technology for document selection, preservation activities and policies regarding weeding process.

Part 3, Library Resources, was aimed at gathering total number of books in the library and details of electronic resources available through subscription and consortia.

Part 4, Library Funding, was planned to obtain data regarding sources of funds, changes in library funding over the past five years and details of marketing strategies adopted by the libraries.

Part 5, Human Resources, was designed to acquire the number of professional staff, staff structure, vacant positions, librarians' views on staff shortage in relation to overall library development, information regarding career development programmes and events conducted by the libraries.

Part 6, Library Automation, was intended to attain status of library automation, particulars of library software, availability of online cataloguing searching, and initiatives of digital library projects Institutional repositories were also inquired.

Part 7, ICT Infrastructure, was proposed to get available communication infrastructures and hardware equipments in the library.

Part 8, User Population, was designed to obtain membership details of different category of users.

Part 9, Information Services, was intended to acquire details about lending services and information services offered by the library including methods adopted for user education. Detailed information concerning lending services was inquired in this section.

Part 10, Technical Processing, was intended to gather data on the classification schemes and catalogue codes used to process library materials. Information on the availability of online catalogues was also inquired in this section.

Part 11, Networking and Consortia, was designed to get facts on involvement of libraries in networking and library consortiums.

Part 12, Library Building and Environment, was planned to obtain information on the availability of special reading areas for research scholars, reading space and librarians views on existing condition of library buildings.

Questionnaires (Appendix-II) were administered to research scholars with the aim of gathering information required for the study. The survey questionnaire was divided into seven parts: 1) Biodata, 2) Reading Habits and Library Use, 3) Library Resources, 4) Library Services, 5) Library Tools and Techniques, 6) Facilities and 7) Suggestions

Part 1 of the survey questionnaire, Bio-data, was designed to obtain basic user characteristics, including research department, university library experience and reason for choosing the university as the centre of research.

Part 2, Reading Habits and Library Use, was intended to inquire reading habits, purpose of library visit and library use pattern.

Part 3, Library Resources, was planned to find out views on the adequacy and organisation of the existing library sources including primary, secondary and electronic. Users' opinion on the up-to-datedness of library collection was also inquired. Five options were given to point out their opinions as 'Excellent', 'Good', 'Average', 'Poor' and 'Very Poor'.

Part 4, Library Services, was designed to obtain research scholars views on information services provided by the libraries. 'Excellent', 'Good', 'Average', 'Poor' and 'Very Poor' options were given to point out their opinion. A column 'NA' was also given to denote the non-availability of a particular service.

Part 5, Library Tools and Techniques, was intended to inquire research scholars' opinion on different kind of library tools and techniques for information retrieval.

Part 6, Facilities, was projected to find out the level of satisfaction of research scholars on facilities available in university libraries. Library timings, IT based infrastructure, reading areas, library atmosphere, views on library staff were included in this section.

Part 7, suggestions, was intended to invite research scholars' views to improve the library.

3.4 Data Collection Procedure

For the purpose of the interview, a prior permission was sought from the university librarians. All librarians agreed and later personal contact was made to arrange the appropriate date and time when the interview could take place.

The researcher made notes during the interview that were later compiled. Statistical data were collected from concerned library sections.

In the user survey, the first stage was pre-testing of the questionnaire with 20 willing respondents in Cochin University of Science and Technology (CUSAT). Thereafter, modifications were made in the questionnaire.

For final data collection, the questionnaires were hand delivered to 200 respondents selected for the study. Necessary discussions were made with them and some of them asked more time to fill the questionnaires and self-addressed stamped envelops were given for them. All the respondents sent back the questionnaires in time. The response rate was 100%.

3.5 Statistical Methods Used for the Study

The data collected using the tools selected for the study were analysed using SPSS (Statistical Package for Social Scientists). Tables and diagrams with frequencies and percentages were drawn to exhibit the relevant data. Detailed analyses were made from two different angles.

1. General analysis, consisting the whole population
2. Research discipline wise analysis

Statistical techniques like percentages and Chi-Square tests were employed as and when required for analysis and interpretations of data. Conclusions were derived and recommendations were made based on the study.

REFERENCES

1. Kumar, Ranjit. Research Methodology: A Step by Step for Beginners. New Delhi: Pearson Education, 2005.

2. *Ibid.,*

3. Moor, Nick. How to do research. London: Library Association, 1983.

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Chapter 4

THE ROLE OF UNIVERSITY LIBRARIES IN RESEARCH

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This chapter attempts to provide a brief sketch of the process of research and the role of university libraries in supporting research carried out by universities. An overview of the development of university libraries in the country has been given. An attempt has been made to understand how the libraries of top ranking universities help their research scholars through different library services and strategies.

4.1 History of Universities

Education is one of the fundamental social institutions through which society transmit to the young generations the values, norms and knowledge essential for effective participation in social life. It is a crucial investment in the economy and an economic resource. It is indeed the key to social mobility. Education ensures equality, quality, relevance, access, choice, respect and partnership. Since learning is critical to social life, societies do not leave it to chance. The process of education is organized through the formal institutions of schools, colleges and universities. Among them, universities play an important role.

Universities function as the focal centre of higher education. They are dynamic and innovative institutions of higher learning and scholarship. They are committed to higher quality research across all disciplines. They play a key role in the generation, transfer and application of new knowledge. They

provide trained manpower for industry, agriculture, administration, services and all other sectors. The intellectual dynamism, resourcefulness and economic prosperity of a country are reflected in the quality of university education.

The word 'university' was derived from the Latin word 'universitas' which originally referred to any guild or association. Modern universities had their beginning in the institutions started in the Christian church in Europe during the Middle Ages. European universities were not the first in the world, however. The University of Al Azhar, founded in Cairo in the 10^{th} century is the oldest that is still in operation. A group of students brought together by a common interest started some of the early European universities. The University of Bologna, in 11^{th} century in Italy and the University of Paris in the 12^{th} century were started in this way.

The University of Halle in Germany, opened in 1964, introduced the idea of the university as a centre for research. The University of Gottingen, founded in 1737, advanced this trend in higher education. The late 18^{th} and 19^{th} century saw the spread of new scientific studies, extension of the concept of academic freedom, and a widening acceptance of the university not only as a conveyor of established knowledge, but as a centre of research. These developments, which originated in Germany, influenced other European universities first and those in the new world a little later.

4.2 The Role of Universities in Research

Research is a structured inquiry that utilises acceptable scientific methodology to solve problems and creates new knowledge that is generally

applicable (Grinnell 4)[1]. It is a systematic investigation to find answers to a problem (Burns 2)[2]. Research is a process for collecting, analyzing and interpreting information to answer questions. But to qualify as research, the process must have certain characteristics: it must, as far as possible, be controlled, rigorous, systematic, valid and verifiable, empirical and critical (Kumar 7)[3].

Since the opening of the University of Halle in Germany, the primary function of universities across the world has been offering opportunities for conducting research in all areas of human knowledge. Universities fuel research by providing access to an environment that includes high quality teaching community, up-to-date materials, and modern facilities.

4.3 Role of University Libraries in Research

The process of research in universities is organized in a way that many components are essential factors for the success of research and innovation. The establishment and maintenance of a resource rich service library is one of the important prerequisites of university education system. Hence the value of university libraries.

University libraries are essential part of university education and research. The historical development of university libraries has been influenced by the contexts in which the parent organisations operate. The vision, mission and strategies which are selected by universities as a guide for meeting the core functions of teaching, learning, research and providing community service

form the foundation on which the role of the university library is based (Wolpert 34)[4].

The successful completion of any research project requires reference to a large quantity of recorded knowledge. Learning, research, and the library often appear to be a natural mix. Their union in higher education is not only desirable, but is also integral to the conduct and success of teaching and learning (Edward 282-94)5. Libraries take part directly in research process and hence are components of knowledge innovation, and are involved in the diffusion and conversion of knowledge thereby acting as bridges for turning the results of knowledge into realistic productive entities (Cao Yi 17-19)[6].

In achieving the mission of the university, the library has the unique role of providing access to a carefully selected portion of the global intellectual record through planned acquisitions programmes, information literacy programmes, and user oriented information services. Besides the library has repository and archival responsibility for university publications, and provides a physical environment and remedial treatment conducive to longevity for library materials.

There are mainly seven steps involved in a research process: choosing a topic, finding background information, redefining the topic, selecting resources, searching for information, evaluating resources, and citing sources. In each step, a university library offers valuable help and support to the research scholar. The secondary information sources assist the students in the selection of a problem. The process of review of literature is made possible

with access to an extensive library collection in different formats. When the required documents are not available in the library, it is accessed through interlibrary loan. With the advent of information and communication technologies, libraries are able to help the scholars in accessing online documents and literature available through World Wide Web. Document delivery services are organised to supply articles and documents possessed either by libraries in the country or outside the country.

There are some special information services offered by university libraries that connect the world of research scholars with that of current information. The availability of new books, current articles, oncoming conferences on a topic, information appeared in newspapers are brought to the notice of research scholars through Current Awareness Service (CAS). Selective Dissemination of Information (SDI) is another specialised service that brings requested current information with the help of computers. Literature search is carried out for research scholars to retrieve relevant information from databases, online journals and the World Wide Web.

Libraries can offer special attention to the research scholars by providing them separate physical space within the library to encourage undisturbed learning and research. The scholars are offered more library tickets than the normal users in order to loan more books at a time. Apart from providing services and facilities, the university libraries offer the scholars education on the use of both resources and resource discovery tools for selecting, using and evaluating the documents effectively.

4. 4 Online Environment and Changing Trends

The essence of research activity, the creative thinking of the researcher aimed at contributing new knowledge and understanding, has remained unaltered throughout the centuries. The research environment and the research process, however, have been undergoing, for quite some time now, dramatic changes, with the advent of innovative information technologies and their ever-growing utilization for scholarly purposes (Herman 387-401)[7]. The 1990s greatly enhanced researchers' information handling capabilities, offering them a constantly growing array of Internet based full text databases and electronic journals, with hypertext and hypermedia linking, marking the way to the evolution of the digital library and the goal of providing flexible, demand based electronic access to information that often has no physical format or location (Herman 431-57)[8]. Now we live in an age in which all institutions and social activities are plugged in to digital technology. This technology with its tremendous potential has altered the way people access, use, create, distribute and store information.

The digital technology has made its impact on library services and operations also. The collection of books, manuscripts and other physical material continues to be important, but acquisition of resources in digital form involves a shift from ownership to access. Much of this digital content is not owned by the library but is made accessible based on licencing agreements negotiated with publishers and vendors. This has changed the relationship of libraries to their collection, with a significant loss of control over how material

is organised and accessed. The nature of work of librarians is also changing, as users are increasingly demanding support for accessing online resources.

Now all types of libraries are applying digital technologies to their environment. Academic libraries set their websites as gateways to various online resources that include databases, library catalogues, E-books, E-journals, selected websites and locally developed digital collections. Digital technology has reached a point where it is so pervasive that it cannot be ignored.

Digital libraries offer better delivery of information than was possible in the past. Researchers can access a digital library any time and anywhere that the necessary technology is available. A digital library delivers to the user's desktop not only bibliographic data about library collection and journal publications but also abstracts and full text documents. It can link researchers to unique collection and archives from all over the world. Digital libraries are capable of delivering services as well as information. A digital library user may take an online library orientation or tutorial, renew materials online, use e-mail to request particular materials or services, or interact with the librarians in real time using chat based reference services.

Digital libraries and Internet collapse many of the restrictions of space and time to supply scholars and faculty with unparalleled access to research materials. There exist many research initiatives for providing more information digitally.

Many university libraries are attempting to create portals themselves, which provide a unified and user-friendly interface to information services of

interest to their user communities, some of which are subscription based and hence not publicly available.

Open Access (OA) movement started a new era of global information flow. It is defined simply as "free, unrestricted access (to primary research articles) for everyone" exists in various forms (Morris 304-307)[9]. There are currently over 1200 fully Open Access journals (DOAJ)[10]. Librarians in universities can help to filter to huge flow of information and to select topics of interest to the local users and serve them in an appropriate form. The role of libraries in providing effective access to OA journals has made a tremendous impact on the provision of literature and the process of research in universities the world over.

4.5 University Libraries–An Overview of Indian Scenario

In India, the role of university libraries has been identified and pointed out by various Education committees and commissions. Radhakrishnan Commission (1948-49) emphasized the importance of the library in research as. "The library is the heart of all the universities work: so as regards its research work, and indirectly as regards its educational work, which derives its life from research work. Scientific research needs a library as well as its laboratories while for humanistic research the library is both the library and laboratory in one. Training in higher branches of learning and research is mainly a question of learning how to use the tools, and if the library tools are not there, how can the student learn to use them"(India, Education Commission 110)[11].

Kothari Education Commission (1964-66) observed that "No university, college or department should be setup without taking into account its library need in terms of staff, books, journals, space etc. Nothing could be more damaging to a growing department than to neglect its library or to give it a low priority. On the contrary, the library should be an important center of attraction on the college or university campus" (India, Education Commission 287)[12]. In truth and effect, the quality of teaching and research work in any institution is depending upon the potential of the library to respond (Buck 9)[13].The university library should be designed to support the role, which has been assumed by or assigned to the university. It is this important academic role of the library that was stressed by Dr. Shankar Dayal Sharma, the former vice president of India, who said: "a library is more important than a university because a library can function without a university where as a university cannot do without a library" (Inamdar and Ramaiah xii)[14].

The earliest known university in India was Taxila. It was a famous seat of learning from 700 BC to AD 300. Even though it was a famous seat of learning, archeological excavations found no libraries there. It may be due to the reason that the medium of communication was oral at that time. With the advent of Buddhism, teaching came to be practiced through written word and this in turn gave rise to libraries. The Nalanda University set up in the fourth century had a huge library complex known as Dharmaganj. Other ancient seats of learning like Jagaddal, Kanhery, Mithila, Odantapuri, Somapuri, Ujjain, Vallabh, and Vikramsila had good collections of manuscripts in their libraries.

In the medieval period, though the Muslim rulers patronized libraries in their palaces, academic libraries did not exist, except a college library at Bidar.

College libraries are the fore- runners of modern university libraries in India. British rulers had given importance to academic library development. In later nineteenth century three universities were set up at Mumbai, Culcutta, and Madras in 1857 on the model of London University which itself was an examining body then. Since these universities had no role to play in teaching and research, the need for attaching a library to them immediately after their establishment was not felt. There was a long time gap between the establishment of these universities and that of their libraries.

The Indian Universities Commission (1902) and The Calcutta University Commission (1917-1919) recommended the need for good reference libraries in universities and colleges. During the period of 1919-1930, eight new universities were established with libraries attached to them.

In Post independence period, the Government of India appointed the University Education Commission (1948-49) to enquire the existing condition of university education. The Commission strongly recommended the importance of library in a university. Kothari Commission (1964-66) also emphasized the need for quality in the provision of library services. The reports of these commissions laid down the guidelines for establishment, organisation, growth, and maintenance of university libraries in the country on scientific line.

The establishment of University Grants Commission (UGC) in 1956 was a significant event for the growth and development of universities in the

country. UGC discharges the Constitutional mandate of coordination, determination, and maintenance of standards of teaching, examination and research in universities and higher education institutions. UGC serves as a vital link between the Union and State Governments and the institutions of higher learning. It monitors developments in the field of collegiate and university education; disburses grants to the universities and colleges; advises Central and State Governments on the measures necessary for the improvement of university education; and frames regulations such as those on the minimum standards of instruction.

The contributions of UGC towards university libraries started with the recommendations of the Library Committee headed by Dr. S.R. Ranganathan. UGC accepted most of the recommendations of this committee and provided liberal grants to universities for uplifting their libraries from their pitiable conditions (Prasher 31)[15]. The establishment of an Inter University Centre (IUC) in the field of Library and Information is another significant event.

4.5.1 Information and Library Network (INFLIBNET)

Information and Library Network (INFLIBNET) was started as a project under the Inter University Centre for Astronomy and Astrophysics (IUCAA) in 1991 with its head quarters at Ahmedabad. It became an independent Inter University Centre (IUC) of UGC in 1996. INFLIBNET was designed to be a major player in promoting scholarly communication among academics and researchers in India.

During the past ten years, INFLIBNET has played a significant role in the automation of university libraries in India. To bring the information technology culture in the universities and automate the university libraries funds were provided for five years depending on the size of the universities to establish computer system facility in the university libraries with a non-recurring grant for establishing computer and network infrastructure and recurring grants for five years for maintenance. This helped the libraries substantially to procure the hardware and software for library automation activities.

The INFLIBNET conducted intensive training courses and workshops for the professionals, developed a library management software (SOUL), built up union databases of materials of universities and provided access through its website http://www.inflibnet.ac.in. INFLIBNET has been instrumental in creating an Information Technology conscious environment in the university libraries in India (Cholin 189-197)[16].

4.5.1.1 UGC-Infonet E-journals Consortium

Realizing the need for a common mechanism for access to scholarly information, UGC set the priority to provide access to scholarly communication for the research and academic community by supplementing existing collection in the individual universities. UGC-Infonet E-Journals Consortium was set up by the UGC with close cooperation with Education and Research Network (ERNET), the Inter-University Centre for Astronomy and Astrophysics (IUCAA), INFLIBNET and the international publishers. Began in

January 2004, this is an important step towards enhancing access to scholarly journals and databases by the academic community in India. So far, one hundred universities were brought under this programme. Through the consortium, about 4000 full text scholarly electronic journals from twenty-five publishers across the world can be accessed. It facilitates both current as well as archival access to core and peer-reviewed journals in different disciplines. Table 4.1 represents electronic resources subscribed under UGC-Infonet E-journal Consortium.

Table 4.1 Electronic Resources Subscribed to Under UGC-Infonet E-Journal Consortium

Sl. No.	Name of the Publisher	No. Databases/ Journals
1.	American Chemical Society	31 journals
2.	Royal Society of Chemistry	6 databases and 23 journals
3.	Nature Publishing Group	1 journal
4.	Institute of Physics Publishing	36 journals
5.	Cambridge University Press	189 journals
6.	Project Muse	222 journals
7.	Biological Abstract	1 database
8.	JSTOR	450 journals
9	American Physical Society	8 journals
10	Science Online	1 journal
11	Springer	200 journals
12	Elsevier Science-Life Sciences	34 journals
13	Emerald	28 journals
14.	Annual Reviews	29 journals
15	Taylor and Francis	100 journals
16	MathSciNet	1 database
17	Portland Press	4 journals
18	Blackwell	450 journals
19	Oxford university press	165 journals

From the Table 4.1 it can be seen that worlds leading publishers are involved in the e-journals consortium. The literature made available includes

journals covering research articles, reviews and abstracting databases. Besides E-journals the consortia also gives access to portals like 'Ingenta'. This gateway portal provides full text access to the journals subscribed and access to the level of abstracts for all other non-subscribed journals.

The UGC-Infonet E-Journals Consortium is bridging the gap between information and its user (Murthy et al 658-67)[17]. The programme has given a long way in mitigating the severe shortage of periodicals faced by university libraries for many years. As journals are carriers of the latest scholarly information the e-subscription, initiatives under UGC-Infonet are expected to stimulate remarkable increase in sharing the electronic resources amongst universities across the country.

4.6 Library Websites and Research Help

Libraries face stiff competition from search engines. These for-profit players have invested significantly in their front-end screens and marketing strategies, and can serve up quick bites of information the way users want fast and easy. To overcome the situation the only measure is creation of robust library Web sites (Detlor and Lewis 251-58)[18]. The online environment has offered wide opportunities for librarians to support the process of information seeking and using especially for research. The design and development of user centred Web sites is an important step that not only provide users with access to online catalogs, subscribed resources, and other electronic content but also create virtual environments, which enable them to personalise the selection and presentation of collections, to channel the delivery of value added services, to

engage in two-way communication with library staff and, in some cases, to even collaborate with other library users.

4.6.1 University Libraries Selected for Review

The investigator reviewed the library websites of top ranking universities with an objective to know how they are supporting their research scholars. The following four top universities from a list of one hundred universities, as listed in the Institute of Education in Shanghai at Jiao Tong University (SJTU) academic ranking of world's universities in 2004 are selected for examination.

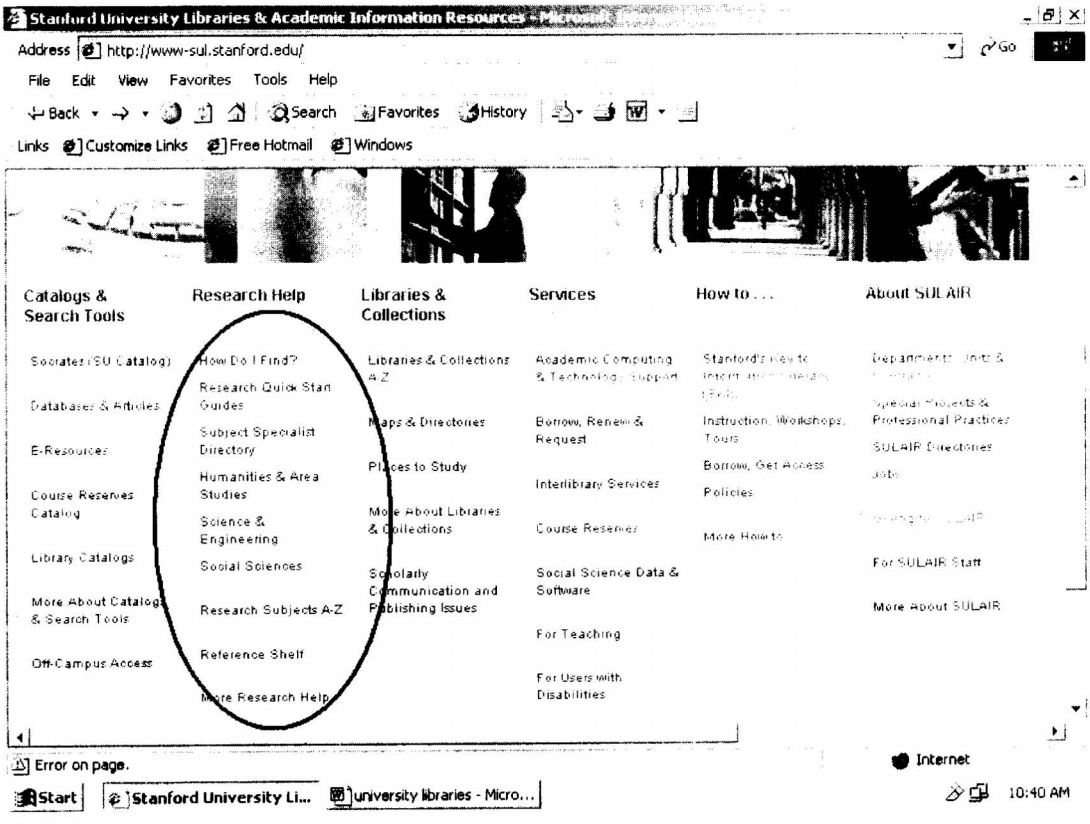
1. Harvard University (USA)
2. Stanford University (USA)
3. Cambridge University (Britain)
4. Tokyo university (Japan)

The first three universities are top ranking universities and Tokyo University (12th position in the ranking) was selected for review because it is the only university from Asia. All these universities are world's leading research and teaching institutions (Goodall 388-411)[19]. The investigator examined the university library websites of the four universities for a period of six months from September 2006 to January 2007. The facilities checked includes: Research Guides/ Research Help Facility, Digital Reference Service, User-friendly Display of Library Collections, Web OPACs and Other Catalogues, Subject Gateways, Web Based Information Literacy Programmes, and Institutional Repositories.

4.6.2 Research Guides/ Research Help Facility

Majority of the libraries has given an icon 'Research guides' or 'research help facility' in their webpage exclusively for research scholars. This facility provides a real assistance to research scholars throughout his/her research process. This service offers subject specialist directory, research quick start guides, A to Z research subject list, subject wise arrangement of various kind of resources, information about how to create bibliographies and manage citations, reference tools etc. Fig.4.1 shows webpage of Stanford University library.

Fig.4.1 Research Help Interface of Stanford University Library (http://www.sul.standford.edu/)



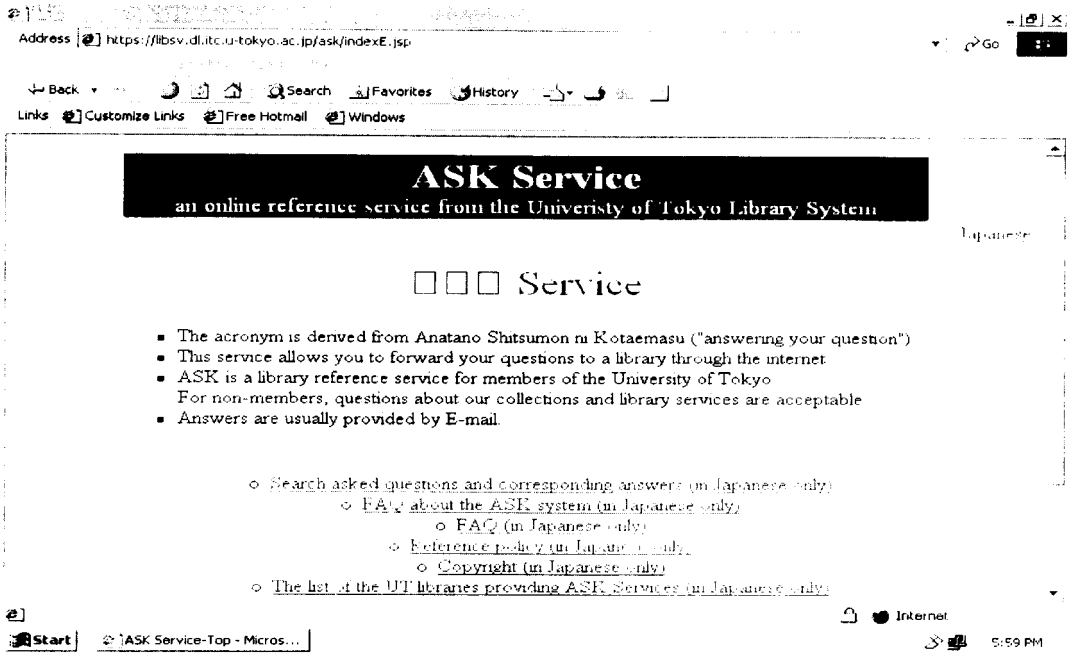
From the figure 4.1, it can be seen that research help icon is given in the home page itself. A researcher can easily navigate the links given under this icon. The link 'How do I find' provides information about where to look for different types of materials and collections.

Research quick start guides give a list of topics and information sources available in that particular topic. Subject Specialists are available for advanced research consultation under the link 'Subject specialist directory'. The list of subject specialists is arranged alphabetically by general subject with a detailed list of all subject areas, and a list of subject specialists arranged alphabetically by name. Reference shelf icon offers access to categorized reference sources available at Stanford and on the web. Subject wise collections are given under major three subject headings.

4.6.3 Digital Reference Service

Reference services provided over the Internet, usually via e-mail, instant messaging ("chat"), or through Web-based submission forms by reference staff come under digital reference. Digital reference services are known in different names like chat reference, e-reference, online reference, ask a librarian and virtual reference. The Figure 4.2 illustrates digital reference service of Tokyo University library.

Fig.4.2 Web Page of Digital Reference Service of Tokyo University Library (https://libsv.dl.itc.u-tokyo.ac.jp/ask/indexE.jsp)



The Tokyo university library's digital reference service is known as 'Ask Service'. The service allows the users to forward their questions to library through Internet. In 'Ask service' answers are usually provided by e-mails. Digital reference services are performed in a variety of forms like chat and telephone. Digital reference service facilitates research process in multidimensional way. It saves time and provides quick assistance, guidance and interaction.

4.6.4 User-friendly Display of Library Collections

The University libraries of top ranking universities organise their materials to make it user-friendly and fully searchable, and serve as the host for this documents. Comprehensible display will automatically lead the users to the content. The Figure 4.3 explores Cambridge University library's home page.

Fig.4.3 Web page of Cambridge University Library's E-journals (http://www.lib.cam.ac.uk/electronicresources/websites.htm)

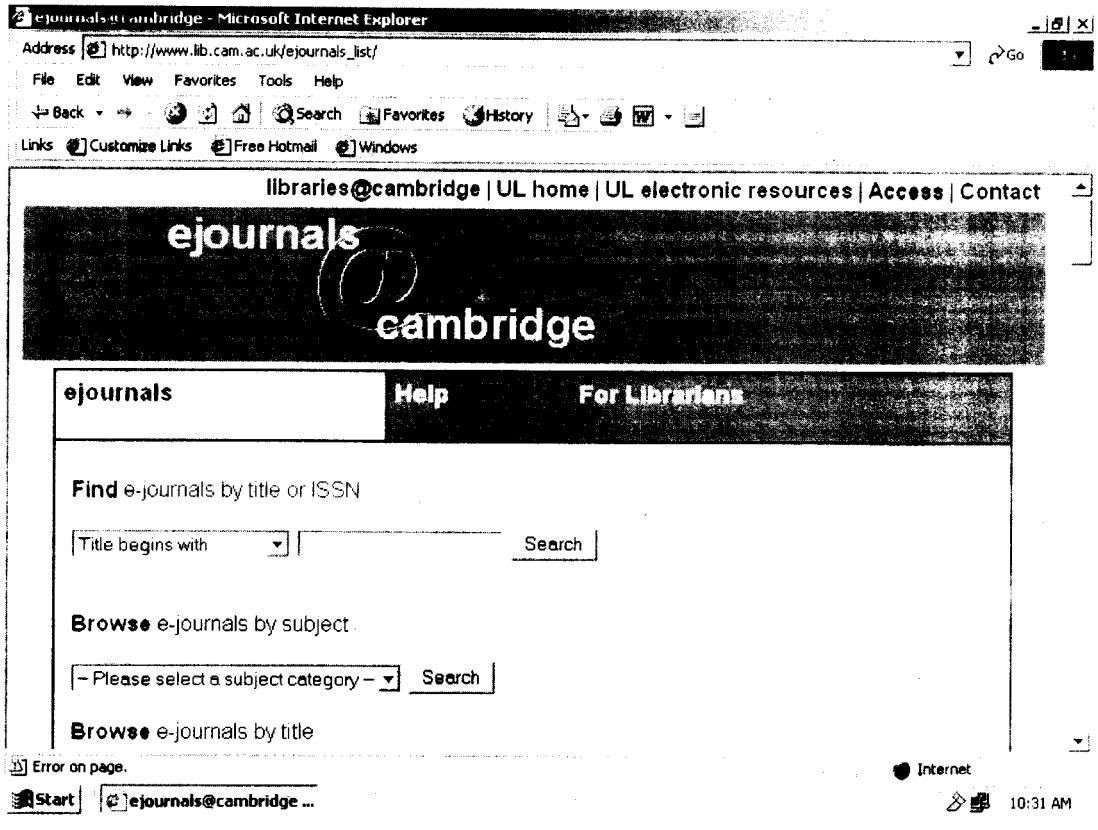


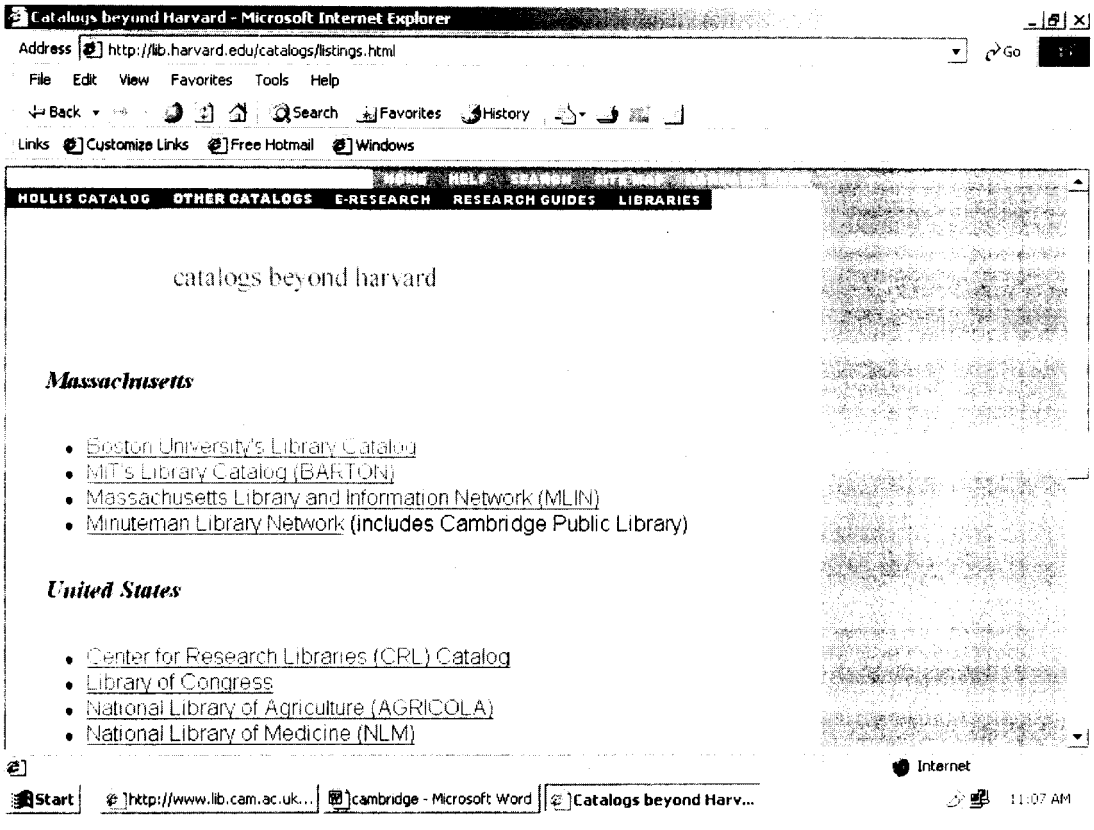
Figure 4.3 shows Cambridge University library's e-journal search interface. Three search criteria are given in the web page. Users can browse e-journals by title, ISSN or by subject. In addition to this facility, alphabetical listing of journal titles is also provided. The webpage has also supplied list of publishers who offered e-journals in the university library. This type of categorised arrangement assists the research scholars to mine right information at the right time.

4.6.5 Web OPAC and Other Catalogues

Web based catalogues accelerate the use of resources. Users can access library catalogues anywhere any time. Some libraries make provisions to

search catalogues of other libraries also. The figure 4.4 shows Harvard university library's web page of catalogues beyond Harvard.

Fig.4.4 Harvard University Library Web Page of Catalogues
(http://lib.harvard.edu/catalogs/listings.html)



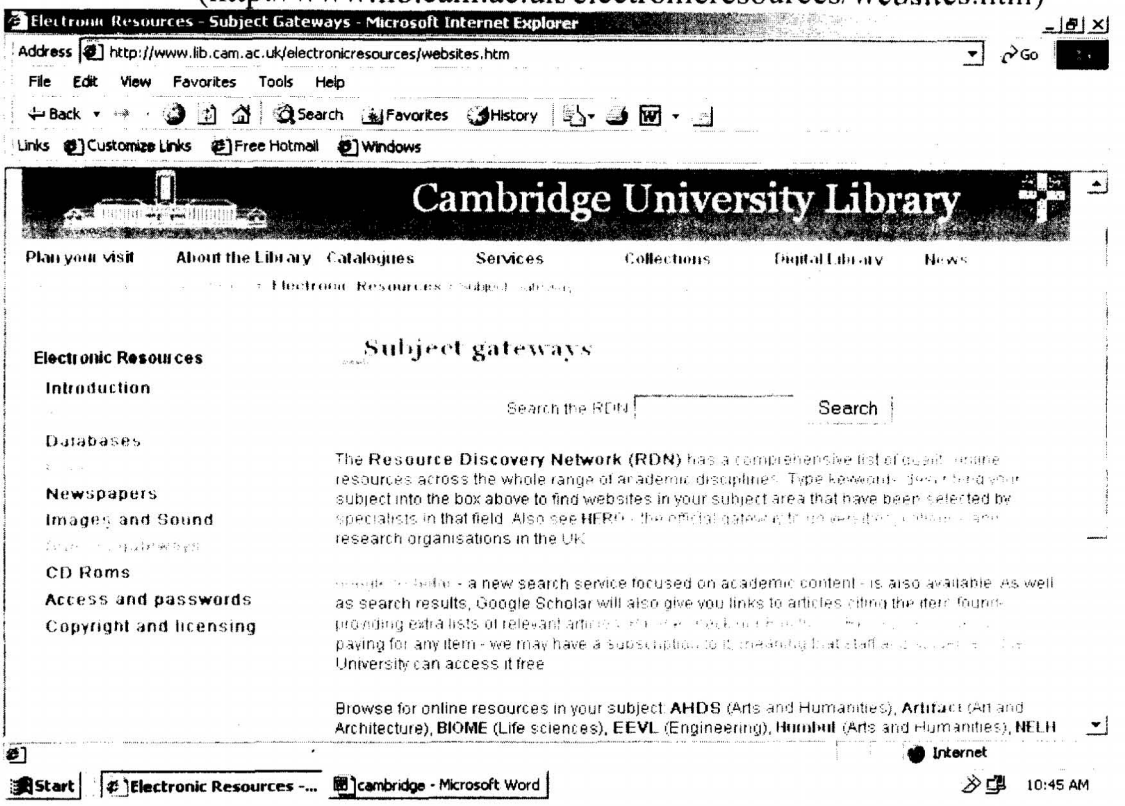
The Fig.4.4 shows the catalogue of many libraries that includes regional, national and international catalogues. Through the library website, the scholars can access a number of catalogues of world's leading universities and institutions like Library of Congress and MIT. This will enable the researcher to widen the search dimensions and save time for locating catalogues.

4.6.6 Subject Gateways

The Australian Subject Gateways Forum has defined a subject gateway as "a Web-based mechanism for accessing a collection of high quality,

evaluated resources identified to support research in a particular subject discipline"(ASGF)[20]. It is a web site that helps searching and accessing online resources focused around a specific subject. Arrangement of freely available Internet sources helps the researchers navigate their specific research needs. The figure 4.5 presents subject gateway of Cambridge University library.

Fig 4.5 Subject Gateway of Cambridge University Library
(http://www.lib.cam.ac.uk/electronicresources/websites.htm)

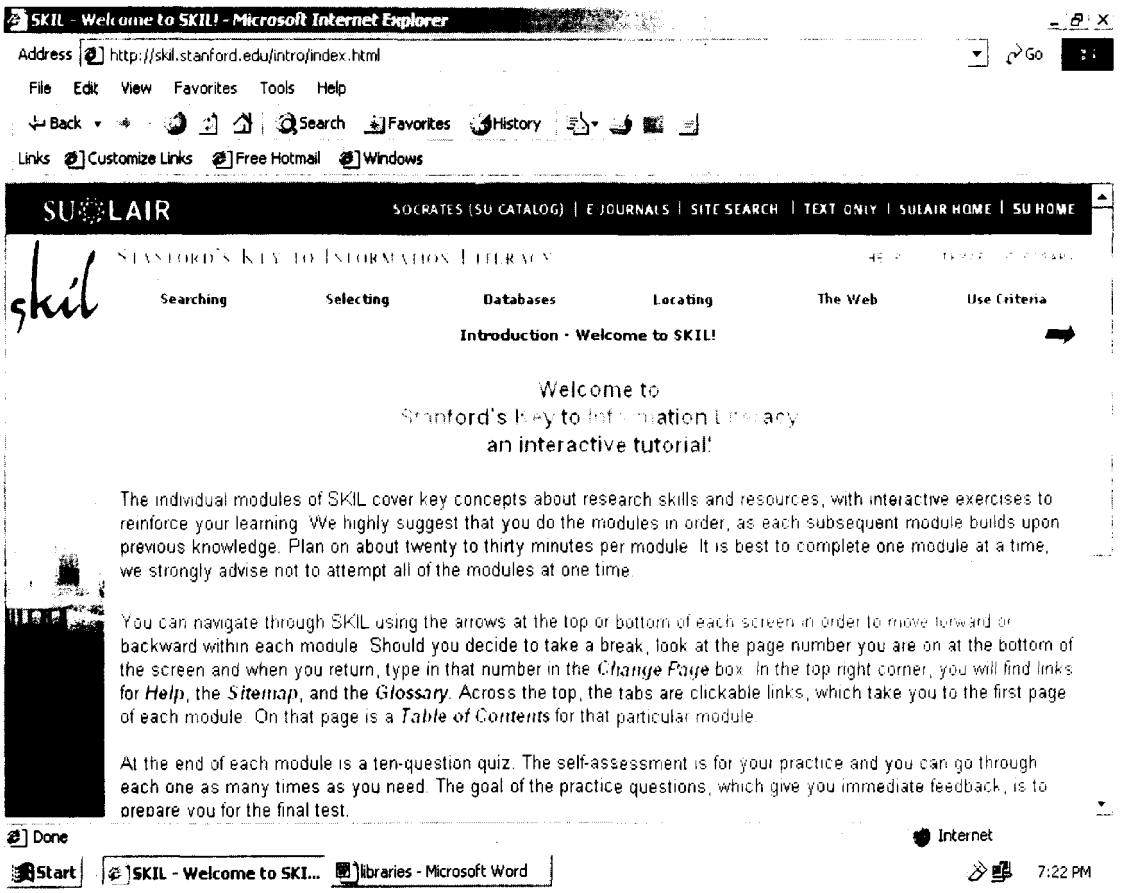


Subject Gateway at Cambridge University library offers a comprehensive list of quality online resources across the whole range of academic disciplines. This catalogue gives direct links to related websites selected and evaluated by the library, thereby helping researchers save their time.

4.6.7 Web Based Information Literacy Programmes

Information literacy is the ability to search, locate, use and evaluate information sources. The figure 4.6 illustrates web based information literacy programme of Stanford University library.

Fig.4.6 Web based Interactive Tutorial Session of Stanford University Library (http://skil.stanford.edu/intro/index.html)

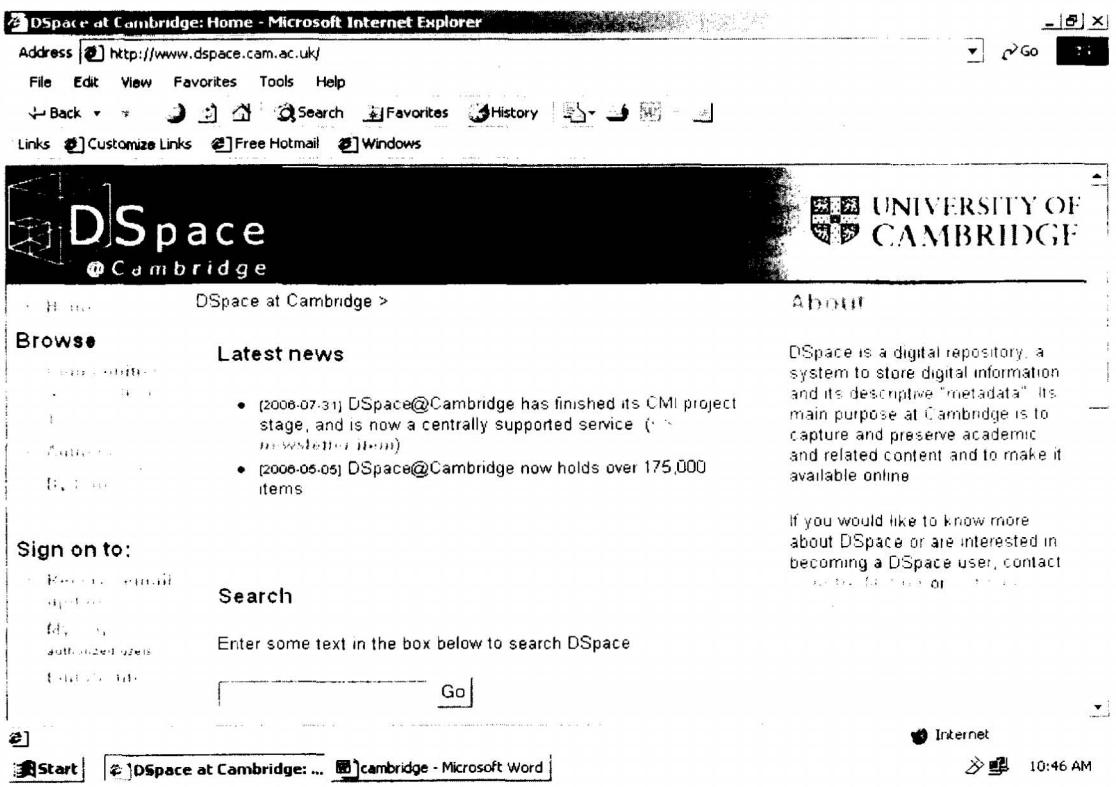


The web based information literacy programme is an essential service especially for research scholars for finding their resources easily. This service gives the research scholars an overall idea about library's resources, services and facilities.

4.6.8 Institutional Repositories

Institutional repositories are content management system to house the digitally formatted works. They help to collect, make available, and preserve important scholarly material of all kinds, especially that of materials produced by the faculty and research community. The figure 4.7 shows the window of the institutional repository created by the Cambridge University library.

Fig. 4.7 Web Page of Digital Repository of Cambridge University Library (http://www.dspace.cam.ac.uk/)



There are several softwares available in building institutional repositories. From the figure 4.7, it can be seen that Cambridge University library is using DSpace, developed by the MIT libraries. University libraries

have made use of the utilities of digital repositories for managing, hosting, preserving and enabling the distribution of scholarly communication.

4.7 Conclusion

The role of university libraries in supporting research is remarkable in many ways. They are responding to the ever-increasing demands of scholars for quality literature, in a format convenient for them and at a time, they most need the information. University libraries are enhancing access to more resources available in other libraries through consortia. They have built interactive websites for helping their users access the library any time anywhere. When the focus of publications shifted from print to electronic, libraries managed these developments through accommodating electronic environment in the libraries. They created institutional digital repositories to help manage the flow of published materials and knowledge created by the institutions. Subject gateways maintained in the websites of university libraries offer quick access to the resources available on other sites.

Everything is constantly changing and changing fast. Librarians combine the traditional roles with powerful technologies and expertise to mine the great opportunities for information handling in the new era. They are performing their research role through different platforms.

REFERENCES

1. Grinnell, Richard. ed. Social Work, Research and Evaluation. 4th ed. Illinoise: F.E Peacock, 1993.

2. Burns, Robert B. Introduction to Research Methods. 2nd ed. Melbourne: Langman Cheshirey, 1994.

3. Kumar, Ranjit. Research Methodology: A Step by Step for Beginners. New Delhi: Pearson Education, 2005.

4. Wolpert, A. "Services to Remote Users: Marketing the Library Role". Library Trends 47.1(1998):21-41.

5. Edward, Owusu-Ansah K. "The Academic Library in the Enterprise of Colleges and Universities: Toward a New Paradigm." The Journal of Academic Librarianship 27.4 (2001): 282–294.

6. Cao Yi "The Reorientation of Libraries in the Knowledge Economy Era". Library Work and Research 6 (1999): 17-19.

7. Herman, Eti. "End-users in Academia: Meeting the Information Needs of University Researchers in an Electronic Age". Part 1 Aslib Proceedings 53.9 (2001): 387-401.

8. Herman, Eti. "End-users in Academia: Meeting the Information Needs of University Researchers in an Electronic Age Part 2 Innovative Information-Accessing Opportunities and the Researcher: User

Acceptance of IT –Based Information Resources in Academia". Aslib Proceedings 53.10 (2001): 431-457.

9. Morris, Sally. "Open Access: How are Publishers Reacting?." SerialsReview 30.4 (2004): 304–307.

10. Doaj.com. 2006. Directory of Open Access Journals. 14 December 2006 <http://www.doaj.org/>

11. India, Education Commission 1948. Report 1949, Vol.1.Delhi: Manager of Publications, 1950.

12. India, Education Commission 1964 Report 1966 Delhi: Ministry of Education, Govt.of India, 1966.

13. Buck, Paul. Libraries and Universities. Cambridge: Harvard University Press, 1964.

14. Inamdar, N.B., and Ramaiah, L.S. eds. National Policy for University Libraries in India. New Delhi: Concept, 1989.

15. Prasher, R.G. Managing University Libraries. New Delhi: Today & Tomorrow, 1991.

16. Cholin, Veeranna S. "Study of the Application of Information Technology for Effective Access to Resources in Indian University Libraries." The International Information & Library Review 37(2005): 189–197.

17. Murthy T.A.V., et al. "UGC-Infonet: E-journals Consortium an Indian Model- Bridging the Gap Between Scholarly Information and End User". Proceedings of the Third International CALIBER, 2-4, 2005: Multilingual Computing and Information Management in Networked Digital Environment. Ed. T.A.V. Murthy et al. Ahmedabad: INFLIBNET Centre, 2005. 658-667.

18. Detlor and Lewis, Vivian. "Academic Library Websites: Current Practice and Future Directions." The Journal of Academic Librarianship 32.3 (2006): 251-258.

19. Goodall, Amanda H. "Should Top Universities be Led by Top Researchers and are They? A Citation Analysis." Journal of Documentation 62.3 (2006): 388-411.

20. Australian Subject Gateways Forum. 2006. Australian Subject Gateways Forum. October 24 2006 < http://www.nla.gov.au/initiatives/sg>

ROLE OF UNIVERSITY LIBRARIES IN RESEARCH IN KERALA: A CASE STUDY

Thesis Submitted to the University of Calicut
for the Degree of

DOCTOR OF PHILOSOPHY

in

LIBRARY AND INFORMATION SCIENCE

By

SHEEJA N.K.

Under the Supervision of
Dr. JALAJA V.

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
UNIVERSITY OF CALICUT
KERALA
2007

Chapter 5

UNIVERSITY LIBRARIES IN KERALA

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UNIVERSITY LIBRARIES IN KERALA

The focus of this study was to examine the role of university libraries in Kerala in research. For this purpose, it is essential to study the existing status of the university libraries in Kerala. This chapter provides background information about the state of Kerala focusing the field of higher education, universities in the state, and the university libraries. The collection of primary data for this purpose was made through a structured interview with the university librarians and by personal observation. Secondary data were collected examining library brochures, websites, and annual reports of universities.

5.1 Background Information

Kerala is located on the southwestern coast of Republic of India, between north latitudes 8 degree 18' and 12 degree 48' and east longitudes 74 degree 52' and 72 degree 22'. It is bounded on the north and north east by Karnataka state, on the east and south by Tamilnadu and on the west by the Arabian Sea. The state covers an area of 39,863 square kilometers, which makes it the seventeenth in area among the states of India.

The present political entity, known as Kerala was formed in 1956 by the States Reorganisation Act of 1956. Kerala has 31,838,619 people according to the 2001 census, which is nearly 3.44 per cent of the country's population. The sex-ratio recorded in this census is 1058 females per 1000 males. The nature of

the terrain and its physical features, divides an east west cross section of the state into three district regions - hill and valleys, midland plains and coastal region. The majority of the population lives in coastal region.

The state has a unique place in the literacy map of India, with a literacy rate of 90.92 percent. Keralites have migrated in large numbers in search of employment to several foreign countries like United States, Malaysia and Singapore in South East Asia as well as to several countries of Africa and West Asia. The professionals of Kerala are among the most wanted experts in the fields of Medicine and Information Technology. (Government of Kerala)[1].

The education system in Kerala is based on 10+2+3+2 structure, which provides ten years of primary and secondary education followed by two years of higher secondary education, three years of graduate education and two years postgraduate education. M.Phil., a preparatory programme for doctoral level studies is normally of one year duration. PhD programmes require research study for minimum two years.

Primary education is the first level of formal school education in Kerala. There are 6712 lower primary schools in Kerala in government, private aided and unaided sectors. Primary education starts at five years of age. Secondary education constitutes a consolidation and transition between primary and higher secondary education. There are 2951 upper primary and 2608 high schools in Kerala. At the end of secondary education, the students sit for examination for the Secondary School Leaving Certificate of Board of Examinations, Kerala. In higher secondary level, there are 2608 higher

secondary schools in Kerala. Besides this, there are 375 Vocational Higher Secondary Schools in the state.

University education is the apex of Kerala's formal education and training. Apart from undertaking research and development, the universities are preparing high-level manpower for national development. Other than universities, education and training are also provided by institutions such as Polytechnics, Teacher training colleges, Food craft institutes and specialized institutions run by government and ministries. There are 121 polytechnics, which offer diplomas and certificates in various fields of technical trades.

The State of Kerala has at present seven universities namely:

1. University of Kerala
2. University of Calicut
3. Cochin University of Science and Technology
4. Mahatma Gandhi University
5. Kannur University
6. Kerala Agricultural University
7. Sri Sankaracharya University of Sanskrit

There are 356 Arts and Science Colleges affiliated to four Universities namely, Kerala, Calicut, Mahatma Gandhi and Kannur. Out of these, 39 are government colleges, 150 are private aided colleges and 167 are private unaided colleges.

There are several government departments providing non-formal education for adults through extension services and literacy programmes aimed

at enhancing the participation of the whole communities irrespective of age, sex, religion for socio economic improvement and overall development of the state.

5.2 University Education in Kerala

The history of higher education in Kerala started with the establishment of C.M.S College at Kottayam by the Christian missionaries in the early nineteenth century. The history of universities in Kerala goes back to 1937 when the University of Travancore was established at Thiruvananthapuram by Sri Chithira Thirunal Balarama Varma, the then Maharaja of Travancore, who was also the first Chancellor of the University. Sir C. P. Ramaswamy Ayyar, the then Diwan of the State, was the first Vice-Chancellor. It was the sixteenth University to be set up in India. The ten colleges previously affiliated to the Madras University, were affiliated to the University of Travancore.

The University of Travancore was renamed as the University of Kerala in 1957 by the Kerala University Act. The University has three campuses located in three different parts of the State viz. Thiruvananthapuram, Ernakulam and Kozhikode. In 1968, the University Centre at Kozhikode became the University of Calicut covering the colleges and departments located in Thrissur, Palakkad, Kozhikode and Kannur districts of Kerala. The Cochin University of Science and Technology was founded in 1971 as the University of Cochin. The name of the university was changed in 1986. The Kerala Agricultural University was set up in 1971 at Thrissur. The Mahatma Gandhi University was established in 1983 at Kottayam as Gandhiji University. The

name was changed in 1986. With the establishment of these Universities, the area of the jurisdiction of the University of Kerala has been limited to Thiruvananthapuram, Kollam, Alappuzha districts and some parts of Pathanamthitta district.

Now there are seven universities in the state offering opportunities for higher learning and research in the widest possible range of subjects of Science, Arts, Humanities, Engineering, Medicine, Agriculture and Animal Husbandry. The Table 5.1 shows the year of establishment and location of the seven universities in Kerala.

Table 5.1 Universities in Kerala

Sl.No.	Name of the University	Year of Establishment	Location
1	UK	1937	Thiruvanathapuram
2	UC	1968	Tenhipalam
3	CUSAT	1971	Cochin
4	KAU	1971	Thrissur
5	MGU	1983	Kottayam
6	SSUS	1994	Kalady
7	KU	1996	Kannur

From the Table 5.1 it can be seen that the University of Kerala (UK) is the oldest university in the state located at Thiruvanathapuram, the state capital. The University of Calicut (UC), the second university was established after thirty-one years. It is located at Tenhipalam in Malappuram district. 24 kilometer south of Calicut city. The year 1971 witnessed the establishment of two universities; the Cochin University of Science and Technology (CUSAT), the only science and technology university at Cochin, the industrial

belt of Kerala and the Kerala Agricultural University (KU) at Thrissur. Mahatma Gandhi University (MGU) was established in 983 at Kottayam. Sree Sankaracharya University of Sanskrit (SSUS) and Kannur University (KU) are the recently established universities in the state.

The University of Kerala (UK) has at present sixteen faculties and forty-one departments for teaching and research. There are 157 affiliated colleges. Of these, 46 are aided Arts and Science colleges and 14 are unaided. In addition to the departments, the university also maintains several centers for carrying on studies and research in particular areas. The International Centre for Kerala studies, the Centre for Canadian studies, and the Centre for Women's studies belong to this category.

The University's Web site http://www.keralauniversity.edu/ launched in January 2000, offers several services like downloadable application forms, question papers of past examinations, free resource links, and subject gateway. The University has academic cooperation with some foreign Universities namely Valladolid of Spain and Claremont of the United States of America. The UGC has identified the University as one of the 26 institutions selected for promotion of India Studies by foreign students. The National Assessment and Accreditation Committee (NAAC) has placed the University at the B++ grade (University of Kerala)[2].

The University of Calicut (UC) was set up with the objective of developing human resources in the northern districts of Kerala by extending the reach of higher education and by promoting research in all areas of

development with particular emphasis on technology, art and culture of Kerala. The jurisdiction of the University extends to the districts of Kozhikode, Waynad, (except Manathavady taluk), Malappuram, Palakkad and Thrissur. The university has twenty-one postgraduate departments of teaching and research and 262 affiliated colleges.

The Cochin University of Science and Technology (CUSAT) was established for the specific purpose of development of higher education with particular emphasis on postgraduate studies and research in applied science, technology, industry and commerce. The University is situated in the central region of the state. The territorial jurisdiction of the University extends to the whole state.

The University has at present twenty departments of study and research and an engineering college at Pulinkunnu, Aalapuzha and twenty recognised colleges and institutions. The University has academic links and exchange programmes with several institutions in North America, Europe and it is participating with the Netherlands Organisation for International Co-operation in Higher Education (NUFFIC) and the European Union under the Asia Link Curriculum Development Programme, in areas such as applied economics, environment, photonics, and polymer science and management information systems besides academic collaboration with some of the premier educational institutions in France, Korea and USA.

The Mahatma Gandhi University (MGU) was established as the fifth university in the central part of Kerala. The University extends its jurisdiction

to Kottayam, Ernakulam, Idukki and some parts of Alappuzha and Pathanamthitta districts. Presently the University has 21 teaching and research departments/schools and 183 affiliated colleges, six information centres, three study centres and several campuses. The MG University is the largest of the seven universities in terms of affiliated colleges. The University has ten inter disciplinary schools of teaching and research and 12 schools of higher learning in applied science and professional studies with academic autonomy.

The University has tie-up with national and international universities in France, USA, Belgium and Switzerland. The University has awarded 865 doctoral degrees for the research activities undertaken by the scholars in various disciplines and published over 5000 papers in research journals of international repute.

Kerala Agricultural University was established with its headquarters at Vellanikkara in Thrissur district. The university is carrying out research related to the problems of agriculture and allied sciences for aiding the development of farmers in the State. The jurisdiction of the university extends to the entire State.

The Sree Sankaracharya Sanskrit University, located at Kalady in Ernakulam district has been set up with an aim of imparting higher education in various branches of Sanskrit language, literature and fine arts. The jurisdiction of the university extends to the entire State.

Kanuur University is the youngest university in the state with the jurisdiction of revenue districts of Kasargode, Kannur, and Manathavady taluk of Wayanad district.

5.3 Library Tradition in Kerala

Kerala has a rich tradition in learning and scholarship. The contribution of library movement to this tradition is noteworthy. The library system of Kerala consists of public, special and academic libraries. The history of public library movement in Kerala began with the establishment of Trivandrum Public Library in the year 1929 by Swathi Thirunal, the then Maharaja of Travancore. During the first quarter of the twentieth century, more libraries were established with the help of enthusiastic people. It became an organised movement when the All Travancore Grandhasala Sangham came into being in 1945. Later its name was changed to Kerala Grandhasala Sangham (KGS). The KGS was the apex body of public libraries for the entire state up to 1989 when the Kerala Public Libraries Act was passed and the KGS was transformed into State Library Council, the apex administrative body as per the Act.

The Special library system of Kerala comprises of those libraries attached to specialised research, development, and technical institutions in Kerala in both private and public sector.

The academic library system is the most flourished library sector in the state. It comprises school libraries at the lowest level and university libraries at the highest level.

5.4 University Libraries

The history of university libraries in Kerala goes back to the establishment of a library in the University of Kerala in 1942. Now the seven universities in the state have well-equipped libraries. The collection in these libraries reflects the wide range of subjects being offered in their parent organisation. Since the present study is limited to the four university libraries in Kerala, various aspects of these libraries were examined in detail. The Table 5.2 shows the year of establishment of four universities and their libraries.

Table 5.2 University Libraries and Their Year of Establishment

Sl. No.	Name of the University	Year of Establishment	Year of Establishment of Library
1.	University of Kerala (UK)	1937	1942
2.	University of Calicut (UC)	1968	1971
3.	Cochin University of Science &Technology (CUSAT)	1971	1974
4.	Mahatma Gandhi University (MGU)	1983	1989

From the Table it is clear that no university had set up its library in the same year of its establishment. It took three years for the University of Calicut (UC) and Cochin University of Science and Technology (CUSAT) to set up their libraries. The University of Kerala (UK), the oldest university in the State and the Mahatma Gandhi University (MGU), the recently established university under study, took five to six years to establish their libraries. All University libraries in Kerala are known in the names of the university except the library of the University of Calicut, which is known as CHMK University

library. The library is renamed after C.H Mohammed Koya (Former Minister for Education, Government of Kerala). The investigator has used UC library to denote CHMK University library. For convenience, the investigator has used UK to denote University of Kerala, UC to University of Calicut, CUSAT to Cochin University of Science and Technology and MGU to Mahatma Gandhi University.

5.5 Collection Development and Preservation

Document collection is considered the foundation of any library. A university library cannot respond to the rising needs of its numerically increasing users unless it has the materials required by them. For supporting education and research programmes of the university, its library must develop a well-balanced and rich document collection.

Collection development is a process of planning and building a useful and balanced collection of library materials over a period of years, based on an ongoing assessment of the information needs of the library users, analysis of usage statistics, and demographic projections, normally constrained by budgetary limitations. All the four university libraries examined in this study reported to have collection development policies in one form or another. Where policies are not active, the libraries rely on the university Statutes and Acts. It is noted that there are no laid down policies to guide the acquisition of electronic information sources. All university libraries examined in the study reported constrains with regard to collection development due to inadequate

funds. No university library under study is in a position to subscribe to full text databases.

5.5.1 Selection Procedures

All the university libraries under study have displayed similarity in document selection procedure. The principle selectors of books and journals are faculty concerned. The librarians help them by providing information from websites of publishers, online books shop, best sellers columns in news papers, books review columns in magazines and journals, printed catalogues, list from local book suppliers, indexes and bibliographies. Librarians select materials for areas of their competence as well as reference materials. Computer and communication technology have enhanced the ability of librarians for locating, identifying and procuring relevant materials.

5.5.2 Preservation and Weeding

University libraries in Kerala have been involved in various preservation activities. The common method used is physical preservation that involves binding and other regular repairs. Of the four university libraries under study, the UC library and UK library have binding section. Chemical preservation is also carried out by all libraries to a minimum level. Reprographic preservation is not much prominent in any university library. Digitization of rare and valuable materials is also yet to be started in the four university libraries. University libraries of Kerala have not initiated any digital preservation methods to ensure long-term conservation of electronic materials. It shall be a

great task for the university libraries as the medium of electronic documents are constantly changing.

The four university libraries weed out collection in one way or other. Majority of the librarians have admitted weeding out would facilitate easy access and retrieval but it is a tedious job involving administrative restrictions. Hence, the university libraries do not write off materials that are weeded out, but keep them in a room not accessible to users. This may add more problems to university libraries that are suffering from lack of storage space.

5.6 Library Resources

The number of books and print journals available in the four university libraries under study is presented in Table 5.3.

Table 5.3 Document Collections

Name of the Library	Volumes	Print Journals
MGU	33,301	296
CUSAT	72,000	304
UC	89,456	252
UK	2,91000	231

The data presented in Table 5.3 reveals that only one university library in Kerala has more than one lakh volumes. The UK library is the largest university library in terms of book collection. UC library is the second largest library followed by the CUSAT library. The MGU library is the smallest library in terms of book collection. The data presented above shows that the oldest library has the largest collection that is eight times more than the

collection of the recently established university library and three times more than the second largest library.

Regarding the subscription of current periodicals, it is found that most of the university libraries subscribe to around two hundred and fifty journals. The CUSAT library has more journals followed by MGU library and UC library. The UK library has less than 250 journals.

The impact of Information technology in collection development is very prominent in university libraries in Kerala. The four university libraries examined in this study are in the process of integrating electronic and Internet based information sources in their collection. All the university libraries in Kerala keep non-book materials like floppy disks, CD-ROMs and multimedia reference books in the collection. Most of them have switched from print to electronic format of abstracting journals. The libraries of CUSAT and MGU have five editions of the Current Contents, a publication of Institute for Scientific Information (ISI). Chemical Abstracts (CA) on CD-ROM is available only in CUSAT library. The UK library is also subscribing to a number of CD-ROMs and six online databases. MGU library is subscribing to eleven bibliographic databases and multimedia reference books, including Indian Science Abstracts, National Union Catalogue of Scientific Serials in India, PSYCI Info, Wilson Social Science Abstracts, and INSPEC. Electronic collection in UC library is not much noticeable. No university library subscribes to any full text database in any subject field.

Majority of the university libraries in Kerala has special collection sections. The UK library is the depository for UN and World Bank Publications in Kerala. CD-ROMs on important topics published by the UN and World Bank are available in the library. The library has also a Kerala Studies section with specialised collection comprising books and other materials dealing with subjects relating to Kerala.

The CUSAT library has a section for special documents that includes collections of patents, art books, WHO and UN publications, census reports and Planning Board publications. Being a depository of Indian patents, CUSAT library has twenty seven thousand five hundred and seventy odd patents supplemented by the INPAT, a patent database on CD brought out by INSDOC, New Delhi.

The CUSAT library is the only university library in Kerala having membership in Indian Digital Library in Engineering Science and Technology (INDEST) Consortium, initiated by Ministry of Human Resource Development, Government of India. With this membership, CUSAT library has access to IEEE Electronic Library (IEL) online, covering electronic resources of IEEE.

All the four university libraries under study have access to E-journal consortium under UGC Infonet, a project initiated and funded by the University Grants Commission (UGC) to provide electronic access to scholarly literature in all areas of learning to the university sector in India. The INFLIBNET Centre, Ahemedabad administers the programme. At present more than four

thousand e-journals can be accessed through UGC-Infonet E-journals Consortium.

5.7 Library Funding

Library funding is the money that supports the daily operations of a library or library system and its capital projects. Finance is very essential for a service library for satisfying the ever-increasing demands of an active academic community.

5.7.1 Sources of Funds

All university libraries in Kerala are supported by the parent organization. The fund for a financial year is allocated as per the university annual budget plan. The university finance includes the grants from the state government, internal receipts like fees and assistance from UGC and other technical bodies. Of these funding sources, universities depend mainly on UGC. The rapid growth in Information and Communication Technology (ICT) based infrastructure and resources in the university libraries are the clear evidence of UGC assistance. Regarding the budget allocation, the university librarians have expressed in common that the library budget is declining every year.

Majority of the university libraries under study do not collect library fees directly. The income generated through library fine is very less and overdue charge of one rupee per day is the highest fine collected in the university libraries in Kerala.

5.7.2 Library Marketing

The concept of application of marketing principles in library services has been absorbed by the university libraries in Kerala to a minimum extend. They used to generate income through reprographic services, Internet services and literature search. Some university libraries collect fees from non-members for using the library resources. However, in most cases libraries have no control over the funds they generate since the amount is remitted to university account.

5.8 Human Resource

The human resources available in a library have a key role in keeping, controlling and organizing the library resources and facilities. They provide life to the institution.

5.8.1 Staffing Levels

The hierarchical structure of the library staff in university libraries in Kerala is in the following order. University Librarian, Deputy Librarian, Assistant Librarian, Junior Librarian or Reference Assistant, Professional Assistant Grade I or Library Assistant Grade I, Professional Assistant Grade II or Library Assistant Grade II. The entry-level post in university libraries is Library Assistant Gr.II/ Professional Assistant Gr.II. The qualifications prescribed for the post is Bachelors Degree in Library and Information Science. Apart from the posts mentioned above, the UGC has sanctioned a post of

Information Scientist in university libraries for managing the automation and networking of libraries.

UK library accommodates the highest number of professional staff. At the time of the present study, there are seventy professional staff in the University, followed by UC library with twenty-seven, CUSAT library with twenty-three and MGU library with twenty-one professional staff.

The post of university librarian is vacant in three university libraries at the time of the study. Deputy librarians/ Assistant librarians in charge of University librarian are managing the university libraries. Majority of the entry-level posts are vacant in the four universities. University librarians have opined that staff shortage and emergence of new courses are affecting the performance of libraries. The study revealed that the post of Information Scientist is vacant in UK and MGU libraries at the time of the present study.

5.8.2 Training

All the four university libraries examined in this study reported that in house training is given to staff members at the time of computerisation. UGC has provided compulsory training programmes to selected library staff members of all universities on library software, library automation and networking. All the universities have given financial assistance to library professionals to attend seminars, conferences and training programmes.

All university libraries have conducted annual conference and workshops. During the past five years, CUSAT library conducted one national workshop and hosted one national and one international library conference.

MGU library conducted one national level training programme. UK library conducted one state level training programmes to library professionals. It shows that university libraries in Kerala have promoted the exchange of ideas and information among professionals.

5.9 Information and Communication Technology (ICT)

University libraries are the fertile areas for the introduction of ICT to make accessible the best possible information from anywhere any time and any source. The university libraries in Kerala are at various stages of development in the application of ICT in their functions. The status of library automation and ICT infrastructure in university libraries Kerala were collected.

5.9.1 Library Automation

Automation offers many opportunities for libraries to improve their services and serve their users well. It will also help the library staff in their responsibilities of acquisition, cataloguing, circulation and dissemination of information.

The special libraries in the state are the earliest adopters of ICT to their environment. University libraries joined the fray only during the 1990s, when the UGC established INFLIBNET as the national agency for coordinating the library automation activities of universities. The status of library automation of university libraries in Kerala is given in Table 5.4.

Table 5.4 Status of Library Automation

Automation status	University Libraries			
	UK	UC	CUSAT	MGU
Year of starting	1994	1996	1999	1998
Status of automation	Not completed	Completed, 1998	Completed, 2000	Completed, 2000
Application software	LIBSYS-4	LIBSYS-4	ADLIB	SOUL
Operating system	Windows	Unix	Windows	Windows
OPAC	Yes	Yes	Yes	Yes
Web OPAC	No	No	Yes	No
Union catalogue	Not completed	Not initiated	Not completed	Not completed
Digital library	Not initiated	Not initiated	Not initiated	Not initiated

The UK library is the first university library in the State to start library automation in 1994, followed by the UC, MGU and CUSAT libraries. All the libraries except UK library have completed the housekeeping activities in a limited period.

MGU library is the only library in the State that uses SOUL: a Windows based library management software developed by the INFLIBNET Centre, Ahemmedabad. UK and UC libraries use LIBSYS, a Windows/Unix based software package of LIBSYS Corporation. CUSAT library uses ADLIB; a Windows based software of Databasix Information System, Netherlands.

The CUSAT library is the only library in the state maintaining a web-enabled OPAC. Majority of the libraries in the state have started preparation of Union Catalogues of various documents. No university library in the state has initiated steps for building digital libraries for managing the digitally formatted

contents. Though all the university libraries under study have computerized most of their functions, no library could claim as fully computerized as they maintain manual mechanism also for library operations.

5.9.2 ICT Infrastructure

The process of taking advantage of modern computer and communication technology for information management in libraries depends very much on the availability of a strong ICT infrastructure. Such an environment is highly desirable for facilitating the information communication in many ways. The ICT infrastructure available in the four university libraries under study is illustrated in Table 5.5.

Table 5.5 ICT Infrastructure

Infrastructures	University Libraries			
	UK	UC	CUSAT	MGU
Telephone	Yes	Yes	Yes	Yes
E-mail	Yes	Yes	Yes	Yes
Webpage	Yes	Yes	Yes	Nil
Server	4	2	3	2
Computers	31	23	35	23
User terminals	11	10	14	10
Printer	7	3	7	10
Scanner	1	Nil	1	2
Barcode scanner	Nil	3	2	2
LAN	Yes	Yes	Yes	Yes
Campus LAN	Yes	Nil	Yes	Nil
CD –server	Nil	1	1	1
CD-network	Nil	Yes	Yes	Yes

All the university libraries maintain their library webpage in the university website. The link to library is visible in the home page of UK, UC and CUSAT libraries. The webpage of MGU library is neither available in the home page of university website nor accessible from the "general facilities" link. Apart from having telephone with intercom facility, all the university libraries offer E-mail address for facilitating online contact. LAN facility is available in all university libraries but the campus LAN is available in UK and CUSAT libraries. CD servers and CD-ROM networking are available in all university libraries except in UK library. All the university libraries possess more than twenty computers with printer facility. Majority of the libraries own Scanners. For accessing Internet and electronic resources university libraries have provided ten to fourteen terminals.

Asianet India is the main ISP for Internet connection. All the university libraries have leased line connectivity. The 1 Mbps Terrestrial Leased Line Internet connectivity under the UGC-Infonet program is available in all university libraries. An additional 2 Mbps and 512 kbps leased line connectivity and 32 kbps leased line connectivity are available in CUSAT and UK libraries respectively.

Internet based information services require strong Internet connectivity and more infrastructures. The study revealed that university libraries in Kerala are far behind in IT infrastructural facilitates.

5.10 User Population

The users of university libraries in Kerala can be broadly classified in to four categories namely, teachers, research scholars, students and non-teaching staff. Some university libraries extend their membership to other categories also. The UK library offers membership to the students and teachers of affiliated colleges, members of faculties and Board of Studies, graduates of recognised universities, oriental title holders residing in Kerala, and recognised institutions and others at the discretion of the Vice Chancellor. UC library offers memberships to the students, research scholars and teachers of affiliated colleges, and graduates of the university. Membership is also offered to the Members of the Senate, Syndicate, Academic Council, Faculties and Boards of Studies, staff members of other offices situated in the University campus. The CUSAT library is the only library in Kerala that offers institutional membership to industrial and research units in the area. The library also offers graduate membership to those in Greater Cochin area. MGU library offers membership to students of affiliated colleges.

At the time of the present study, the UK library has 6013 members. Of these, 5207 (86.6%) are students, 457 (7.61%) are teachers and 211(3.52%) are research scholars. In UC library, out of 4910 users only 196 (4%) are research scholars. In MGU library, out of 2414 members, 528 (21.9%) are teachers, 279 (11.59%) are research scholars, 1099 (45.56%) are students and 502 (20.8%) are non-teaching staff. In CUSAT library, there are 363(11%) research scholars out of 3301 members.

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In terms of user population, UK library is the largest and the MGU library is the smallest university library under study.

5.11 Library Services

The investigator has found out the following facts regarding the services provided by the university libraries in Kerala. All the libraries are providing traditional library services as well as modern information services. While they are almost similar in the services being offered, they differed in the quality and level of organization of these services.

5.11.1 Lending Service

Lending documents for outside use is the most important library service in all types of libraries. Data were collected to identify the features of lending services of the university libraries in Kerala. The Table 5.6 shows the distribution of different categories of users, number of books allowed to lend, period of loan, renewal facility and fine collected per day.

Table 5.6 Lending Facilities

Sl. No	University Library	User category				Loan period	Renewal	Fine per day
		T	RS	ST	NT			
1	UK	6	6	2	2	Vary	Twice	50paise to1Rupee
2	UC	6	3	3	3	30 days	Twice	20 paise
3	CUSAT	6	4	3	3	15 days	Twice	25 paise
4	MGU	3	3	2	1	15 days	Twice	10→50 paise

(T=Teachers, RS=Research scholars, ST=Students and NT=Non Teaching staff)

The Table 5.6 shows that the number of books allowed to lend out varies for different categories. Teachers are permitted to borrow more books in CUSAT and UC libraries whereas the number of books issued to faculty and research scholars is same in UK and MGU libraries.

There is difference in the loan period of books to different categories. While two university libraries allow fifteen days as loan period, one allow 30 days. The loan period varies according to the type of membership in UK library. In the case of renewal facility, uniformity is seen among the university libraries. The amount of library fine collected varies from university to university.

5.11.2 Information Services

Information services are the essential part of university libraries that connect the world of users and that of resources in different ways. Table 5.7 shows the information services offered by the four university libraries.

Table 5.7 Information Service

Information Services	University Libraries			
	UK	UC	CUSAT	MGU
Internet and E-mail	Yes	Yes	Yes	Yes
E-journal accessibility	Yes	Yes	Yes	Yes
Online database accessibility	Yes	Yes	Yes	Yes
CD-Rom search	Yes	-	Yes	Yes
Document Delivery	-	-	Yes	Yes
Current Awareness	-	-	Yes	Yes
SDI	-	-	Yes	Yes
New addition alert	Yes	Yes	Yes	Yes
Literature search	-	-	Yes	Yes
Conference alert	-	-	Yes	-
Bibliographic services	Yes	Yes	Yes	Yes
Compilation of bibliographies	Yes	Yes	Yes	Yes
Consultancy service	-	Yes	Yes	Yes
CD writing	Yes	Yes	Yes	Yes
Print out facility	Yes	Yes	Yes	Yes
Scanning	Yes	Yes	Yes	Yes
Inter library loan	Yes	Yes	Yes	Yes
Re print request	-	-	Yes	Yes
Patent information search	-	-	Yes	-

All the University libraries in Kerala provide Internet and Email services to their users. It is managed as a paid form of service in most of the university libraries. Internet connectivity under the UGC Infonet project is the backbone of these services. Bibliographic information search and compilation of bibliographies are also provided by all university libraries.

E-journals, full text and bibliographic online databases are accessible in all the university libraries under study. UK and CUSAT libraries are providing Internet and E-Journal access through campus LAN.

CD-ROM database access is available in UK, CUSAT and MGU libraries. Document Delivery Service is available only in CUSAT and MGU

libraries. The two libraries are depending on the Developing Library Network (DELNET) and INFLIBNET for providing this service.

Personalised services like Current Awareness Service (CAS) Selective Dissemination of Information (SDI) and Literature search for researchers are available in CUSAT and MGU libraries. New addition alert service is available in all libraries in various forms. The CUSAT library informs each member the availability of new books through E-mail. The UK library makes the list of new additions available on the library website. The UC library used to send the new addition list to each department. All the four university libraries are providing scanning, printing and CD writing facilities to their users. Conference alert service and patent information service are available only in CUSAT library. All the university libraries, except UK library are providing consultancy service to institutions. At the time of the present study, no university library in Kerala offers translation service.

5.12 Technical Processing

The information on the classification system and the catalogue code followed by the four university libraries under study is given in Table 5.8.

Table 5.8 Classification and Cataloguing System

Sl. No.	University Library	Classification Scheme	Catalogue Code
1.	UK	CC	CCC
2.	UC	DDC	AACR II
3.	CUSAT	UDC	AACR II
4.	MGU	DDC	AACR II

The Table 5.8 shows that UC library and MGU library follow Dewey Decimal Classification (DDC) scheme, UK library uses Colon Classification (CC) and CUSAT library uses Universal Decimal Classification system (UDC) for document classification. While three university libraries follow Anglo American Cataloguing Rules (AACR) for their catalogue entries, UK library follows Classified Catalogue Code (CCC).

5.13 User Education and Information Literacy

Information literacy programmes in university libraries in Kerala are not prominent. Instruction and education on library use are met only by means of giving manuals and guides. University libraries are not organsing user education on a regular basis using computers and communication technology.

5.14 Working Hours

Information on the working hours of the university libraries is given in Table.5.9.

Table.5.9 Library Working Hours

Sl. No	University Library	Opening Hours	
		Working Days	Second Saturdays and Sundays
1	UK	8 am to 8 pm	2pm to 8pm
2	UC	8am to 8pm	8.30 am to 2pm
3	CUSAT	9am to 8pm	10am to 4pm
4	MGU	8am to 8pm	10am to 2pm

The majority of university libraries are kept open 12 hours a day on normal working days and 6 hours on Sundays and second Saturdays. The

working hours of all the University libraries except CUSAT library are from 8 am to 8 pm on normal days and from 8 am to 2 pm on holidays. CUSAT library opens at 9 am and closes at 8 pm. On Sundays and second Saturdays, the library is kept open from 10 am to 4 pm. The MGU library is kept open four hours on second Saturdays and Sundays; from 10 am to 2 pm. All the university libraries remain closed on public holidays except UK library that is kept open on some public holidays also. When all three libraries offer 12 hours service a day, CUSAT library functions 11 hours a day. The working hours of teaching departments in CUSAT starts at 9 am. The university library timing might have been fixed accordingly.

5.15 Resource Sharing and Networking

The study reveals that all the university libraries in Kerala have participated in resource sharing and networking ventures to enhance reciprocal access to resources and services among themselves. All the university libraries under study are having membership in INFLIBNET. Two University libraries in Kerala; MGU and CUSAT library have membership in DELNET. Besides this MGU library has membership in American Information Resource Center (AIRC) and CUSAT library has membership in the INDEST consortia.

5.16 Library Buildings and Environment

It is observed that all university libraries were established years back when the strength of staff and students was limited. As new courses are introduced and users increased, there is no further expansion of the library

buildings. Space is required to introduce new services and facilities. The congestion and inadequacy of reading, working and storage space could be observed in all the university libraries under study. In CUSAT library 50 seats are available for reading to a total number of 3301 users. The number of seats being provided to users is not in proportion to the increasing user population. Storage space is also found inadequate in all libraries. The library buildings of all universities do not reflect the meaning of Ranganathan's fifth law of library science that "Library is a growing organism."

REFERENCES

1. kerala.gov.in. 2006. Government of Kerala. 4 October 2006

<http://www.kerala.gov.in/>

2. keralauniversity.edu. 2006. University of Kerala. 12 October 2006.

<http://keralauniversity.edu>

ROLE OF UNIVERSITY LIBRARIES IN RESEARCH IN KERALA: A CASE STUDY

Thesis Submitted to the University of Calicut
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in

LIBRARY AND INFORMATION SCIENCE

By

SHEEJA N.K.

Under the Supervision of
Dr. JALAJA V.

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
UNIVERSITY OF CALICUT
KERALA
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Chapter 6

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Chapter 6

PRESENTATIONS AND ANALYSIS OF DATA

The purpose of the study was to examine the role of university libraries in Kerala in research. The investigator attempted to discover whether the university libraries in Kerala were satisfying the various information requirements of the research scholars through the existing collections, services and facilities for the accomplishment of a successful research study.

The investigator designed a questionnaire to obtain data necessary to examine the research problem. The instrument was administered directly by the investigator to 200 research scholars in the four universities in Kerala. This data has been analysed, summarised and presented in tables using totals and percentages. SPSS was used for producing descriptive statistics.

This chapter presents the analysis of data providing a descriptive examination of general characteristics of respondents, their library use pattern and the detailed analysis of their responses on resources, services, library tools, techniques and physical facilities.

6.1 General Characteristics of the Population

The general characteristics of respondents include age, gender, research discipline, experience as a user, reason for choosing a particular centre for the research.

6.1.1 Age and Gender

The Table 6.1 shows the age and gender distribution of research scholars selected for the study.

Table 6.1 Age and Gender Wise Distribution of Respondents

Characteristics	Categories	Frequency	Percentage
Age	Below 25	71	35.5%
	25-30	102	51%
	30-35	17	8.5%
	Above 35	10	5%
	Total	200	100%
Gender	Male	88	44%
	Female	112	56%
	Total	200	100%

The result shows that half of the respondents belonged to the age group of 25-30 (51%). The respondents under the age group of 25 years were 35.5 percent. The percentage of research scholars who were in the age group of 30-35 was 8.5 and 5 percent were above 35 years. The sample consisted of 112 (56%) females and 88 (44%) male research scholars. Since the majority of scholars were females, a slight female dominancy can be seen in the sample.

6.1.2 Research Discipline

The respondents belonging to different subject fields of study were broadly divided into two major subject heads of Science and Social Science. Table 6.2 shows the number of respondents belonging to different subjects under the major heads.

Table 6.2 Research Discipline Wise Distribution of Respondents

Science	NR *n= 100*	**Social science**	NR *n=100*
Physics	8	History	7
Chemistry	8	Sociology	9
Botany	10	Politics	7
Zoology	9	Economics	8
Geology	4	commerce	4
Marine sciences	6	Education	10
Environmental science	5	Library science	6
Biotechnology	4	Law	1
Electronics	3	Philosophy	6
Computer science	3	Psychology	6
Biochemistry	4	English	7
Microbiology	6	Hindi	7
Mathematics	7	Malayalam	13
Statistics	9	Sanskrit	4
Polymer science	8	Management	5
Photonics	6		
Total	100	Total	100

The Table 6.2 shows that research scholars were selected from various subjects under Science and Social Science. Equal number of scholars from each field was not possible as the number of full time scholars was less in some subject fields.

6.1.3 Experience of Library Use

The Table 6.3 presents the duration of experience of library use of research scholars. Users having more library use experience may be able to provide better response to the study.

Table 6.3 Experience of Library Use

Year of Experience	Name of the university				Frequency	%
	UC	UK	MGU	CUSAT		
Below 1 year	1	13	4	8	26	13.0
1-2 years	10	16	0	4	30	15.0
2-3 years	13	6	34	15	68	34.0
Above 3 years	26	15	12	23	76	38.0
Total	50	50	50	50	200	100.0

Table 6.3 shows that majority of the respondents (38%) were having three years of use experience in their university libraries. Only 26 (13%) respondents had less than one year experience.

6.1.4 Reason for Choosing the Research Centre

The research scholars were asked to mark the reasons behind choosing a particular university as their centre of research. The response of scholars is given in Table 6.4.

Table 6.4 Reasons for Choosing Research Centre

Reasons	Name of the university				Frequency	%
	UC	UK	MGU	CUSAT		
Eminent Faculty	0	3	3	8	14	7.0
Good Library	19	6	1	19	45	22.5
Faculty & Library	22	35	40	15	112	56.0
Other Reasons	9	6	6	8	29	14.5
Total	50	50	50	50	200	100

The existence of a combination of good library and eminent faculty influenced the majority of respondents in selecting a centre for their research (56%). The percentage of respondents who selected a university for their research centre because of a good library was three times more than that of respondents who viewed eminent faculty as a factor (7%). Majority of the respondents in CUSAT pointed out that, they selected CUSAT as their research center because of the presence of a good library.

6.2 Library Use

Time spending per day, library visit in a week, main purpose of library visit, dependence on other libraries and use of library websites were inquired to identify the library use pattern of research scholars.

6.2.1 Time spending in one Day

Table 6.5 illustrates how much time research scholars spent a day in their university library.

Table 6.5 University Library Wise Analysis of Time Spending in One Day

Hours per Day	Name of the University								Total	Percent %
	UC		UK		MGU		CUSAT			
	F	%	F	%	F	%	F	%		
1.00	9	18.0	6	12.0	1	2.0	12	24.0	28	14.0%
2.00	7	14.0	26	52.0	10	20.0	11	22.0	54	27.0%
3.00	5	10.0	2	4.0	36	72.0	19	38.0	62	31.0%
4.00	10	20.0	11	22.0	2	4.0	0	0.0	23	11.5%
5.00	9	18.0	3	6.0	0	0.0	4	8.0	16	8.0%
6.00	7	14.0	0	0.0	1	2.0	4	8.0	12	6.0%
7.00	3	6.0	0	0	0	0.0	0	0.0	3	1.5%
8.00	0	0.0	2	4.0	0	0.0	0	0.0	2	1.0%
Total	50	100.0	50	100.0	50	100.0	50	100.0	200	100.0

Majority of the respondents spent three hours a day in the library (31%). Only few scholars spent eight hours a day (1%). Majority of the respondents from MG (72%) and CUSAT (38%) spent three hours a day in the university library. Half of the respondents from UK (52%) spent only two hours a day.

Table 6.6 Chi-Square Test Name of the University Library Vs Time Spending in One Day

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	123.907(a)	21	.000
Likelihood Ratio	134.816	21	.000

Table 6.8 reveals that the p-value (.000) is less than .05. It indicates that there was significant association between university libraries and the time spending in one day. Hence it can be concluded that time spending in libraries

is different from university to university.

6.2.2 Number of Library Visit in a Week

The Table 6.7 represents the number of library visits by scholars in a week.

Table 6.7 Number of Library Visit in a Week

Days per Week	UC	UK	MGU	CUSAT	Total	%
1	3		3	4	10	5%
2	2	5	0	6	13	6.5%
3	10	17	3	8	38	19%
4	7	9	1	4	21	10.5%
5	18	10	18	11	57	28.5%
6	6	4	18	4	32	16%
7	4	5	7	13	29	14.5%
Total	50	50	50	50	200	100%

The result shows that majority of the scholars (28.5%) visited the library five days a week. A considerable percent of respondents (14.5%) were daily visitors of their university libraries.

To find out whether any significant difference existed in the number of days scholars visited the library in a week in different universities Chi-Square test was conducted and the result is presented in Table 6.8.

Table 6.8 Chi-Square Test-

Name of the University Library VS- Number of Visit in a Week

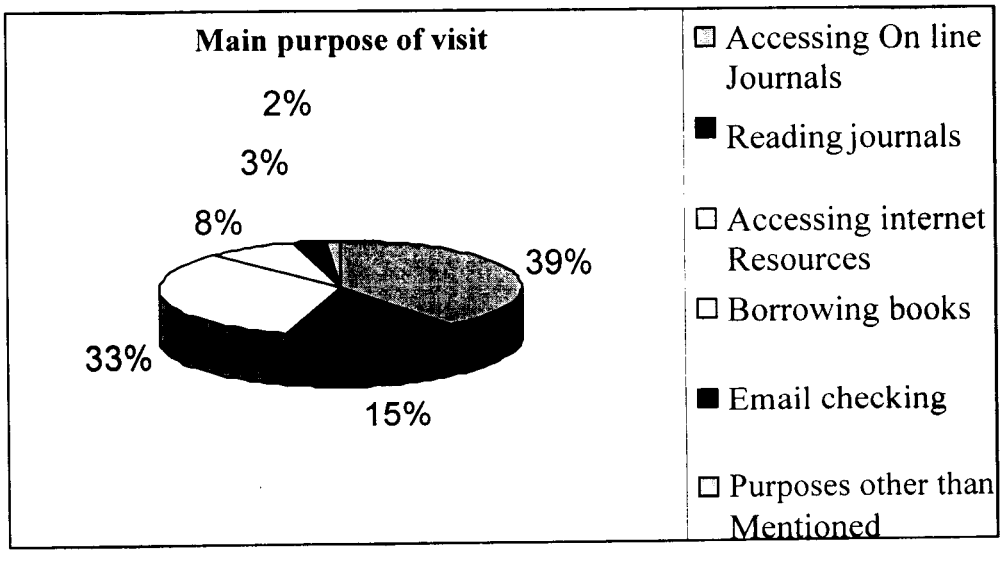
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	55.938(a)	18	.000
Likelihood Ratio	59.965	18	.000

Table 6.8 reveals that the p-value (.000) is less than .05. It indicates that there was significant association between university libraries and the library visit of scholars. The number of library visit by the scholars in a week was different from university to university.

6.2.3 Main Purpose of Visit

Respondents were asked to indicate the main purpose of their visit to the university library. They were given five options. The Figure 6.1 indicates the research scholars' response on this question.

Fig. 6.1 Main Purpose of Visit in the University Library



Majority (39%) of research scholars visited the library mainly for accessing online journals. Scholars who visited the library for accessing Internet resources were 33 percent. The result shows that the purpose of visit by research scholars was mainly for accessing electronic resources.

6.2.4 Dependence of Other Libraries

Respondents were asked to indicate whether they depended on other libraries for searching and collecting information related to their research. The responses of scholars for this question are in given in Table 6.9.

Table 6.9 Dependence of Other Libraries

University	Scholars Opinion			
	Yes		No	
	Frequency	%	Frequency	%
UC	45	90%	5	10%
UK	49	98%	1	2%
MGU	46	92%	4	8%
CUSAT	47	94%	3	6%
Total	187	93.5%	13	6.5%

Table 6.9 shows that majority (93.5%) of research scholars reported using other libraries for satisfying their information requirement. University wise difference was not significant.

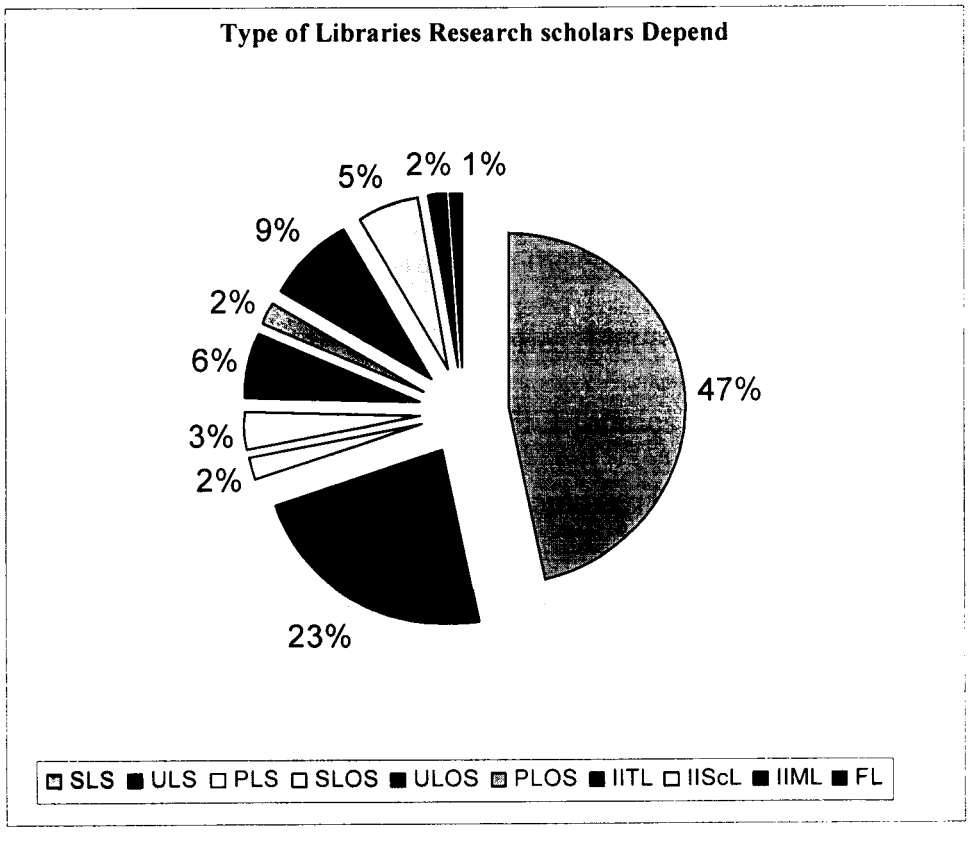
6.2.4.1 Type of Libraries Scholars Depend

In continuation of the question on the dependence of other libraries, research scholars were asked to name some of the libraries that they used. The

response rate was 97 percent for this open-ended question. Majority of respondents cited only one or two libraries.

The libraries named by the respondents are grouped broadly under various categories as Special Libraries in the State (SLS), University Libraries in the State (ULS), Public Libraries in the State (PLS), Special Libraries Out of the State (SLOS), University Libraries Out of the State (ULOS), Public Libraries Out of the State (PLOS), IIT Libraries (IITL), IISc Library (IIScL), IIM Libraries (IIML), and Foreign Libraries (FL). The Figure 6.2 shows the other libraries used by the respondents.

Fig.6.2 Types of Libraries Research Scholars Depend



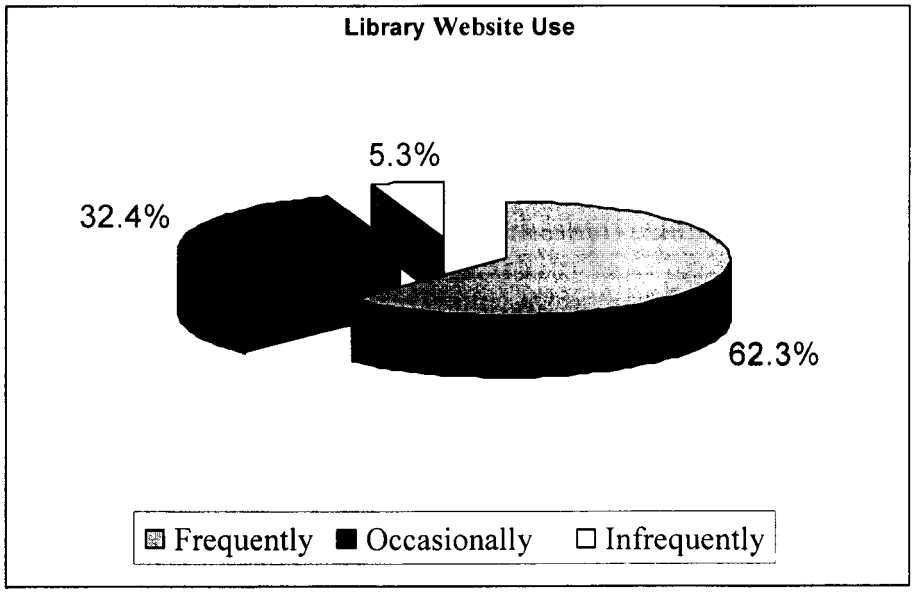
Nearly half of the respondents (47%) used Special Libraries in the State (SLS). A considerable majority (23%) used university libraries in the State

(ULS). Scholars also used the libraries abroad (1%). From the result, it is inferred that university libraries are not in a position to cater to all the information requirements of research scholars. It may necessitate the need for a statewide network of university libraries and special libraries.

6.2. 5 Use of Library Website

Of the four university libraries under study, three had their own Websites. Majority of the university library websites provided general information as well as hyperlinks to digital resources subscribed by the university libraries. The opinions of scholars on visit to the library websites for accessing information was collected.

Fig.6.3 Use of Library Website



Majority (62.3%) of the scholars frequently visited the library website for getting information. More than a quarter of respondents visited the library websites occasionally (Fig. 6.3).

The examination of general characteristics of respondents and their library use pattern attempted above can be summarised as follows:

The sample selected for the study showed slight female dominancy. The sample group was under the age of 25-30 years with having more than three years of library use experience. The group used their university libraries five days a week and three hours a day. The sample mainly used the libraries for accessing electronic resources. The sample used the resources of special libraries in the state for satisfying their information requirements when they found that university library did not have the resource. They frequently visited the websites of their university libraries for accessing and updating information for research.

6.3 Library Resources-Print

The responses of research scholars were collected to identify the strength and weakness of resources in the library that supported research in various fields of study. For the purpose of analysis, information sources were divided to print and electronic. Print sources were again divided to primary and secondary sources. Research scholars were asked to put their opinion as Excellent, Good, Average, Poor or Very Poor.

6.3.1 Primary Sources

Primary sources of information are the first published records of original research and development. It helps the researchers keep up-to date with new developments in their field of study and avoid duplication in research. The respondents were asked to give their opinion on the following primary sources.

6.3.1.1 Journals

Journals are specifically, a periodical issued by an institution, corporation or learned society, containing current news and reports of activities and work in a particular field. They have been the carriers of scholarly information. The availability of most important journals in a field is essential for research scholars.

Table 6.10 portrays the response of scholars on journal collection in the university libraries under study.

Table 6.10 University Wise Opinion on Journals

University		Opinion on Journals					
		Excellent	Good	Average	Poor	Very poor	Total
UC	Count	5	16	12	13	4	50
	%	10.0	32.0	24.0	26.0	8.0	100.0
UK	Count	13	14	13	5	5	50
	%	26.0	28.0	26.0	10.0	10.0	100.0
MGU	Count	5	13	32	0	0	50
	%	10.0	26.0	64.0	.0	.0	100.0
CUSAT	Count	14	18	16	1	1	50
	%	28.0	36.0	32.0	2.0	2.0	100.0
Total	Count	37	61	73	19	10	200
	%	18.5	30.5	36.5	9.5	5.0	100.0

Generally, research scholars were satisfied with journal collection in their libraries since 18.5 percent found it as 'excellent' and 30.5 percent found it as 'good'. University wise analysis shows that majority of scholars from all

universities except MG university opined as 'good'. Majority of the respondents (64%) from MGU perceived the journal collection as 'average'.

Chi-Square test indicated that (Chi-Square value = 45.435, df =12, p-value = .000) p-value is less than significant level .05. The opinions of scholars on journal collection vary. It can be concluded that the research support of university libraries through the provision of journals varies from university to university.

The research discipline wise analysis of opinion on journal collection is presented in Table 6.11.

Table 6.11 Research Discipline Wise Opinion on Journals

Research Discipline	Opinion on Journals						Total
		Excellent	Good	Average	Poor	Very poor	
Science	Count	10	23	44	17	6	100.0
	%	10.0	23.0	44.0	17.0	6.0	100.0
Social Science	Count	27	38	29	2	4	100
	%	27.0	38.0	29.0	2.0	4.0	100.0
Total	Count	37	61	73	19	10	200
	%	18.5	30.5	36.5	9.5	5.0	100.0

The result shows that there was a variation of opinion between science and social science scholars on journal collections in the university libraries in Kerala. While social science research scholars were satisfied with journal collection (Excellent 27%; Good 38%), majority of the science research scholars (44%) indicated journal collection as 'average' in their areas.

To test if there exists any similarity of opinion between science research scholars and social science research scholars towards journals, Chi-Square test was applied and the result is presented in Table 6.12.

Table 6.12 Chi-Square Test-Research Discipline Vs Journals

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.824(a)	4	.000
Likelihood Ratio	28.898	4	.000
Linear-by-Linear Association	20.732	1	.000
N of Valid Cases	200		
a 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.00.			

From the Table it can be seen that the p-value is less than .05. Hence, science research scholars and social science research scholars are not similar in their satisfaction of journals available in university libraries in Kerala. The Chi-Square test proved that research discipline wise difference is significant in the case journal of collection. It can be concluded that social science research scholars are more satisfied with journals collection than science scholars are.

6.3.1.2 Thesis

A thesis contains results of original research. Though the results of some theses are later published in journals or separately as books, certain data relating to an important original work may never get included in that forms. Therefore, the research scholars give much importance to this source of

information. Table 6.13 shows the opinion of research scholars towards theses collection.

Table 6. 13 University Wise Opinions on Theses

University		Opinion on Theses					Total
		Excellent	Good	Average	Poor	Very poor	
UC	Count	4	13	19	7	7	50
	%	8.0	26.0	38.0	14.0	14.0	100.0
UK	Count	12	19	19	0	0	50
	%	24.0	38.0	38.0	.0	.0	100.0
MGU	Count	4	11	31	4	0	50
	%	8.0	22.0	62.0	8.0	.0	100.0
CUSAT	Count	3	10	28	8	0	49
	%	6.1	20.4	57.1	16.3	.0	100.0
Total	Count	23	53	97	19	7	199
	%	11.6	26.6	48.7	9.5	3.5	100.0

The scholars in general were not much satisfied with theses collection as majority (48.7%) found it as 'average'.

The University wise analysis shows that scholars in CUSAT were the most dissatisfied group. More than half (57.1%) of them found it as 'average' and 16.3 percent of them as 'poor'. In UK, the scholars were satisfied with theses collection as 24 percent marked it 'excellent' and 38 percent 'good'. Nearly 70 percent scholars of MGU were not satisfied with theses collection.

Chi-Square test indicated that (Chi-Square value =39.292, df =12, p-value = .000) p-value is less than .05. Hence, university wise difference is significant on the opinion on thesis collection. Compared to other universities scholars from UK were satisfied with theses collection.

Research discipline wise analysis of data was done to identify the relation between the opinion of science and social science research scholars towards theses collection (Table 6.14).

Table 6.14 Research Discipline Wise Opinion on Theses

Research Discipline		Opinion on Theses					Total
		Excellent	Good	Average	Poor	Very poor	
Science	Count	8	26	53	10	2	99
	%	8.1	26.3	53.5	10.1	2.0	100.0
Social Science	Count	15	27	44	9	5	100
	%	15.0	27.0	44.0	9.0	5.0	100.0
Total	Count	23	53	97	19	7	199
	%	11.6	26.6	48.7	9.5	3.5	100.0

Table 6.14 shows that there was no difference between science and social science research scholars in their opinion. The majority of scholars from science (53.5%) and social science (44%) found thesis collection as 'average'.

To test if there is any difference between the opinion of science research scholars and social science research scholars towards thesis, Chi-Square test was applied and the result is presented in Table 6.15.

Table 6.15 Chi-Square Test-Research Discipline Vs Theses

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.318(a)	4	.365
Likelihood Ratio	4.396	4	.355
Linear-by-Linear Association	.547	1	.460
N of Valid Cases	199		
a 2 cells (20.0%) have expected count less than 5. The minimum expected count is 3.48.			

From the Table it can be seen that the p-value is greater than .05. Hence, Chi-Square test proved that science research scholars and social science research scholars do not differ in their satisfaction of thesis collection available in university libraries in Kerala. It is concluded that thesis collection is not adequate to both science and social science scholars.

6.3.1.3 Research Reports

Research report collections (reports of conferences, seminars and technical reports) carry current information that cannot be obtained from other sources. Research reports have great research value as they help researchers keep up-to-date with latest information in the subject. The analysis of research scholars views on the availability of research reports in university libraries is represented in Table 6.16.

Table 6.16 University Wise Opinion on Research Reports

University		Opinion on Research Reports					Total
		Excellent	Good	Average	Poor	Very poor	
UC	Count	3	5	7	27	8	50
	%	6.0	10.0	14.0	54.0	16.0	100.0
UK	Count	12	10	19	7	0	48
	%	25.0	20.8	39.6	14.6	.0	100.0
MGU	Count	1	11	9	8	21	50
	%	2.0	22.0	18.0	16.0	42.0	100.0
CUSAT	Count	4	9	17	15	4	49
	%	8.2	18.4	34.7	30.6	8.2	100.0
Total	Count	20	35	52	57	33	197
	%	10.2	17.8	26.4	28.9	16.8	100.0

From the Table 6.16 it can be seen that generally scholars were dissatisfied with the research reports collection except those from UK. The majority (28.9%) of scholars marked as 'poor' about research reports. The dissatisfaction level was higher among scholars in UC and MGU. Nearly half of the MGU scholars (42%) found it as 'very poor'. More than half of the scholars (54%) from UC marked 'poor' about research reports.

Chi- Square test conducted indicated that (Chi- Square value = 71.467, df= 12, p-value = .000) p-value is less than significant level. Therefore, it can be concluded that the level of dissatisfaction of research scholars on research

report varies from university to university.

Table 6.17 represents the research discipline wise analysis of opinion of respondents regarding the adequacy of research reports.

Table 6.17 Research Discipline Wise Opinion on Research Reports

Research Discipline	Opinion on Research Reports						Total
		Excellent	Good	Average	Poor	Very poor	
Science	Count	7	16	27	31	18	99
	%	7.1	16.2	27.3	31.3	18.2	100.0
Social Science	Count	13	19	25	26	15	98
	%	13.3	19.4	25.5	26.5	15.3	100.0
Total	Count	20	35	52	57	33	197
	%	10.2	17.8	26.4	28.9	16.8	100.0

The majority of scholars from both science (31.3%) and social science (26.5%) found the research report collection as 'poor'. A quarter of respondents from both disciplines found it as 'average'. It can be seen that research discipline wise difference was not perceived in the case of research reports collection.

To test if there is any significant difference of opinion between science research scholars and social science research scholars towards research reports, Chi-Square test was applied and the result is presented in Table 6.18.

Table 6.18 Chi-Square Test- Research Discipline Vs Research Reports

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.840(a)	4	.585
Likelihood Ratio	2.870	4	.580
Linear-by-Linear Association	2.258	1	.133
N of Valid Cases	197		
a 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.95.			

From the Table 6.18, it can be seen that the p-value is greater than .05(significance level). Hence, there is no significant difference between science research scholars and social science research scholars in their satisfaction on research report collection available in university libraries in Kerala. It is concluded that the research support of university libraries through the provision of research reports is inadequate.

6.3.1.4 Patents

A patent is a government grant of exclusive privilege or right which allows making use or selling of a new invention for a term of years.

The respondents were asked to express their views on patents collection in their libraries. The opinions of research scholars were tabulated and presented in Table 6.19.

Table 6.19 University Wise Opinion on Patents

University		Opinion on Patents					Total
		Excellent	Good	Average	Poor	Very poor	
UC	Count	-	0	4	17	27	48
	%	-	.0	8.3	35.4	56.3	100.0
UK	Count	-	3	7	19	10	39
	%	-	7.7	17.9	48.7	25.6	100.0
MGU	Count	-	4	4	11	23	42
	%	-	9.5	9.5	26.2	54.8	100.0
CUSAT	Count	-	13	19	4	0	36
	%	-	36.1	52.8	11.1	.0	100.0
Total	Count	-	20	34	51	60	165
	%	-	12.1	20.6	30.9	36.4	100.0

It can be seen from Table 6.19 that scholars were dissatisfied with patent collection. High-level dissatisfaction was found in UC and MGU. The majority (56.3%) of scholars from UC, and MGU (54.8%) marked 'very poor' about it. Though the university library of CUSAT is a recognised centre for patents produced in the country, respondents of CUSAT were not much satisfied. Majority (52.8%) of them found it as 'average'.

Research discipline wise opinion of scholars on patent collection were collected. The analysis of data is presented in Table 6.20.

Table 6.20 Research Discipline Wise Opinion on Patents

Research Discipline	Opinion on Patents						Total
		Excellent	Good	Average	Poor	Very poor	
Science	Count	-	10	15	39	29	93
	%	-	10.8	16.1	41.9	31.2	100.0
Social Science	Count	-	10	19	12	31	72
	%	-	13.9	26.4	16.7	43.1	100.0
Total	Count	-	20	34	51	60	165
	%	-	12.1	20.6	30.9	36.4	100.0

In the case of patents collection, nearly 73 percent of science scholars marked it as either 'poor' or 'very poor'. The majority of social science scholars 31(43.1%) indicated as 'very poor' (Table 6.20). More than 25 percent scholars from social sciences found it as 'average'. From the result, it can be seen that science research scholars are more dissatisfied with patent collection than social science scholars are.

To test if there is any significant difference between the opinion of science research scholars and social science research scholars towards patent collection, Chi-Square test was applied and the result is presented in Table 6.21.

Table 6.21 Chi-Square Test- Research Discipline Vs Patents

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.359(a)	3	.006
Likelihood Ratio	12.909	3	.005
Linear-by-Linear Association	.084	1	.772
N of Valid Cases	165		
a 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.73.			

From the Table 6.21, it can be seen that the p-value is less than .05. Hence, science research scholars and social science research scholars significantly differ in their satisfaction on patent collection available in university libraries in Kerala. The result proved that science research scholars are more dissatisfied than social science research scholars are. Research support through the availability and accessibility of patents collection is not well in university libraries.

6.3.2 Hypothesis I

'Science research scholars and social science research scholars are similar in their satisfaction of primary sources available in university libraries in Kerala'.

From the Chi-Square tests made above it is found that, of the four primary sources examined, science research scholars and social science research scholars differ in their satisfaction with two primary resource (journals and patents) and they are similar in their satisfaction with the other two

primary sources (thesis and research reports). Therefore, the hypothesis-I is accepted in the case of theses and research reports and rejected in the case of journals and patents. Hence the first hypothesis 'Science research scholars and social science research scholars are similar in their satisfaction of primary sources available in university libraries in Kerala' is partially substantiated.

6.3.3 Secondary Information Sources

Secondary sources of information are those, which are either compiled from or refer to primary sources of information. Secondary information sources serve as a bibliographical key to primary sources of information. They have high research value. The opinions of research scholars on the following secondary sources of information were collected.

6.3.3.1 Abstracting Periodicals

An abstracting periodical is a key document for researchers as they provide concise summaries of significant articles that appear in current primary source journals, research monographs, reports, patents and other primary source publications. They are equipped with comprehensive indexes for easy location of articles. Data was collected to identify whether research scholars were satisfied with abstracting periodicals available in their libraries. The analysis of data is presented in Table 6.22.

Table 6.22 University Wise Opinion on Abstracting Periodicals

University		Opinion on Abstracting Periodicals					Total
		Excellent	Good	Average	Poor	Very poor	
UC	Count	1	9	17	14	9	50
	%	2.0	18.0	34.0	28.0	18.0	100.0
UK	Count	6	24	13	2	5	50
	%	12.0	48.0	26.0	4.0	10.0	100.0
MGU	Count	1	14	22	4	5	46
	%	2.2	30.4	47.8	8.7	10.9	100.0
CUSAT	Count	2	11	21	13	3	50
	%	4.0	22.0	42.0	26.0	6.0	100.0
Total	Count	10	58	73	33	22	196
	%	5.1	29.6	37.2	16.8	11.2	100.0

Majority of scholars were not much satisfied with abstracting periodical collection as 37.2 percent of them marked it as 'average'. Nearly half of the respondents from CUSAT (42%), 47.8 percent from MGU and majority from UC (34%) found it as 'average'. The scholars in UK were satisfied with the abstracting periodicals since majority (48%) marked their opinion as 'good'.

Chi-Square test revealed that (Chi-Square value =34.185, df =12, p-value = .001) university wise difference is significant on the opinions about abstracting periodicals. To examine the differences if any between science and social science scholars in their opinion on abstracting periodicals, a discipline wise analysis was done and the result is presented in Figure 6.4 and Table 6.23.

Fig. 6.4 Research Discipline Wise Opinion on Abstracting Periodicals

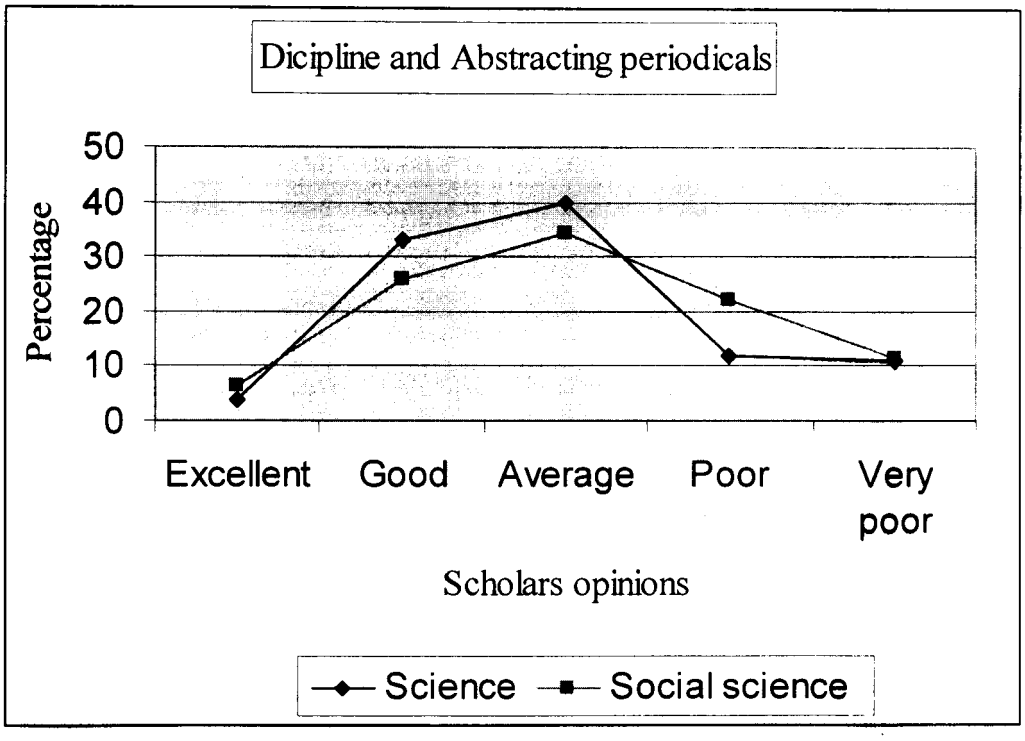


Table 6.23 Research Discipline Wise Opinion on Abstracting Periodicals

Research Discipline		Opinion on Abstracting Periodicals					Total
		Excellent	Good	Average	Poor	Very poor	
Science	Count	4	33	40	12	11	100
	%	4.0	33.0	40.0	12.0	11.0	100.0
Social Science	Count	6	25	33	21	11	96
	%	6.3	26.0	34.4	21.9	11.5	100.0
Total	Count	10	58	73	33	22	196
	%	5.1	29.6	37.2	16.8	11.2	100.0

Majority of scholars from both disciplines marked their opinion as 'average' (Science 40%; Social Science 34.4%) on abstracting periodicals. Chi-Square test revealed that (Chi-Square value = 3.323, df =4, p-value = .505) p-value is greater than the significant level. Hence, there is no significant variation between science research scholars and social science research

scholars in their opinion on the availability of abstracting periodicals. Research support through the provision of adequate abstracting periodicals is average in both disciplines of science and social science.

6.3.3.2 Indexes

An index is a systematic guide to the text of any reading matter or to the contents of other collected documentary material, comprising a series of entries, with headings arranged in alphabetical or other chosen order and with reference to show where each item indexed is located. Researchers doing literature searches depend on the existence of indexes to periodicals, collection, newspapers, reports and correspondence. The respondents were inquired to indicate their views about indexes available in the university libraries (Table 6.24).

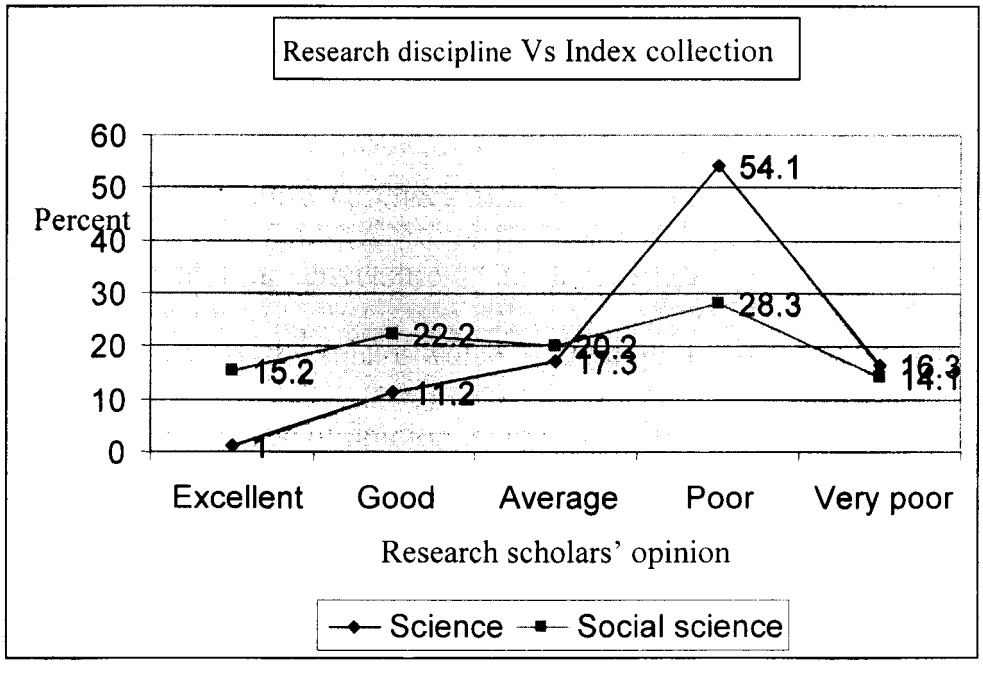
Table 6.24 University Wise Opinion on Indexes

University		Opinion on Indexes					Total
		Excellent	Good	Average	Poor	Very poor	
UC	Count	1	8	10	18	13	50
	%	2.0	16.0	20.0	36.0	26.0	100.0
KU	Count	8	9	11	17	5	50
	%	16.0	18.0	22.0	34.0	10.0	100.0
MGU	Count	4	7	2	25	10	48
	%	8.3	14.6	4.2	52.1	20.8	100.0
CUSAT	Count	3	9	14	21	2	49
	%	6.1	18.4	28.6	42.9	4.1	100.0
Total	Count	16	33	37	81	30	197
	%	8.1	16.8	18.8	41.1	15.2	100.0

The majority (41.1%) of scholars indicated the index collection as 'poor'. Approximately 56 percent of research scholars reported as either being dissatisfied or very much dissatisfied with index collection. Nearly twenty percent indicated it as 'average'. Nearly half of the research scholars from MGU found it as "poor'. To check whether any variation of opinion exists among scholars of four universities, Chi-Square test was conducted. The p-value revealed that (Chi-Square value = 22.079, df =12, p-value = .037) university wise difference of opinion on indexes is significant.

Fig. 6.5 shows research discipline analysis of availability of indexes in science and social science.

Fig. 6.5 Research Discipline Wise Opinion on of Indexes



From the Figure 6.5 it can be seen that scholars from both disciplines were dissatisfied with index collection. Half of science scholars (54.1%) and the majority social science scholars (28.3%) marked 'poor' about it. Nearly a

quarter of science scholars marked either 'average' or 'very poor'. From the result, it can be seen that scholars from science discipline were more dissatisfied than those from social science. Chi-Square test revealed that (Chi-Square value = 28.813, df =4, p-value = .000) p-value is less than .05. Hence, research discipline wise difference is statistically significant. Hence, social science and science research scholars differ significantly in their opinion on the availability of indexes. Science scholars are more dissatisfied than Social science research scholars are. Research support through the provision indexing sources is not well in the university libraries.

6.3.3.3 Reference Books

A reference book is a book designed to be consulted rather than read cover-to-cover when authoritative information is needed. The Table 6.25 portrays university wise analysis of the adequacy of reference books in the four university libraries in Kerala.

Table 6.25 University Wise Opinion on Reference Books

University		Opinion on Reference Books					Total
		Excellent	Good	Average	Poor	Very poor	
UC	Count	5	21	19	4	1	50
	%	10.0	42.0	38.0	8.0	2.0	100.0
UK	Count	16	13	11	8	0	48
	%	33.3	27.1	22.9	16.7	.0	100.0
MGU	Count	10	25	8	7	0	50
	%	20.0	50.0	16.0	14.0	.0	100.0
CUSAT	Count	16	26	7	1	0	50
	%	32.0	52.0	14.0	2.0	.0	100.0
Total	Count	47	85	45	20	1	198
	%	23.7	42.9	22.7	10.1	.5	100.0

The Table 6.25 shows that respondents were satisfied with reference books. Generally, 42.9 percent marked it as 'good' and 23.7% as 'excellent'. Nearly a quarter (22.7%) also responded that reference book collection were 'average'. University wise data also shows that scholars of UK were very much satisfied with reference books as majority of them (33.3%) marked it as 'excellent'. Chi-Square test revealed that (Chi-Square value = 32.116, df =12, p-value = .001) p-value is less than significant level. The opinions of research scholars on reference collection vary from university to university. Figure 6.6 shows research discipline wise opinion of research scholars towards reference books.

Fig.6.6 Research Discipline Wise Opinion Reference Books

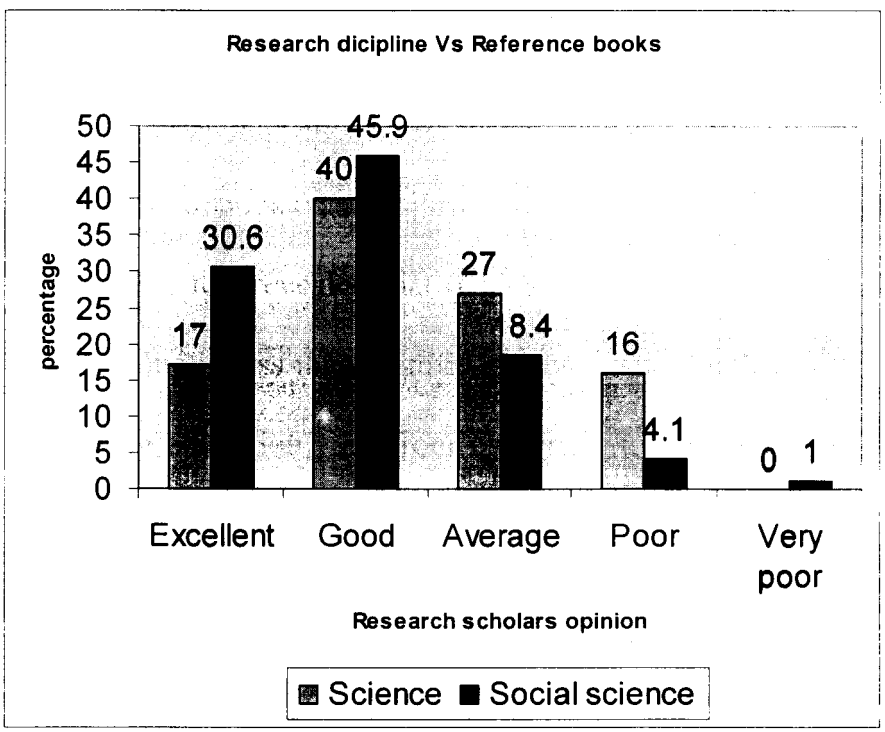


Figure 6.6 shows majority of both disciplines found that reference collection were adequate for their purpose (45.9% social science; 40% science). Social science scholars were more satisfied than science scholars were. Chi-

Square test revealed that (Chi-Square value = 14.618, df =4, p-value = .006) there is significant difference between science and social science scholars' opinion on reference collection. The research support through the provision of adequate reference book is significant in the university libraries. The level of satisfaction varies from university to university.

6.3.3.4 Books

Subject books have high relevance in research process in both disciplines. The opinion of respondents on the book collection is shown in Table 6.26.

Table 6.26 University Wise Opinion on Book Collection

University		Opinion on Book Collection					Total
		Excellent	Good	Average	Poor	Very poor	
UC	Count	5	21	15	9	0	50
	%	10.0	42.0	30.0	18.0	.0	100.0
UK	Count	16	18	10	6	0	50
	%	32.0	36.0	20.0	12.0	.0	100.0
MGU	Count	11	20	15	3	1	50
	%	22.0	40.0	30.0	6.0	2.0	100.0
CUSAT	Count	9	19	15	7	0	50
	%	18.0	38.0	30.0	14.0	.0	100.0
Total	Count	41	78	55	25	1	200
	%	20.5	39.0	27.5	12.5	.5	100.0

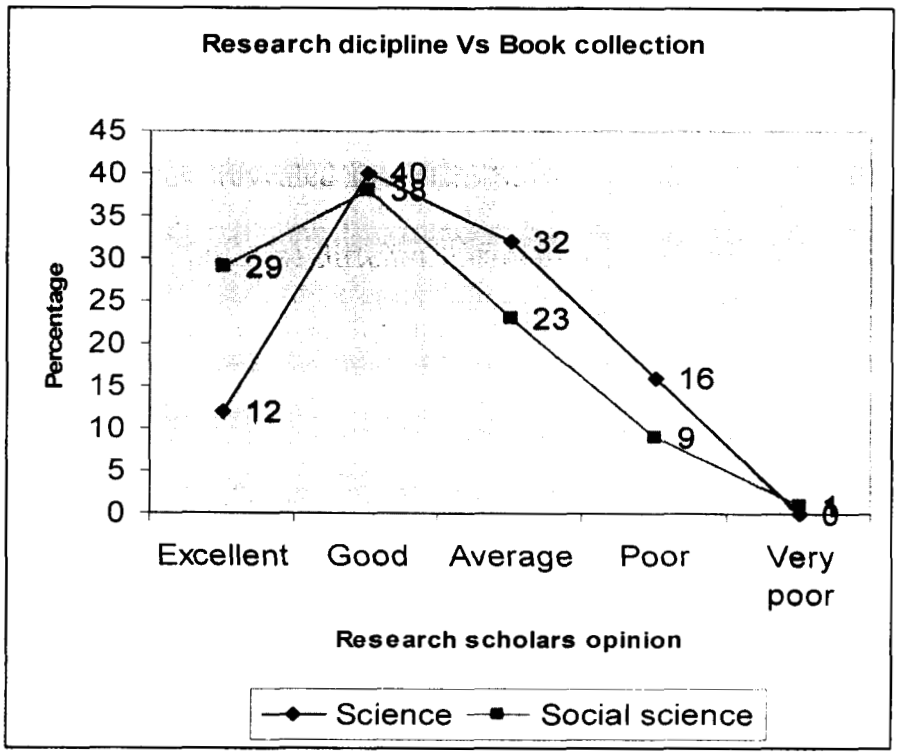
Research scholars were satisfied with the book collection in their libraries as 20.5 percent marked as 'excellent' and 39 percent as 'good'. More

than half of the respondents from all universities opined the subject book collection both as 'excellent' and good'.

Chi-Square test revealed that (Chi-Square value = 15.947, df =12, p-value = .194) University wise difference is not much significant. Hence, it can be concluded that scholars from all the four universities are satisfied with the subject book collection.

The Figure 6.7 shows research discipline wise analysis of research scholars' views on books collection.

Fig.6.7 Research Discipline Wise Opinion on Book Collection



Majority of the science (40%) and social science (38%) scholars were satisfied with the book collection as they indicated 'good' about it. From the Figure 6.7, it is also clear that a considerable number of respondents from social science ('excellent'; 29%) were very much satisfied on book collection. Chi-Square test revealed that (Chi-Square value = 10.422, df =4, p-value =

.034) there is difference between science and social science scholars' opinion on book collection. All libraries support the research scholars well with subject book collection. However, the satisfaction level of science and social science scholars varies. Social science research scholars are more satisfied with book collection than science scholars are.

6.4 Electronic Resources

Electronic resources are the materials consisting of data and/or computer program(s) encoded for reading and manipulation by a computer by the use of a peripheral device directly connected to the computer, such as a CD-ROM drive, or Internet. Online resources make researchers more productive (Hiller 134-39)[1]. In this study, opinion about E-journals, bibliographic databases and CD-ROMs were collected and analysed.

6.4.1 E-Journals

E-Journal is a digital version of a print journal, or a journal-like electronic publication with no print counterpart, made available via the Web, e-mail, or other means of Internet access. The opinion of research scholars on e-journals is given in Table 6.27.

Table 6.27 University Wise Opinion on E- Journals

University		Opinion on E-Journals					Total
		Excellent	Good	Average	Poor	Very poor	
UC	Count	1	5	13	14	17	50
	%	2.0	10.0	26.0	28.0	34.0	100.0
UK	Count	14	9	9	4	10	46
	%	30.4	19.6	19.6	8.7	21.7	100.0
MGU	Count	10	25	12	0	3	50
	%	20.0	50.0	24.0	.0	6.0	100.0
CUSAT	Count	4	19	11	9	7	50
	%	8.0	38.0	22.0	18.0	14.0	100.0
Total	Count	29	58	45	27	37	196
	%	14.8	29.6	23.0	13.8	18.9	100.0

Scholars were satisfied with the e-journal collection available in their university libraries. Majority (29.6%) marked 'good' about it. The university wise analysis shows that scholars of MGU were more satisfied than those in other universities. Half of them found e-journal collection as 'good' and 20 percent as 'excellent'. The scholars in UK and CUSAT were also impressed with the e-journals. However, majority of scholars in UC (34%) were very much dissatisfied with e-journals. The p-value (Chi-Square value = 62.599, df =12, p-value = .000) is less than significant level .05. Hence, the opinion of research scholars on E-journal collection varies from university to university.

Research discipline wise analysis was also done to examine if there is any difference of opinion between science and social science research scholars. The result is illustrated in Table 6.28.

Table 6.28 Research Discipline Wise Opinion on E- journals

Research Discipline		Opinion on E- Journals					Total
		Excellent	Good	Average	Poor	Very poor	
Science	Count	11	29	25	9	23	97
	%	11.3	29.9	25.8	9.3	23.7	100.0
Social Science	Count	18	29	20	18	14	99
	%	18.2	29.3	20.2	18.2	14.1	100.0
Total	Count	29	58	45	27	37	196
	%	14.8	29.6	23.0	13.8	18.9	100.0

Table 6.28 reveals that the majority (29%) of scholars from both disciplines marked 'good' about e-journals. The data shows that 18.2 percent of social science research scholars marked 'excellent' about it. While in science, 23.7 percent opined 'very poor' about it.

To test the discipline wise difference of opinion of research scholars on E- journals, Chi-Square test was conducted and presented in Table 6.29.

Table 6.29 Chi-Square Test - Research Discipline Vs E-Journals

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.415(a)	4	.116
Likelihood Ratio	7.512	4	.111
Linear-by-Linear Association	1.493	1	.222
N of Valid Cases	196		
a 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.36.			

From the Table 6.29 it can be seen that the p-value is greater than .05. Hence, there is no significant difference in opinion between science and social science research scholars on E-Journals available in university libraries in Kerala. University libraries in Kerala support research in both fields of science and social science through the provision of adequate e-journal resources. The level of support varies from university to university. High-level satisfaction is found at MGU library.

6.4.2 Bibliographic Databases

Bibliographic databases are a computer file consisting of electronic entries called records, each containing a uniform description of a specific document or bibliographic item, usually retrievable by author, title, subject heading (descriptor), or keyword(s). Some bibliographic databases are general in scope and coverage; others provide access to the literature of a specific discipline or group of disciplines. Hence, they provide a complete picture of today's global research with combination of coverage of both journals and web literature. Bibliographic databases are the key electronic resources for researchers. Majority of the university libraries provide access to more than three bibliographic databases. The opinions of scholars on bibliographic databases were collected. The analysis of data is given in Table 6.30.

Table 6.30 University Wise Opinion Bibliographic Databases

University		Opinion on Bibliographic Databases					Total
		Excellent	Good	Average	Poor	Very poor	
UC	Count	1	3	21	12	13	50
	%	2.0	6.0	42.0	24.0	26.0	100.0
UK	Count	12	7	17	7	3	46
	%	26.1	15.2	37.0	15.2	6.5	100.0
MGU	Count	1	15	11	19	3	49
	%	2.0	30.6	22.4	38.8	6.1	100.0
CUSAT	Count	2	9	18	17	3	49
	%	4.1	18.4	36.7	34.7	6.1	100.0
Total	Count	16	34	67	55	22	194
	%	8.2	17.5	34.5	28.4	11.3	100.0

Majority of the scholars from all universities were not much satisfied with bibliographic databases ('average' 34.5%). This similarity was seen in all universities except in MGU. A quarter of research scholars reported it as being either 'good' or 'excellent'. Even though MGU library provided access to more bibliographic databases than other university libraries, the majority (38.8%) of the scholars expressed 'poor' opinion. Chi-Square test revealed that (Chi-Square value = 50.076, df =12, p-value = .000) the opinions of research scholars on bibliographic databases vary from university to university

To identify differences of opinion if any between science and social science scholars on bibliographic databases, research discipline wise analysis was made. The result is given in Table 6.31.

Table 6.31 Research Discipline Wise Opinion on Bibliographic Databases

Research Discipline		Opinion on Bibliographic Database					Total
		Excellent	Good	Average	Poor	Very poor	
Science	Count	7	10	43	28	10	98
	%	7.1	10.2	43.9	28.6	10.2	100.0
Social Science	Count	9	24	24	27	12	96
	%	9.4	25.0	25.0	28.1	12.5	100.0
Total	Count	16	34	67	55	22	194
	%	8.2	17.5	34.5	28.4	11.3	100.0

The findings show that majority (43.9%) of science scholars opined it as 'average' (Table 6.31). Majority (28.1%) of the social science research scholars marked it as 'poor'. The data shows that there is a difference in the opinion between science and social science research scholars. Chi-Square test was conducted to examine this. The result presented in Table 6.32.

Table 6.32 Chi-Square Test - Research Discipline Vs Bibliographic Databases

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.583(a)	4	.021
Likelihood Ratio	11.833	4	.019
Linear-by-Linear Association	.908	1	.341
N of Valid Cases	194		
a 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.92.			

From the Table 6.32 it can be seen that the p-value is less than .05. Hence, there is a difference of opinion between science and social science research scholars on bibliographic databases. Social science research scholars are more dissatisfied than science scholars are. The research support of the university libraries is average with regard to the provision of adequate bibliographic databases to research scholars of science and social science.

6.4.3 CD- ROMs

CD-ROM stands for Compact Disc Read-Only Memory, a small plastic optical disk similar to an audio compact disc, measuring 4.72 inches in diameter, used as a publishing medium and for storing information in digital format. The data encoded on it can be searched and displayed on a computer screen. Table 6.33 shows the opinion of scholars on CD-ROM collection.

Table 6.33 University Wise Opinion on CD-ROMs

University	Opinion on CD ROMs						Total
		Excellent	Good	Average	Poor	Very poor	
UC	Count	2	0	18	18	12	50
	%	4.0	.0	36.0	36.0	24.0	100.0
UK	Count	4	12	4	13	13	46
	%	8.7	26.1	8.7	28.3	28.3	100.0
MGU	Count	4	14	27	0	4	49
	%	8.2	28.6	55.1	.0	8.2	100.0
CUSAT	Count	2	9	12	23	2	48
	%	4.2	18.8	25.0	47.9	4.2	100.0
Total	Count	12	35	61	54	31	193
	%	6.2	18.1	31.6	28.0	16.1	100.0

Overall, research scholars were not much satisfied about the CD-ROM collection. Half of the scholars from CUSAT, UC and UK marked either 'poor' or 'very poor'. Half of the scholars (55.1%) from MGU pointed out the CD-ROM collection as average and 18.8 percent as 'good'. Chi-Square test revealed that (Chi-Square value = 62.332, df =12, p-value = .000) the opinions of research scholars on CD-ROM collection vary from university to university.

To find out if there is any difference of opinion exists towards CD-ROM collection, data was further analysed and the result is given in Table 6.34.

6.34 Research Discipline Wise Opinion on CD-ROMs

Research Discipline		Opinion on CD ROM's					Total
		Excellent	Good	Average	Poor	Very poor	
Science	Count	2	20	29	32	16	99
	%	2.0	20.2	29.3	32.3	16.2	100.0
Social Science	Count	10	15	32	22	15	94
	%	10.6	16.0	34.0	23.4	16.0	100.0
Total	Count	12	35	61	54	31	193
	%	6.2	18.1	31.6	28.0	16.1	100.0

Table 6.34 shows that majority (32.3%) of the science scholars marked 'poor' opinion on CD-ROM collection while majority of social science scholar (34%) opined that found it as 'average'. Nearly half of the science scholars indicated either 'poor' or 'very poor'. Compared to Social science, very few scholars from science (2%) marked 'excellent' opinion on CD-ROM collection.

To test the discipline wise difference of opinion of research scholars on CD-ROMs, Chi-Square test was conducted and presented in Table 6.35.

Table 6.35 Chi-Square Test- Research Discipline Vs CD-ROMs

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.955(a)	4	.093
Likelihood Ratio	8.452	4	.076
Linear-by-Linear Association	1.889	1	.169
N of Valid Cases	193		
a 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.84.			

From the Table 6.35 it can be seen that the p-value is greater than 05. Hence, in the case of CD-ROM collection there is no difference of opinion between science and social science research scholars. Scholars from both disciplines are dissatisfied with CD-ROM collection.

6.4.4 Hypothesis II

'Research scholars of science and social science differ in their satisfaction on the adequacy of electronic sources'

To test the discipline wise difference of opinion of research scholars on electronic sources of CD-ROMs, Bibliographic database, E- journals, Chi-Square test was made. The result is presented in Table 6.29, Table 6.32 and Table 6.35.

From the above results, the hypothesis 'Research scholars of science and social science differ in their satisfaction on the adequacy of electronic sources' is proved only in the case of bibliographic databases. In the case of E-journals and CD-ROM, the hypothesis is rejected. Hence, the hypothesis II is not substantiated.

6.5 Up-to-datedness of Books Collection

Up-to-datedness of books collection is very much significant for research work. Hence, research scholar's opinions were collected on it and analysed. Both university wise and research discipline wise analysis was made to identify significant differences if any among universities. The Table 6.36 shows the research scholar's opinion on the up-to-datedness of books collection available in their libraries.

Table 6.36 University Wise Opinion on Up-to-datedness of Books Collection

University		Opinion on Up-to-datedness of Books Collection					Total
		Excellent	Good	Average	Poor	Very poor	
UC	Count	5	7	16	20	2	50
	%	10.0	14.0	32.0	40.0	4.0	100.0
KU	Count	5	19	21	0	5	50
	%	10.0	38.0	42.0	.0	10.0	100.0
MGU	Count	5	16	5	24	0	50
	%	10.0	32.0	10.0	48.0	.0	100.0
CUSAT	Count	10	24	10	3	3	50
	%	20.0	48.0	20.0	6.0	6.0	100.0
Total	Count	25	66	52	47	10	200
	%	12.5	33.0	26.0	23.5	5.0	100.0

An overall, 33 percent research scholars marked 'good' about the up-to-datedness of books. Of the four universities, majority (48%) of the scholars from CUSAT marked 'good' and 20 percent 'excellent'. Nearly half of the scholars from other universities marked either 'poor' or 'average'. The study revealed that existing book collection in university libraries in Kerala was not up to date. To test if there any difference of opinion exists between scholars of different universities, Chi-Square test was applied and the result revealed that (Chi-Square value = 67.566, df =12, p-value = .000) p-value is less than significant level. It indicated that the opinions of research scholars on up-to datedness of book collection vary from university to university. The Table 6.37 shows the research discipline wise opinion of scholars on up-to-datedness of book collection.

Table 6.37 Research Discipline Wise Opinion on Up-to-datedness of Books Collection

Research Discipline		Opinion on up-to-datedness of Book Collection					Total
		Excellent	Good	Average	Poor	Very poor	
Science	Count	6	28	22	34	10	100
	%	6.0%	28.0%	22.0%	34.0%	10.0%	100.0%
Social Science	Count	19	38	30	13		100
	%	19.0%	38.0%	30.0%	13.0%		100.0%
Total	Count	25	66	52	47	10	200
	%	12.5%	33.0%	26.0%	23.5%	5.0%	100.0%

From the Table 6.37 it can be seen that majority (34%) of science scholars were not satisfied with the up-to-datedness of book collection as they found it as 'poor' while majority (38%) of social science scholars were satisfied as they found it as 'good'.

To identify if there is any significant difference between the opinions of science and social science scholars, Chi-Square test was done. (Chi-Square value =28.889 df = 4 p-value = .000) The p-value .000 proved that there is significant association between the up-to-datedness of book collection and the research discipline of scholars. Hence, it can be concluded that science and social science research scholars differ in their opinion on the up to datedness of the book collection. Social science scholars are more satisfied than science scholars with the up-to-datedness of book collection. Research support through the provision of book collection that is up-to-date for facts and information is not well in university libraries in Kerala. Absence of up-to-date book collection is found more in science subjects than in social science subjects.

6.6 Information Services

Libraries of all types have from time to time developed different services, strategies and techniques that help their users in information search, retrieval and use. In order to evaluate the effectiveness of these elements in supporting research in the university libraries in Kerala, opinion was collected from the research scholars. They were asked to mark the column 'Not available' if a particular service was not available in their library. This may

help to identify whether scholars were aware of the availability of a particular service.

6.6.1 Personalised Services

Some service strategies have been designed specifically for keeping the users informed of the latest development in their area of study and save their valuable time and effort for scanning and searching the contents of various literature in the context of a flood of documents. Selective Dissemination of Information (SDI) and Current Awareness Service (CAS) belong to this category. The response of scholars on these services in university libraries in Kerala is presented in Table 6.38 and 6.40.

6.6.1.1 SDI

Selective Dissemination of Information (SDI) is a highly personalised service involving the scanning, selecting and serving the right document for the right user based on user profiles. The Table 6.38 illustrates the opinion of scholars regarding SDI offered by the University libraries in Kerala.

Table 6.38 University Wise Opinion on SDI

University	Opinion on SDI							Total
		NA	Excellent	Good	Average	Poor	Very Poor	
UC	Count	50						50
	%	100.0						100.0
UK	Count	40						40
	%	100.0						100.0
MGU	Count			3	10	20	10	43
	%			7.0	23.3	46.5	23.3	100.0
CUSAT	Count		1	8	8	22	3	42
	%		2.4	19.0	19.0	52.4	7.1	100.0
Total	Count	90	1	11	18	42	13	175
	%	51.4	.6	6.3	10.3	24.0	7.4	100.0

The Table 6.38 shows that UC and UK libraries were not providing SDI service. The scholars were generally not satisfied with the SDI services offered by MGU and CUSAT libraries. Nearly half of the respondents from MGU (46.5%) and CUSAT (52.4%) indicated that the SDI services offered by their libraries were 'poor'. A considerable percent (19%) of respondents from CUSAT viewed the SDI service as 'good'. A sizeable sample of research scholars did not consider the question on SDI service as relevant to them.

To test the difference of opinion if any among research scholars from different universities on SDI services, Chi-Square test was conducted. The result is presented in Table 6.39.

Table 6.39 Chi square Test- University Vs SDI

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	190.130(a)	15	.000
Likelihood Ratio	250.486	15	.000
Linear-by-Linear Association	118.007	1	.000
N of Valid Cases	175		
a 15 cells (62.5%) have expected count less than 5. The minimum expected count is .23.			

The result shows that the p-value is less than .05. Hence, there is a significant difference in the views of research scholars on SDI services in different universities. The result shows that the level of satisfaction of research scholars on the SDI service varies from university to university.

6.6.1.2 Current Awareness Service

Current Awareness Service (CAS) keeps the research scholars abreast of the recent developments in their area of research and helps them avoid duplication of effort. The Table 6.40 reveals the response of scholars on CAS offered in their libraries.

Table 6.40 University Wise Opinion on CAS

University	Opinion on Current Awareness Service							Total
		NA	Excellent	Good	Average	Poor	Very Poor	
UC	Count	50						50
	%	100.0%						100.0%
UK	Count	40						40
	%	100.0%						100.0%
MGU	Count		9	23	7	10		49
	%		18.4%	46.9%	14.3%	20.4%		100.0%
CUS-AT	Count			13	17	13	4	47
	%			27.7%	36.2%	27.7%	8.5%	100.0%
Total	Count	90	9	36	24	23	4	186
	%	48.4%	4.8%	19.4%	12.9%	12.4%	2.2%	100.0%

Like in the case of SDI, both UC and UK libraries were not providing CAS. Scholars in MG University were satisfied with the service. Nearly half of them (46.9%) found CAS as 'good' and 18.4 percent as 'excellent'. The scholars in CUSAT were not much satisfied with the service as 36.2 percent of them marked "average" and more than a quarter indicated 'poor'. A considerable minority of research scholars did not answer the question though this service is much relevant to them.

To test the level of difference of research scholars on the satisfaction on CAS, Chi-Square test was conducted and the result is presented in Table 6.41.

Table 6.41 Chi Square Test- University Vs CAS

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	225.337(a)	15	.000
Likelihood Ratio	283.141	15	.000
Linear-by-Linear Association	132.672	1	.000
N of Valid Cases	186		
a 9 cells (37.5%) have expected count less than 5. The minimum expected count is .86.			

The result shows that the p-value is less than .05. Hence, there is a significant difference in the level of satisfaction of research scholars with CAS in both universities.

6.6.2 Hypothesis III

The level of satisfaction on personalised services provided by the university libraries in Kerala differs from university to university.

Two personalised services (SDI and CAS) provided by the university libraries in Kerala were taken for the study. To test the hypothesis Chi-square test was done and the result is presented in Table 6.39 and 6.41. It reveals that the level of satisfaction on two personalised services, SDI and CAS provided by the university libraries in Kerala differ significantly from university to university hence, the hypothesis III is accepted.

6.6.3 Internet Based Services

University libraries in Kerala provide numerous Internet based information services to their users. Internet Search, E- Journal Access, Bibliographic Database Search and CD-ROM search services were taken for analysis.

6.6.3.1 Internet Search

The availability of high-speed Internet connectivity is an important factor for scholars for searching and selecting online information for their studies. Their satisfaction with Internet access was inquired. The analysis of data is presented in Table 6.42.

Table 6.42 University Wise Opinion on Internet Access

University	Opinion on Internet Access						Total
		Excellent	Good	Average	Poor	Very Poor	
UC	Count	13	18	11	7		49
	%	26.5%	36.7%	22.4%	14.3%		100.0%
UK	Count	16	14	3	15	2	50
	%	32.0%	28.0%	6.0%	30.0%	4.0 %	100.0%
MGU	Count	20	19	11			50
	%	40.0%	38.0%	22.0%			100.0%
CUSAT	Count	25	15	10			50
	%	50.0%	30.0%	20.0%			100.0%
Total	Count	74	66	35	22	2	199
	%	37.2%	33.2%	17.6%	11.1%	1.0 %	100.0%

Overall, more than 70 percent of research scholars indicated that they were satisfied with the speed of Internet access ('excellent' 37.2%; 'good' 33.2%). In UK, a considerable percent (30%) of scholars pointed out it as 'poor'.

To test the level of satisfaction of scholars on the Internet search services, Chi-Square test was conducted and the result is presented in Table 6.43.

Table 6.43 Chi-Square Test – University Vs Internet Access

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	44.170(a)	12	.000
Likelihood Ratio	50.711	12	.000
Linear-by-Linear Association	11.935	1	.001
N of Valid Cases	199		
a 4 cells (20.0%) have expected count less than 5. The minimum expected count is .49.			

The result shows that the p-value is less than .05. Hence, there is significant difference in the level of satisfaction of scholars on Internet search service of different universities.

6.6.3.2 E- Journal Access

All the university libraries under study provide E-journal access facility to their users. Table 6.44 shows response of scholars on E-journal accessibility in their libraries.

Table 6.44 University Wise Opinion on E-Journal Access

University	Opinion on E- Journal Access						Total
		Excellent	Good	Average	Poor	Very Poor	
UC	Count		11	13	19	7	50
	%		22.0%	26.0%	38.0%	14.0%	100.0%
UK	Count	5	5	18	10	10	48
	%	10.4%	10.4%	37.5%	20.8%	20.8%	100.0%
MGU	Count	13	25	10	1	1	50
	%	26.0%	50.0%	20.0%	2.0%	2.0%	100.0%
CUSAT	Count	12	26	9	2	1	50
	%	24.0%	52.0%	18.0%	4.0%	2.0%	100.0%
Total	Count	30	67	50	32	19	198
	%	15.2%	33.8%	25.3%	16.2%	9.6%	100.0%

Overall, scholars were satisfied with the E-journal search facilities provided by their university libraries ('good' :33.8%, 'excellent':15.2%). Coming to individual universities, data shows that half of the scholars from MGU and CUSAT marked it as 'good' while majority of the respondents (38%) in UC indicated it as 'poor'.

To test the level of satisfaction on the E-journal search services, Chi-Square test was conducted and the result is presented in Table 6.45.

Table 6.45 Chi-Square Test- University Vs E-Journal Access

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	77.312(a)	12	.000
Likelihood Ratio	88.498	12	.000
Linear-by-Linear Association	50.295	1	.000
N of Valid Cases	198		
a 4 cells (20.0%) have expected count less than 5. The minimum expected count is 4.61.			

The result shows that the p-value is less than .05. Hence, there is significant difference in the level of satisfaction of scholars on E-journal access search service of different universities. Research support through the provision of effective access to E- journals is found satisfactory in all universities except in UC library. High level satisfaction is found at MGU and CUSAT libraries.

6.6.3.3 Bibliographic Database Search

Opinion of scholars on bibliographic database search service was collected and the result is presented in Table 6.46.

Table 6.46 University Wise Opinion on Bibliographic Database Search

University	Opinion on Bibliographic Database Search						Total
		Excellent	Good	Average	Poor	Very Poor	
UC	Count		8	20	22		50
	%		16.0%	40.0%	44.0%		100.0%
UK	Count		10	11	13	10	44
	%		22.7%	25.0%	29.5%	22.7%	100.0%
MGU	Count	3	12	20	13		48
	%	6.3%	25.0%	41.7%	27.1%		100.0%
CUSAT	Count	6	15	13	6	3	43
	%	14.0%	34.9%	30.2%	14.0%	7.0%	100.0%
Total	Count	9	45	64	54	13	185
	%	4.9%	24.3%	34.6%	29.2%	7.0%	100.0%

Scholars in general were not much satisfied with bibliographic database search service. Majority 64 (34.6%) of respondents found the service as 'average'. The university wise analysis shows that scholars in CUSAT were more satisfied with this service as 34.9 percent marked 'good' about it. Majority of respondents in UC (44.0%) and UK (29.5%) indicated 'poor' about the service.

To test the level of satisfaction of research scholars on bibliographic database search services, Chi-Square test was conducted and the result is presented in Table 6.47.

Table 6.47 Chi-Square Test- University Vs Bibliographic Database Search

Chi-Square Test			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	47.611(a)	12	.000
Likelihood Ratio	51.160	12	.000
Linear-by-Linear Association	13.767	1	.000
N of Valid Cases	185		
a 8 cells (40.0%) have expected count less than 5. The minimum expected count is 2.09.			

The result shows that the p-value is less than .05. Hence, there is difference in the level of satisfaction of research scholars on bibliographic database search service of different universities.

6.6.3.4 CD-ROM Search

University libraries in Kerala possess a number of CD-ROM databases. Data was collected to identify the satisfaction of scholars on CD-ROM search services offered by the libraries. Table 6.48 illustrates the results.

The study revealed that scholars were not much satisfied with the CD-ROM search facility available in university libraries in Kerala. More than half of the respondents marked either 'average' or 'poor' about it. A substantial number of respondents also reported 'very poor'. Comparing to other universities, majority scholars from UC (52.0%) were more dissatisfied as they found it 'poor'.

Table 6.48 University Wise Opinion on CD- ROM Search

University		Opinion on CD- ROM Search					Total
		Excellent	Good	Average	Poor	Very Poor	
UC	Count		4	3	26	17	50
	%		8.0%	6.0%	52.0%	34.0%	100.0%
UK	Count	5	11	6	8	12	42
	%	11.9%	26.2%	14.3%	19.0%	28.6%	100.0%
MGU	Count	5	18	19	5	3	50
	%	10.0%	36.0%	38.0%	10.0%	6.0%	100.0%
CUSAT	Count	1	12	25	10	1	49
	%	2.0%	24.5%	51.0%	20.4%	2.0%	100.0%
Total	Count	11	45	53	49	33	191
	%	5.8%	23.6%	27.7%	25.7%	17.3%	100.0%

To test the level of satisfaction on CD-ROM search services, Chi-Square test was conducted and the result is presented in Table 6.49.

Table 6.49 Chi-Square Test- University Vs CD-ROM Search

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	80.661(a)	12	.000
Likelihood Ratio	88.275	12	.000
Linear-by-Linear Association	30.962	1	.000
N of Valid Cases	191		
a 4 cells (20.0%) have expected count less than 5. The minimum expected count is 2.42.			

The result shows that the p-value is less than .05. Hence, there is difference in the level of dissatisfaction of research scholars on CD-ROM search service of different universities.

6.6.4 Hypothesis 1V

'The effectiveness of Internet based services varies from university to university'.

It is observed from the Chi-Square tests made above that the effectiveness of Internet based services (Internet search, Bibliographic database, E-journal access and CD-ROM search) varies from university to university. Hence, the hypothesis IV is accepted.

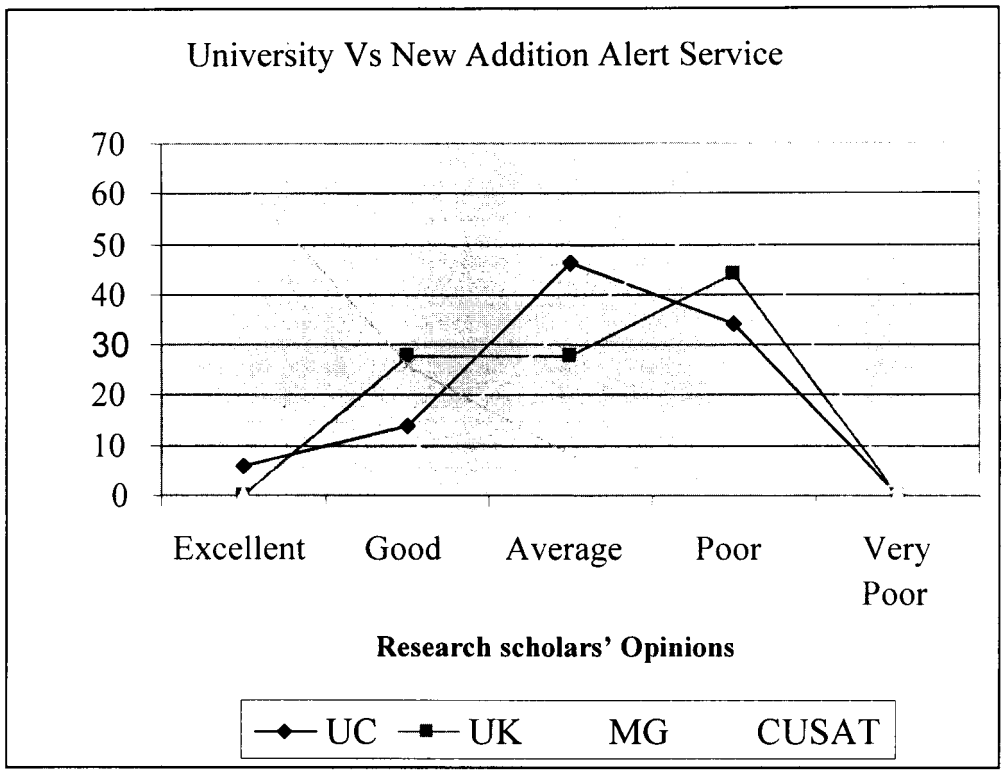
6.6.5 Other Information Services

Research scholar's opinions on Information services other than personalised services and electronic search were analysed and presented under the following headings.

6.6.5.1 New Addition Alert Service

Alerting newly added documents and services through E-mail or displaying it on library website is a useful service provided by the university libraries. Figure 6.8 portrays the opinion of scholars regarding new addition alert service.

Fig.6.8 University Wise Opinion on New Addition Alert Service



From the Figure 6.8, it can be seen that there was variation of opinion among scholars towards this service. The service offered by CUSAT was highly appreciated by scholars. Majority (62%) marked it as 'excellent'. The scholars of MGU and UK were nor much satisfied with this service. Majority of scholars at MGU (58%) and UK (44%) found the service as 'poor'. Chi-Square test revealed that (Chi-Square value = 75.439, df =15, p-value = .000) the opinions of research scholars on new addition alert service vary from university to university.

6.6.5.2 Document Delivery Services

Document delivery service is a provision of published or unpublished documents in hard copy, microform, or digital format, usually for a fixed fee

upon request. Libraries offer this service when a particular document required by the user is not available in the collection. Document delivery service is a great help for research scholars for obtaining a documents available even in remotely located libraries thereby saving their time and money. Table 6.50 portrays the opinion of scholars on document delivery service.

Table 6.50 University Wise Opinion on Document Delivery Services

University	Opinion on Document Delivery Service							Total
		NA	Excellent	Good	Average	Poor	Very Poor	
UC	Count	50						50
	%	100.0%						100.0%
UK	Count	50						50
	%	100.0%						100.0%
MGU	Count		23	15	10	1		49
	%		46.9%	30.6%	20.4%	2.0%		100.0%
CUSAT	Count		7	18	18	2	5	50
	%		14.0%	36.0%	36.0%	4.0%	10.0%	100.0%
Total	Count	100	30	33	28	3	5	199
	%	50.3%	15.1%	16.6%	14.1%	1.5%	2.5%	100.0%

Document delivery service was not available in UK and UC libraries. Scholars were very much satisfied with this service at MGU. Majority of them (46.9%) marked it as 'excellent'. Generally, scholars at CUSAT were not much satisfied with the service. Equal percent of scholars from CUSAT (36% each) marked 'good' and 'average' about the service.

Chi-Square test proved that there is significant association between university libraries and the response of scholars on document delivery service (Chi-Square value=231.999, df =15, p-value= .000). It is concluded that there are differences in the views of research scholars on document delivery service in different universities.

6.6.5.3 Inter Library Loan

Interlibrary loan service is the old form of resource sharing among libraries. Since no library is self-sufficient it is essential that holdings of libraries can be shared for the mutual benefits. Table 6.51portrays the research scholars opinion on the inter library loan service provided by their university libraries.

Table 6.51 University Wise Opinion on Inter Library Loan

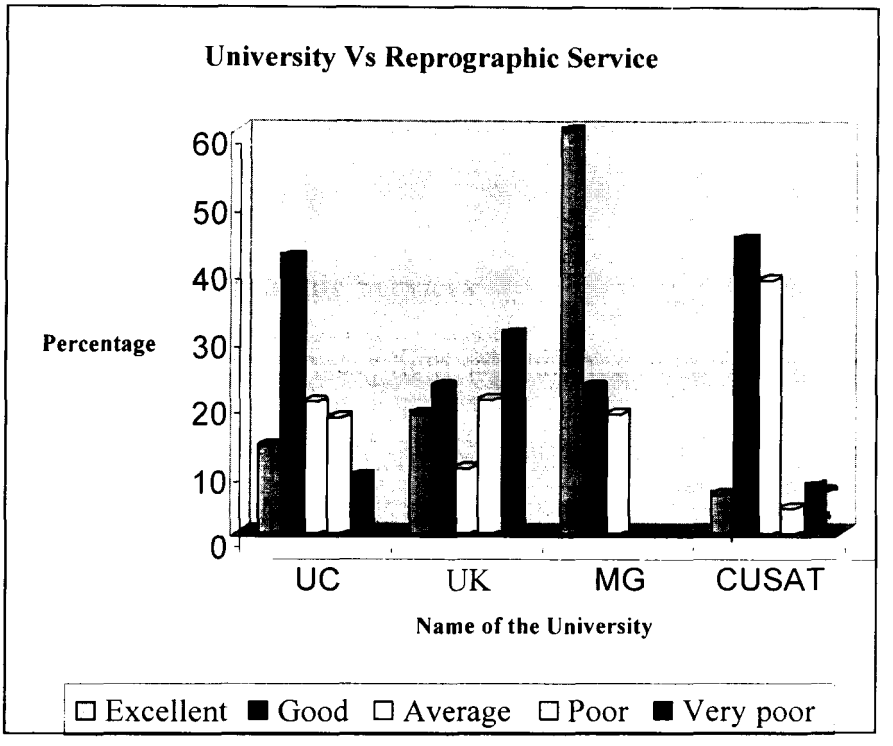
University	Opinion on Inter Library Loan						Total
		Excellent	Good	Average	Poor	Very Poor	
UC	Count		3	15	27	5	50
	%		6.0%	30.0%	54.0%	10.0%	100.0%
UK	Count		2	6	7	25	40
	%		5.0%	15.0%	17.5%	62.5%	100.0%
MGU	Count	16	14	3	9	4	46
	%	34.8%	30.4%	6.5%	19.6%	8.7%	100.0%
CUSAT	Count	5	6	2	28	1	42
	%	11.9%	14.3%	4.8%	66.7%	2.4%	100.0%
Total	Count	21	25	26	71	35	178
	%	11.8%	14.0%	14.6%	39.9%	19.7%	100.0%

Majority of scholars (39.9%) pointed out the interlibrary loan service as 'poor'. The university wise data shows that scholars at MGU were very much satisfied with the service. A considerable amount of scholars (34.8%) viewed it as 'excellent' and 30.4 percent as 'good'. Chi-Square test revealed that (Chi-Square value = 123.803, df =15, p-value = .000) the opinions of research scholars on inter loan service vary from university to university. The research support through the provision of interlibrary loan is not well in all libraries except at MGU library.

6. 6.5.4 Reprographic Services

Reprographic services help scholars for the reproduction of documents for their study. Availability of quality reprographic service is essential for scholars. The study analysed the perception of research scholars towards reprographic services provided by the university libraries in Kerala.

Fig. 6.9 University Wise Opinion on Reprographic Service



The Figure 6.9 shows that scholars were satisfied with the reprographic services in all the universities except in UK. The services provided by MGU are more satisfactory compared to that of other universities as 60 percent of MGU scholars found it as 'excellent'.

Chi-Square test revealed (Chi-Square value = 91.787, df =15, p-value = .000) that the opinions of research scholars on reprographic service vary from university to university.

6.6.5.5 Compilation of Bibliographies

The Table 6.52 analysed the research scholars' opinion on the bibliography compilation service that helps the identification of research materials.

Table 6.52 University Wise Opinion on Compilation of Bibliographies

University		Opinion on Compilation of Bibliographies						Total
		N A	Excellent	Good	Average	Poor	Very poor	
UC	Count	0	3	7	19	17	4	50
	%	.0	6.0	14.0	38.0	34.0	8.0	100.0
UK	Count	1	9	14	11	3	3	41
	%	2.4	22.0	34.1	26.8	7.3	7.3	100.0
MGU	Count	0	2	8	10	27	3	50
	%	.0	4.0	16.0	20.0	54.0	6.0	100.0
CUSAT	Count	0	15	15	14	2	1	47
	%	.0	31.9	31.9	29.8	4.3	2.1	100.0
Total	Count	1	29	44	54	49	11	188
	%	.5	15.4	23.4	28.7	26.1	5.9	100.0

The scholars in general were not much satisfied with the service as majority

found it both 'average' (28.7%) and 'poor' (26.1%). University wise analysis of data shows that scholars at UK and CUSAT were satisfied. Majority of scholars at UK (34.1%) and CUSAT (31.9%) indicated it as 'good'. Scholars from MGU found the service as 'poor' (27%). Chi-Square test was conducted and the result revealed that (Chi-Square value = 72.739, df =15, p-value = .000) the opinions of research scholars on bibliographic service vary from university to university.

6.6.5.6 Lending Service

Book lending service is the most common service in libraries. Responses of scholars were sought and it is presented in Table 6.53.

Table 6.53 University Wise Opinion on Document Loan Service

University	Opinion on Document Loan Service						Total
		Excellent	Good	Average	Poor	Very Poor	
UC	Count	4	16	21	9		50
	%	8.0%	32.0%	42.0%	18.0%		100.0%
UK	Count	5	26	12	1	2	46
	%	10.9%	56.5%	26.1%	2.2%	4.3%	100.0%
MGU	Count	20	14	14	2		50
	%	40.0%	28.0%	28.0%	4.0%		100.0%
CUSAT	Count	18	22	10			50
	%	36.0%	44.0%	20.0%			100.0%
Total	Count	47	78	57	12	2	196
	%	24.0%	39.8%	29.1%	6.1%	1.0%	100.0%

Table 6.53 shows that scholars in all universities were satisfied with lending service except the scholars from UC. Majority of UC scholars found it as 'average' (42%). To find out significant difference in any among scholars of different universities Chi-Square test was conducted and the result revealed that (Chi-Square value =58.448, df =15, p-value =.000) the opinions of research scholars on document loan service vary from university to university. High-level satisfaction is found in MGU library and low level in UC.

6.6.5.7 Reservation Facility

Reservation facility is essential for research scholars both for new and existing documents. It helps them to ensure the availability of a required material. The Table 6.54 shows the response of the scholars on the document reservation facility available in their libraries. The scholars in general were satisfied with reservation facility. University wise analysis of data shows that scholars in UK and CUSAT were satisfied with reservation facility since 45 percent and 62 percent scholars found it as 'good' respectively. Scholars from UC and MGU were not much satisfied with this service. 'Average' opinion was marked by half of the scholars from UC (50%) and MGU (49%). To find out any significant difference among university libraries Chi-Square test was conducted and the result revealed that (Chi-Square value = 79.489, df =15, p-value = .00) the p-value is less than significant level, the opinions of research scholars on reservation facility vary from university to university.

Table 6.54 University Wise Opinion on Reservation Facility

University	Opinion about Document delivery service							Total
		NA	Excellent	Good	Average	Poor	Very Poor	
UC	Count	50						50
	%	100.0%						100.0%
UK	Count	50						50
	%	100.0%						100.0%
MGU	Count		23	15	10	1		49
	%		46.9%	30.6%	20.4%	2.0%		100.0%
CUSAT	Count		7	18	18	2	5	50
	%		14.0%	36.0%	36.0%	4.0%	10.0%	100.0%
Total	Count	100	30	33	28	3	5	199
	%	50.3%	15.1%	16.6%	14.1%	1.5%	2.5%	100.0%

6.7 Library tools and Techniques

Balanced collection of documents is a pre-requisite for a university library in order to provide information support to the research scholars. Such a collection of documents shall be of little use if it is not properly processed, arranged and kept for use. The opinion of scholars were sought to elicit response on the arrangements of documents in libraries and facilities made for access and use of documents

6.7.1 Arrangement of Books on Shelves

Classification system plays a significant role in easy retrieval of books on the shelves. Of four university libraries, two follow Dewey Decimal Classification and one Universal Decimal Classification and the remaining one Colon Classification Scheme. The response of scholars about the arrangement of books on shelves was collected and presented n Table.6.55.

Table 6.55 University Wise Opinion on Arrangement of Books on Shelves

University		Opinion on Arrangement of Books					Total
		Extrem -ely Easy	Easy	Some what easy	Diffi- cult	Very Difficult	
UC	Count	0	24	19	6	1	50
	%	0	48.0	38.0	12.0	2.0	100.0
UK	Count	4	6	15	12	13	50
	%	8.0	12.0	30.0	24.0	26.0	100.0
MGU	Count	5	17	25	3	0	50
	%	10.0	34.0	50.0	6.0	.0	100.0
CUSAT	Count	3	27	13	5	2	50
	%	6.0	54.0	26.0	10.0	4.0	100.0
Total	Count	12	74	72	26	16	200
	%	6.0	37.0	36.0	13.0	8.0	100.0

It can be seen from the Table 6.55 that majority of scholars considered existing arrangements of books on shelves easy to locate (37%). University wise analysis of data shows that the scholars did not find shelf arrangement in UK and MGU easy. Majority of scholars at UK (30%) and MGU (25%) marked as 'some what easy'.

Chi-Square test proved that there is significant association between university libraries and the response of scholars on arrangement of books on shelves (Chi-Square value =57.865, df = 12, p-value = .000). The opinions of research scholars on shelf arrangement vary from university to university.

6. 7.2 Cataloguing System

Library catalogue mirrors the collection of a library. It provides information about the holdings of a library. There are a number of cataloguing systems being followed by libraries. Scholars were asked to mark their opinion on the easiness of catalogue use in their libraries. Table 6.56 shows the response of scholars.

Table 6.56 University Wise Opinion on Cataloguing System

University		Opinion on Cataloguing System					Total
		Extremely Easy	Easy	Some what easy	Difficult	Very Difficult	
UC	Count	0	37	12	1	0	50
	%	.0	74.0	24.0	2.0	.0	100.0
UK	Count	4	18	8	8	12	50
	%	8.0	36.0	16.0	16.0	24.0	100.0
MGU	Count	9	9	32	0	0	50
	%	18.0	18.0	64.0	.0	.0	100.0
CUSAT	Count	3	25	16	6	0	50
	%	6.0	50.0	32.0	12.0	.0	100.0
Total	Count	16	89	68	15	12	200
	%	8.0	44.5	34.0	7.5	6.0	100.0

Table 6.56 shows that scholars in general were satisfied with card catalogues found in the libraries. Majority found the catalogue as "easy" to

follow (44.5%). University wise analysis of data shows that the majority of respondents in all universities except in MGU found the cataloguing system followed by their libraries "easy" to follow. MGU scholars were not much satisfied with cataloguing system. Majority of them opined that it was 'somewhat easy" to follow (64%).

Chi-Square test proved that there is significant association between university libraries and the response of scholars on cataloguing system (Chi-Square value= 96.783, df= 12, p-value = .000). It is concluded that there are differences in the views of research scholars in different universities on cataloguing.

6.7.3 Online Public Access Catalogue (OPAC)

Online Public Access Catalogues (OPACs) replaced traditional card catalogues in many libraries. They prove user-friendly in many respects. An OPAC has facilitated search for documents with much speed and easy. A Web OPAC allows catalogue search anytime, and anywhere. The scholars were requested to mark their opinion on the usefulness of OPAC. Table 6.57 illustrates opinion on OPAC.

Table 6.57 University Wise Opinion on OPAC

University		Opinion on OPAC Search and Retrieval					Total
		Extremely Useful	Useful	Some what useful	Not useful	Not at all useful	
UC	Count	8	15	22	5		50
	%	16.0%	30.0%	44.0%	10.0%		100.0%
UK	Count	10	7	14	14	5	50
	%	20.0%	14.0%	28.0%	28.0%	10.0%	100.0%
MGU	Count	10	18	21	1		50
	%	20.0%	36.0%	42.0%	2.0%		100.0%
CUSAT	Count	37	13				50
	%	74.0%	26.0%				100.0%
Total	Count	65	53	57	20	5	200
	%	32.5%	26.5%	28.5%	10.0%	2.5%	100.0%

Table 6.57 shows that scholars were very much satisfied with the OPAC in university libraries in Kerala. University wise analysis shows that Scholars from UC, UK and MGU found the OPAC not much useful. Majority of CUSAT scholars (74%) found OPAC 'extremely useful' for document search. Chi-Square test proved that there is significant association between university libraries and the response of scholars on OPAC (Chi-Square value = 101.446, df = 12, p-value = .000). It is concluded that there are significant differences in the views of research scholars towards the search facility of OPAC in different universities. High-level satisfaction is found in CUSAT and low level in UK library. Among the four university libraries under study, CUSAT library alone offers web-enabled OPAC.

6.7.4 Sufficient Number of Library Tickets

Lending facility is essential for research scholars to use the reading materials outside the library. All libraries issue borrowers tickets to users to facilitate the lending of documents. As the borrowing facility has some impact on the scholars library use, they were asked to indicate their opinion on the sufficiency of library tickets being issued by the libraries.

Table 6.58 University Wise Opinion on Sufficient Number of Library Tickets

University		Opinion on Sufficient Number of Library Ticket		Total
		Sufficient	Not sufficient	
UC	Count	23	27	50
	%	46.0	54.0	100.0
UK	Count	47	3	50
	%	94.0	6.0	100.0
MGU	Count	14	36	50
	%	28.0	72.0	100.0
CUSAT	Count	22	28	50
	%	44.0	56.0	100.0
Total	Count	106	94	200
	%	53.0	47.0	100.0

Table 6.58 shows that the respondents were not unanimous in their opinion on the availability of sufficient number of library tickets. Only the research scholars in UK were satisfied with the number of library tickets (94%). Majority (72%) of the scholars from MGU indicated the library tickets issued were inadequate for their use. More than half of the respondents from

CUSAT and UC also have the same opinion. UK library provide six tickets while others give three tickets. Chi-Square test proved that there is significant association between university libraries and the response of scholars on the availability of sufficient number of library tickets to borrow books (Chi-Square =48.896, df =12, p-value = .000). It is concluded that there are differences in the views of research scholars in different universities on the availability of sufficient number of library tickets.

6.7.5 Document Selection

The collection building process is an important task for university libraries. The selection of documents depends upon many factors. It was attempted to explore whether research scholars had any voice in the selection of documents in their libraries. Scholars were asked to put their opinion in this regard. Table 6.59 illustrates the response of scholars.

Table 6.59 University Wise Opinion on Document Selection

University	Opinion on Document Selection			Total
		Yes	No	
UC	Count	11	39	50
	%	22.0	78.0	100.0
UK	Count	32	18	50
	%	64.0	36.0	100.0
MGU	Count	11	39	50
	%	22.0	78.0	100.0
CUSAT	Count	18	32	50
	%	36.0	64.0	100.0
Total	Count	72	128	200
	%	36.0	64.0	100.0

Table 6.59 shows that scholars had no voice in the selection of documents in their libraries. Majority of (78%) respondents from UC, MGU (78%) and CUSAT (68%) responded that they had no voice in the selection of documents in their libraries. The scholars in UK indicated a different opinion. Chi-Square test proved that there is significant association between university libraries and the participation in the document selection procedure (Chi-Square value = 25.521, df =3 p-value = .000). It is concluded that research scholars vary from university to university in their opinion on the participation in document selection.

6.7.6 User Education Programmes

User education includes all the activities involved in teaching users on how to make the best possible use of library resources, services, and facilities, including formal and informal instruction delivered by a librarian or other staff member one-on-one or in a group. The analysis of the response of scholars on user education is represented in the Figure 6.10.

Majority of the scholars from the four university libraries selected under study revealed that they did not get any user education programme from their university libraries (94%).

6.7.6.1 Need for User Education

In continuation of the question on the user education, research scholars were asked to indicate whether they needed user education. The response to the

question is presented in Fig. 6.11.

Fig. 6.10 University Wise Opinion on User Education

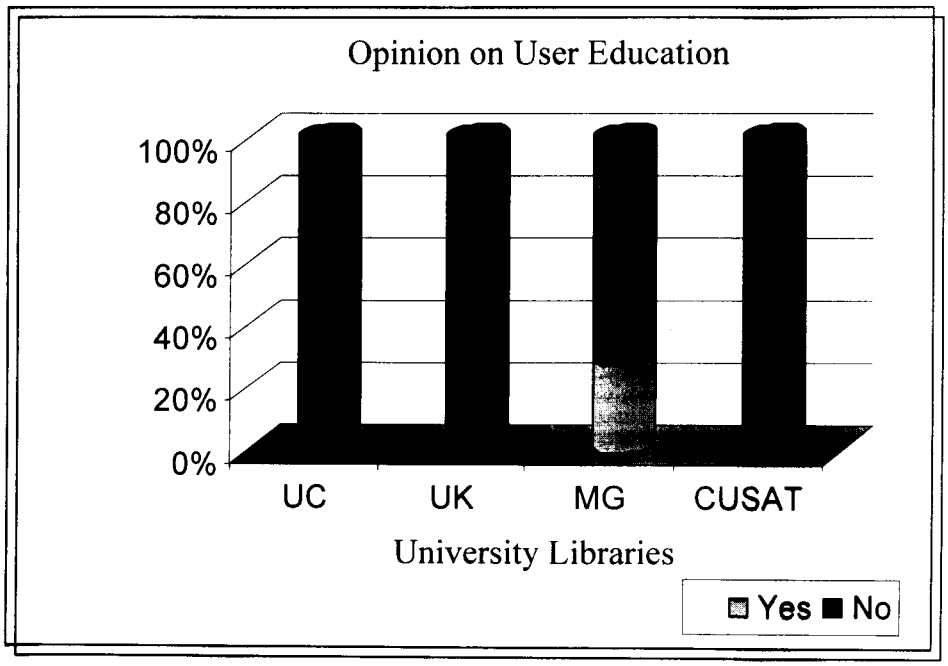
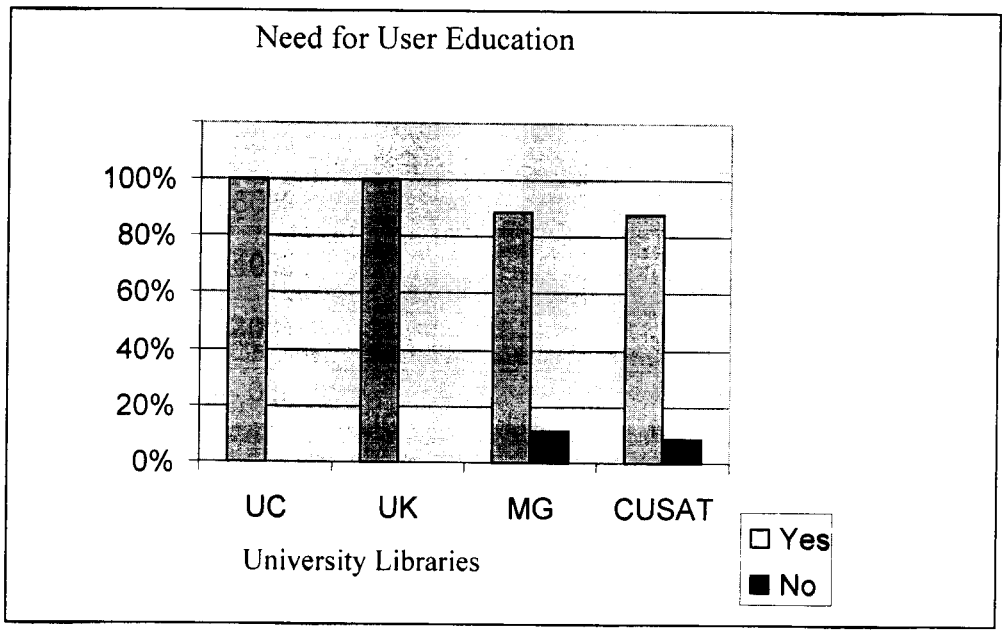


Fig. 6.11 University Wise Opinion on Need for User Education



The Figure 6.11 shows that nearly hundred percent (94.6%) research scholars indicated they needed user awareness programmes. User instruction

programmes are integral part of library services to help the effective use of information sources and services.

6.8 Physical Environment

Scholars were asked to give their response on the library environment since it plays a significant role in library usage. IT infrastructures, reading area, timings, architecture, reading atmosphere, lighting, competence and customer friendliness of library staff were included under physical environment.

6.8.1 IT Infrastructures

Adequate infrastructural facilities will directly have a positive bearing on the standard of services offered by the university libraries. Table 6.60 shows the opinion of scholars on Information Technology (IT) infrastructures like Computers, Printers and Scanners that facilitate access and exchange of information available in machine-readable format.

The analysis of the data indicates that research scholars in the universities under study were not much satisfied with the IT infrastructure as the majority of scholars found it 'average' (41.5%). University wise analysis of data also shows the same result. Majority of scholars from UC (42%), MGU (42%), and CUSAT (58%) marked as 'average'. Scholars at UK were very much dissatisfied with the service. Majority of them marked 'very poor' (34%).

Chi-Square test proved that there is significant association between university libraries and the response of scholars on the availability of information technology infrastructures like Computers, Printers and Scanners

(Chi-Square value = 54.640, df =12, p-value = .000). It is concluded that the level of dissatisfaction varies from university to university.

Table 6.60 University Wise Opinion on Availability of IT Based Infrastructures

University	Opinion on IT Based Infrastructures						Total
		Excellent	Good	Average	Poor	Very Poor	
UC	Count		3	21	17	9	50
	%		6.0%	42.0%	34.0%	18.0%	100.0%
UK	Count	5	8	12	8	17	50
	%	10.0%	16.0%	24.0%	16.0%	34.0%	100.0%
MGU	Count	5	9	21	13	2	50
	%	10.0%	18.0%	42.0%	26.0%	4.0%	100.0%
CUSAT	Count		15	29	2	4	50
	%		30.0%	58.0%	4.0%	8.0%	100.0%
Total	Count	10	35	83	40	32	200
	%	5.0%	17.5%	41.5%	20.0%	16.0%	100.0%

6.8.2 Reading Area

Table 6.61 shows the response of scholars on availability of study space (tables, chairs and rooms) in the university libraries in Kerala.

Table 6.61 University Wise Opinion on Reading Areas

University		Opinion on Reading Area					Total
		Excellent	Good	Average	Poor	Very Poor	
UC	Count			7	24	19	50
	%			14.0%	48.0%	38.0%	100.0%
UK	Count	1	9	15	14	11	50
	%	2.0%	18.0%	30.0%	28.0%	22.0%	100.0%
MGU	Count		1	6	13	30	50
	%		2.0%	12.0%	26.0%	60.0%	100.0%
CUSAT	Count	1	7	5	8	29	50
	%	2.0%	14.0%	10.0%	16.0%	58.0%	100.0%
Total	Count	2	17	33	59	89	200
	%	1.0%	8.5%	16.5%	29.5%	44.5%	100.0%

Scholars in general were dissatisfied with the present reading area of their libraries. Majority of scholars (44.5%) marked very poor about the available reading area. University wise data shows that scholars were very much dissatisfied with reading area except in UK library. Majority of scholars from UC (48%), MGU (60%), and CUSAT (58%) found this aspect 'poor'. Scholar were not much satisfied about reading area in UK as the majority indicated 'average' (30%) followed by 'poor' (22%).

Chi-Square test proved that there is significant association between university libraries and the response of scholars on the availability of reading area (Chi-Square value = 43.475, df =12, p-value = .000). The level of dissatisfaction varies from university to university.

6.8. 3 Library Timings

Length of opening hours is a critical factor in the library service provision. The Table 6.62 portrays the response of research scholars towards the university library timings.

Table 6.62 University Wise Opinion on Library Timings

University		Opinion on Library Timings						Total
		Excellent	Good	Average	Poor	Very Poor	22	
UC	Count	5	12	18	9	6		50
	%	10.0%	24.0%	36.0%	18.0%	12.0%		100.0%
UK	Count	14	22	3	8	3		50
	%	28.0%	44.0%	6.0%	16.0%	6.0%		100.0%
MGU	Count	5	33	3	9			50
	%	10.0%	66.0%	6.0%	18.0%			100.0%
CUSAT	Count	7	18	16	4	4	1	50
	%	14.0%	36.0%	32.0%	8.0%	8.0%	2.0%	100.0%
Total	Count	31	85	40	30	13	1	200
	%	15.5%	42.5%	20.0%	15.0%	6.5%	.5%	100.0%

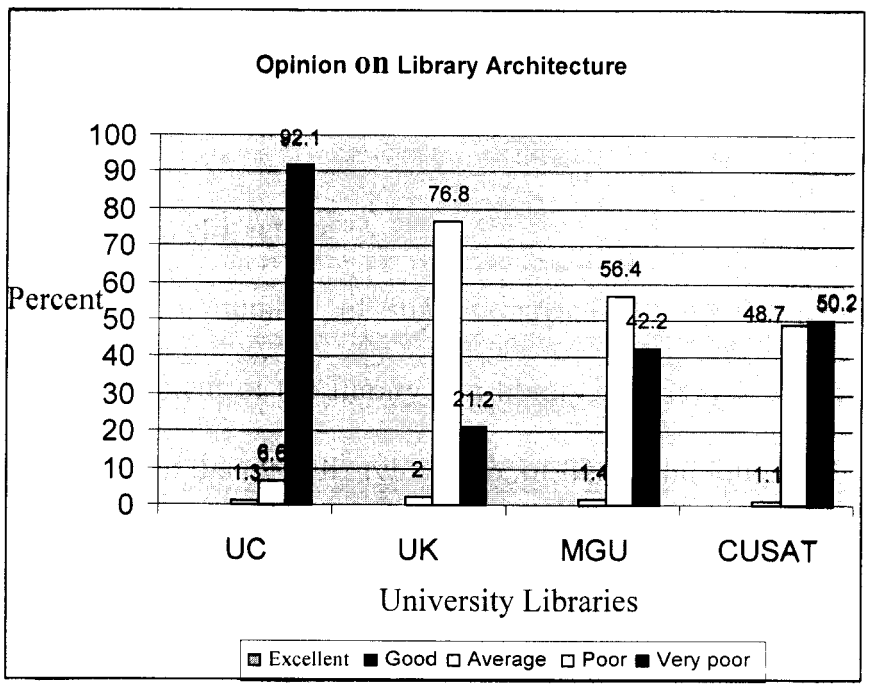
Scholars opined they were satisfied with the current library timings of their university libraries. Majority of them (42.5%) indicated 'good' about it. University wise analysis of data shows that except UC, scholars from all universities were satisfied with the current library timings. Majority of scholars from UK (44%), MGU (66%), and CUSAT (36%) found the library timing as 'good'. Majority of scholars (36%) from UC found it as 'average'. All university libraries in Kerala, except CUSAT keep the library open from 8 am

to 8 pm. In CUSAT the library, timing is from 9 am to 8 pm. Chi-Square test proved that there is significant association between the university libraries and library timings (Chi-Square value =48.947, df = 15, p-value = .000). This concluded that the opinions of research scholars on library timings vary from university to university.

6.8.4 Library Architecture

There are a number of studies carried out on the relation between physical environment of the library and library use. It was important to gather scholars' views on the overall architecture of library buildings. The Figure 6.12 illustrates their response on library architecture.

Fig. 6.12 University Wise Opinion of Library Architecture



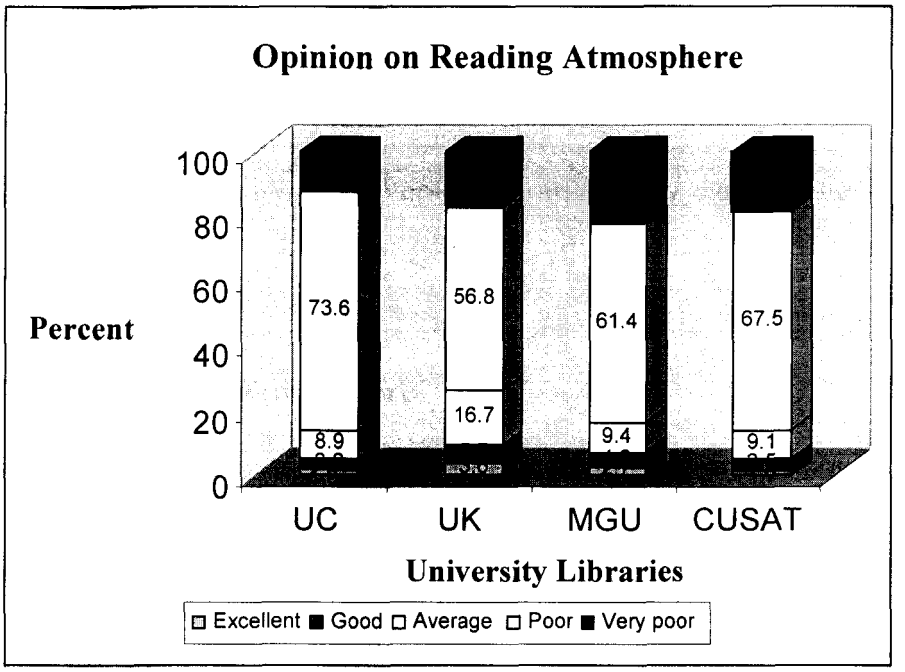
It can be seen from the Figure 6.12 that majority of the scholars were dissatisfied with the structure of the university libraries in Kerala. The structure

of the library must be attractive and inviting. All the university libraries in Kerala were 'poor' in architecture. Majority of scholars from UC (92.1%), and CUSAT (50.26%) were very much dissatisfied with library architecture, as they marked 'very poor' about it. Majority of scholars from UK (76.8%) and MGU (56.4) found this attribute 'poor'. Since restructuring of the entire building is beyond the capacity of university libraries, they can change their interior more attractive.

6.8.5 Reading Atmosphere

The research scholars' outlook on comfortable physical environment and noise level were inquired and it is presented in Figure 6.13.

Fig.6.13 University Wise Opinion on Reading Atmosphere



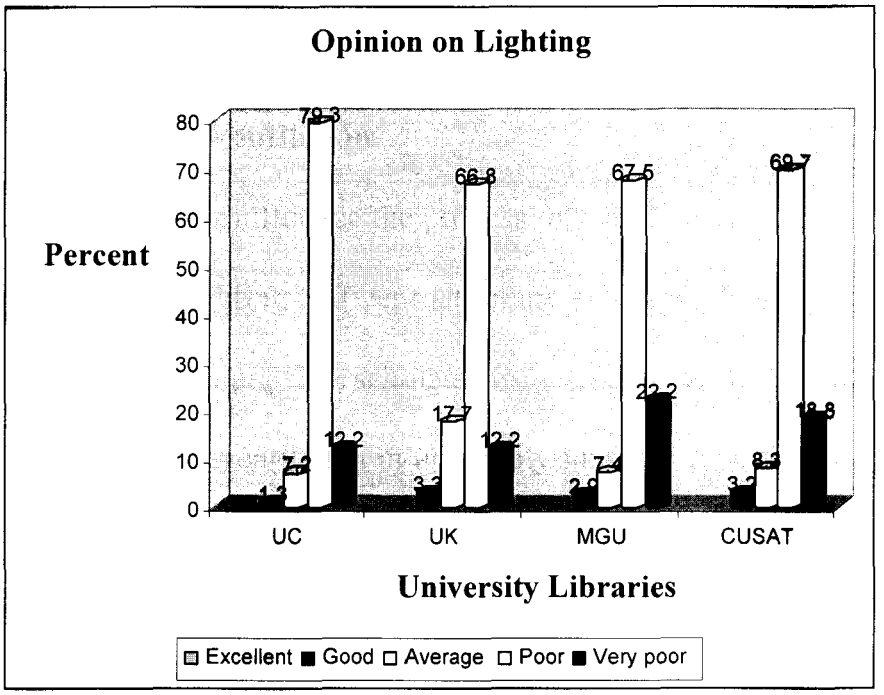
Research scholars from the all university libraries were of the same opinion that reading atmosphere in their libraries was not satisfactory. The

Figure 6.13 shows that 73.6 percent of scholars from UC, 56.8 percent from UK, 61.4 percent from MGU and 67.5 percent from CUSAT marked 'poor' about this attribute.

6. 8.6 Lighting and Ventilation

So many factors influence the process of searching, reading and learning in a library. Proper lighting and ventilation are essential elements that enhance the quality of learning. The scholars were asked to mark their opinion regarding lighting and ventilation in university libraries. The Figure 6.14 shows university wise analysis of lighting.

Fig. 6.14 University Wise Opinion on Lighting and Ventilation



From the Figure 6.14 it is seen that the scholars from all universities were dissatisfied with the lighting and ventilation of their university libraries. The majority of scholars from all universities marked 'poor' about it.

6.8.7 Competence of Library Staff

The Table 6.63 represents data on the competency of library staff as perceived by the research scholars.

Table 6.63 University Wise Opinion on Competence of Staff

University Library		Opinion on Competence of Staff					Total
		Excellent	Good	Average	Poor	Very Poor	
UC	Count	6	13	18	12	1	50
	%	12.0%	26.0%	36.0%	24.0%	2.0%	100.0%
UK	Count	5	20	18	2	5	50
	%	10.0%	40.0%	36.0%	4.0%	10.0%	100.0%
MGU	Count	1	20	29			50
	%	2.0%	40.0%	58.0%			100.0%
CUSAT	Count	16	22	9	2	1	50
	%	32.0%	44.0%	18.0%	4.0%	2.0%	100.0%
Total	Count	28	75	74	16	7	200
	%	14.0%	37.5%	37.0%	8.0%	3.5%	100.0%

From the Table 6.63 it is clear that the scholars were satisfied with the competency of library staff. University wise analysis of data shows that 40 percent of the respondents each in UK and MGU and 44 percent of the respondents in CUSAT marked 'good' about the competency of library staff. However, the scholars in UC were not much satisfied with that as majority of them (36%) indicated 'average' about this aspect. Chi-Square test proved that (Chi-Square value = 61.215, df = 12, p-value = .000) there is significant

association between competence of staff and university. Competence of staff varies from university to university.

6.8.8 Customer Friendliness of Staff

Table 6.64 shows users opinion on the costumer friendliness of staffs in the university libraries in Kerala. As a service institution, behavior of staffs has a significant role in library usage.

Table 6.64 University Wise Opinion on Customer Friendliness of Staff

University		Opinion on Costumer Friendliness of Staff					Total
		Excellent	Good	Average	Poor	Very Poor	
UC	Count	2	13	18	11	6	50
	%	4.0%	26.0%	36.0%	22.0%	12.0%	100.0%
UK	Count	13	17	17	3		50
	%	26.0%	34.0%	34.0%	6.0%		100.0%
MGU	Count	4	13	28	1	4	50
	%	8.0%	26.0%	56.0%	2.0%	8.0%	100.0%
CUSAT	Count	18	15	14			47
	%	38.3%	31.9%	29.8%			100.0%
Total	Count	37	58	77	15	10	197
	%	18.8%	29.4%	39.1%	7.6%	5.1%	100.0%

From Table 6.64 it is clear that the scholars were not much satisfied about the customer friendliness of the university library professionals except in CUSAT. Majority of scholars from UC (36%), UK (34%) and MGU (56%) marked 'average' about it. The library professionals in CUSAT were more

customer friendly as the majority (38.3%) of scholars marked 'excellent' and 31.9 percent 'good' about this attribute.

Chi-Square test proved that there is significant association between university libraries and the response of scholars on the Customer friendliness of Staff (Chi-Square value = 55.732, df = 12, p-value = .000). It is concluded that customer friendliness of staff vary from university to university. High-level satisfaction is found in CUSAT library and low level in UC.

REFERENCES

1. Hiller, Steve. "The Impact of Information Technology and Online Library Resources on Research, Teaching and Library Use at the University of Washington." Performance Measurement Metrics 3.3(2002):134-139.

ROLE OF UNIVERSITY LIBRARIES IN RESEARCH IN KERALA: A CASE STUDY

Thesis Submitted to the University of Calicut
for the Degree of

DOCTOR OF PHILOSOPHY

in

LIBRARY AND INFORMATION SCIENCE

By

SHEEJA N.K.

Under the Supervision of
Dr. JALAJA V.

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
UNIVERSITY OF CALICUT
KERALA
2007

Chapter 7

SUMMERY, CONCLUSION AND SUGGESTIONS

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The study attempted to map the existing status of resources and services in the four university libraries in Kerala. The focus of the study was to examine the research support potential of university libraries. The investigation was mainly based on two premises, the response of the actual users and the information from actual supporters supplemented by personal visit and verification. The study was carried out to examine the role of university libraries in research in Kerala because it is an important area where few studies were made. Librarians recognise the value of knowledge as a resource in supporting almost all human activities in one way or other. They not only collect process and organise knowledge in libraries but also take active part in the process of knowledge creation through research in academic and other settings. Their role is ever increasing in the knowledge society.

This chapter gives the findings, conclusions, recommendations for the improvement of library and information services in university libraries in Kerala and suggestions for further research.

7.1 Findings of the Study

The major findings of the study on the four university libraries in Kerala have been described below:

1. The university libraries in Kerala are hybrid type of libraries in terms of physical formats of resources having dominance of print resources. The

major share of electronic resources comes from UGC Infonet e-journal consortium.

2. The availability of Journals in university libraries in Kerala is just adequate to meet the information needs of research scholars. University library wise difference is significant. Low-level satisfaction for journals is found in MGU library and high-level satisfaction is found in CUSAT library. University libraries in Kerala subscribe to an average 270 journal titles.

3. Research discipline wise difference is significant in the case of journal collection. Social science research scholars are more satisfied with journal collection than science research scholars.

4. The research support of university libraries in Kerala is average with regard to the provision of Theses collection. Research discipline wise difference is not significant in the case of Theses.

5. The university libraries in Kerala do not have adequate Research Reports collection. University library wise difference is significant. Low-level satisfaction for research reports is perceived against MGU library. Research discipline wise difference is not significant.

6. The Patents collection is limited in University libraries in Kerala except in CUSAT library. Science research scholars and social science research scholars are significantly differ in their satisfaction on the patent collection. Science research scholars are more dissatisfied than social science.

7. The research support through the provision of Abstracting periodicals in university libraries in Kerala is average. It is applicable to both science and social science disciplines. University library wise difference is significant. Abstracting journal services is adequate in UK library.

8. University libraries in Kerala have inadequate Index collection for information search by scholars. There is no significant difference among universities. Discipline wise difference is significant. Science scholars are more dissatisfied than social science research scholars.

9. All university libraries possess a good collection of Reference books that supports the research scholars. University wise difference is significant. High-level satisfaction is found in UK library, the largest university library in terms of book collection. Research discipline wise difference is also significant. Social science scholars are more satisfied than science scholars.

10. The university libraries in Kerala possess a good collection of Subject books that facilitate research work. There is no significant difference among universities. Research discipline wise difference is significant. Social science scholars are more satisfied than science scholars.

11. The university libraries in Kerala provide extensive access to E-journals. University wise difference is significant. The satisfaction level of E-journals is highest in UK library and lowest in UC library. Research discipline wise difference is not significant. Scholars from both disciplines are satisfied with E-journal collection.

12. The accessibility of Bibliographic databases in university libraries in Kerala is just adequate to meet the information needs of research scholars. University library wise difference is significant. Low-level satisfaction is reported against MGU library. Research discipline wise difference is also significant. Social science scholars are more dissatisfied than science scholars.

13. The CD-ROM collections in university libraries are average to meet the information requirements of research scholars. University wise difference is significant. The level of dissatisfaction is high in UK, UC and CUSAT libraries. Research discipline wise difference is not significant. Both science and social science scholars are dissatisfied with CD-ROM collection.

14. The book collection is up-to-date in university libraries in Kerala. University wise difference is significant. High-level and low level satisfaction is marked against CUSAT library and MGU library respectively. Research discipline wise difference is also significant. Social science scholars are more satisfied than Science scholars.

15. Personalised services are not prominent among university libraries in Kerala. Only half of the university libraries (MGU and CUSAT) offer SDI service and that too is not upto the standard. University library wise difference is significant. CUSAT library's SDI service is perceived better than that of MGU library.

16. Of four university libraries studied, only two libraries in Kerala (MGU and CUSAT) offer CAS. University wise difference is significant. The MGU library provides it more effectively than CUSAT.

17. All the university libraries offer facilities for Internet search to the Research scholars with varying speed of 256 Kbps to 2Mbps. The opinion of research scholars on Internet search service vary from university to university. High-level satisfaction is found in CUSAT.

18. All the university libraries offer E-journal search and retrieval facilities. University wise difference on E-journal search facility is significant. High-level satisfaction is found in CUSAT and MGU library and low-level satisfaction is shown against UC library.

19. University libraries in Kerala subscribe to less number of bibliographic databases for information search. Bibliographic database search and retrieval service vary from university to university. High-level satisfaction is found at CUSAT library and low-level at UC library.

20. CD-ROM networking facility is offered by all university libraries in Kerala except by UK library. The level of satisfaction on CD-ROM search facility is varying from university to university. High-level dissatisfaction is found in UK library. Compared to UC library, dissatisfaction level is less in CUSAT and MGU library.

21. University libraries in Kerala extensively use Internet and Web for new addition alert service. University wise difference for new addition alert service is found significant. High-level satisfaction is found in CUSAT library and low level in MGU and UK libraries.

22. Document delivery service is not available in half of the university libraries in Kerala (UK library and UC library). The opinions of research scholars on document delivery services vary from university to university. The performance of MGU library is much better than that of CUSAT. Document delivery service is provided in association with the INFLIBNET and DELNET.

23. Inter library loan service offered by the university libraries are not up to the level. University library wise difference is significant. High-level dissatisfaction is seen at UK library. However, MGU library's performance is noticeable.

24. All university libraries offer reprographic services at a satisfactory level to the research scholars. University wise difference is significant. Scholars from MGU are more satisfied compared to that of other universities.

25. Half of the universities (UK and CUSAT) offered bibliographic compilation service at a reasonable level. University library wise difference is significant. High level satisfaction is found in CUSAT library and low level in MGU library.

26. Lending service of university libraries is satisfactory. University library wise difference is significant. High-level satisfaction is shown towards MGU library and low-level towards UC library.

27. Research scholars are satisfied with the reservation facilities offered by the university libraries. University wise difference in reservation facility is significant. Scholars from UK and CUSAT are more satisfied than scholars from UC and MGU.

28. The arrangement of books on shelves by the university libraries is found helpful by scholars for searching and selecting documents. University wise difference is significant. High-level satisfaction is found in CUSAT and UC.

29. The Cataloguing system followed by the university libraries is easy to locate documents. Online Public Access Catalogues provided by the university libraries are very useful to scholars for speedy search of holdings. University level difference is significant. High-level satisfaction is found in CUSAT library and low-level in UC library. Only one university library (CUSAT library) offers Web enabled OPAC.

30. The opinions of research scholars on sufficient number of library tickets vary from university to university. The number of Borrowers Tickets issued to research scholars in university libraries in Kerala is insufficient except in UK library.

31. University libraries in Kerala are not providing user education programmes to research scholars. Scholars from all universities demand user education programmes to understand the services and resources better.

32. Majority of the university libraries in Kerala does not invite or incorporate the suggestions of research scholars for documents selection process.

33. The availability of computers, printers and scanners for the use of scholars is just adequate. The level of dissatisfaction is different from university to university.

34. The existing reading area in university libraries in Kerala is inadequate for study and reference. No university offers cubicles for research scholars.

35. Research scholars are satisfied with the present working time of their university libraries. Of four libraries studied, three libraries keep open 12 hours a day on normal working days.

36. University library buildings are not attractive and inviting. University library wise difference is less significant.

37. The scholars found the library environment not favorable for reading and learning.

38. University libraries in Kerala are provided with poor lighting and ventilation.

39. University libraries in Kerala have qualified staff for delivering information services to research scholars.

40. University library professionals are characterized with average customer friendliness.

41. The majority of the research scholars used the libraries five days a week and three hours a day. The scholars mainly used the libraries for accessing electronic resources. Majority of them used other libraries in the state especially the special libraries. The scholars frequently visited the library websites for accessing and updating information for research.

7.2 Tenability of Hypotheses

The first hypothesis stated that 'Science research scholars and social science research scholars are similar in their satisfaction on primary sources available in university libraries in Kerala'.

The hypothesis is tested on four primary sources; journals, theses, research reports and patents. Of the four primary sources examined, science research scholars and social science research scholars differ in their satisfaction with two primary resource (journals and patents) and they are similar in their satisfaction with the other two primary sources (thesis and research reports). Therefore, the hypothesis-I is accepted in the case of theses and research reports and rejected in the case of journals and patents. Hence the first hypothesis 'Science research scholars and social science research scholars are similar in their satisfaction of primary sources available in university libraries

in Kerala' is partially substantiated. The findings numbers 3 to 6 have confirmed the tenability of hypotheses.

The second hypothesis stated that 'Research scholars of science and social science differ in their satisfaction on the adequacy of electronic sources' The hypothesis was tested on three electronic resources: E-journals, Bibliographic databases and CD-ROMs. Of the three primary sources examined, hypothesis II is proved only in the case of bibliographic databases. In the case of E-journals and CD-ROM, the hypothesis is rejected. Hence, the hypothesis II is not fully substantiated. The findings numbers 11 to 13 confirmed the tenability of hypothesis.

The third hypothesis stated that 'The level of satisfaction of research scholars on personalised services provided by the university libraries in Kerala differs from university to university'. The hypothesis was tested on two personalised services (SDI and CAS). It was proved that there is significant difference in the level of satisfaction of research scholars on personalised services. Hence, the hypothesis 3 is fully substantiated. The hypothesis has been proved by the findings numbers 15 and 16.

The fourth hypothesis stated that 'The effectiveness of Internet based services varies from university to university'. The hypothesis was tested on four Internet based services: Internet search, Bibliographic database, E-journal access and CD-ROM search. On the four services, p-value is less than significant level hence the hypothesis is fully substantiated. Findings number 17 to 20 has proved the hypothesis.

7.3 Conclusion

The investigation for understanding the role of university libraries in research in Kerala revealed that the organisation of resources and services in university libraries is not fully oriented towards supporting the process of research. Though the individual performance of libraries in some areas reflects the research mission of the university, they are not directed to the ultimate function of supporting research in the parent organisation by supplying high quality material through advanced forms of information services.

The book collection in university libraries in Kerala is not up-to-date in science subject fields. The submission of research scholars is not incorporated in the procedure for selection of documents. The availability of primary sources that are essential for research scholars found to be very less in number in all university libraries in Kerala. The secondary sources both in print and electronic forms are inadequate in the libraries. The UGC Infonet E-journal consortium based online journal access is the most remarkable service found in the libraries. No university library subscribes to any full text database. The major factor that affects the building up of an adequate collection is low library budget. The university libraries are not investing much on personalised services that connect the world of resources with the world of users.

Information services offered by the university libraries are at a minimum level. There are limited facilities for accessing electronic resources and web-based services in university libraries. It is evident from the less number of computer systems and accessories devoted to the purpose. Only one university

library offers web based OPAC. The university libraries are not providing user education programmes for imparting the skills to users for searching, selecting retrieving and using relevant documents by themselves.

The university libraries are lacking sufficient reading area to accommodate more users at a time. They are backward in matters of proper lighting and ventilation. Moreover, they are not structurally attractive.

Coming to the human resource, the university libraries lack sufficient number of professionals for planning and organizing information services. Though the existing staff is competent, they are not customer friendly.

Though the principle function of all universities is research and innovation in various fields of knowledge, the university libraries are not working accordingly. The satisfaction level of existing services and facilities may be positive in some cases, but there is absence of creative librarianship in the university libraries.

7.4 Implications, Suggestions and Recommendations

The study attempted to survey the four university libraries in Kerala to understand their strength and weakness in supporting the research function of universities. However, the findings of the survey can be generalised. The findings suggest that university libraries in Kerala have not organised their services and resources in a research-oriented line. In the light of the observations and findings of the study, the investigator would like to put forward the following recommendations that would help the libraries support research and leaning carried out in universities in an effective way.

1. Provide comfortable physical environment by adding more reading space and separate seating facility for supporting undisturbed study and learning.

2. The collection of reading materials must reflect the current development in all subject fields.

3. Formulate sound collection development policy for online information sources and acquire such sources for accessing more literature by the scholars. Changes can be made in the collection development policies at time to time

4. Achieve bibliographical control of all types of materials and provide web enabled catalogues for anytime anywhere retrieval of holdings.

5. Prepare article database of current and back issues of journals for speedy search for literature.

6. Provide user ID enabled service for remote access of full-text and bibliographic databases.

7. Provide more computer workstations and network ports and outlets for portable computers

8. Introduce computer-assisted instructional packages, handouts and quick guides for enhancing the users' skill for effective searching and retrieval. Conduct workshops and orientation programmes for research scholars when new services and resources are incorporated.

9. Implement reference service on different platforms to provide remote assistance to research scholars. Libraries can accomplish this through telephone, reference, Internet chat, and e-mail.

10. Enhance the facilities of interlibrary loan and introduce document delivery services

11. The library may be kept open for long hours in the night to facilitate continuous reading and learning.

12. There is need for introducing web based information services to keep research scholars up-to-date with latest knowledge in their area.

13. There is need for improving the facilities for Internet access in university libraries. The application of technologies like Wi-Fi can be introduced in the library building for enabling wireless connectivity to the web and web based services.

14. Initiatives for building institutional repositories can be encouraged so that the knowledge created in a University can be preserved and made accessible to users.

15. Digitization programmes may be initiated for the convenient use of documents.

16. Creation of digital libraries, a library in which a significant proportion of the resources are available in machine-readable format, shall be encouraged.

17. Implementation of self-issue and return mechanisms shall be implemented for helping scholars save time.

18. Formulate policies to preserve digital materials. Libraries shall create digital archives, a system designed for locating, storing, and providing access to digital materials.

19. Implement Radio Frequency Identification (RFID) technology to control the movements of documents effectively and save the time of staff who can focus their time on the varied needs of patrons.

20. Formulate policies for creating digital thesis for easy access and retrieval of thesis collection of universities.

21. Document delivery methods can be extended to international level so that the scholars can save their money and time.

22. Conduct user surveys among the users at regular intervals to find out various aspects of library use and to evaluate the quality of library services.

23. A state level consortium of special libraries and university libraries can be achieved so that the research scholars are able to use the documents of different libraries.

The role of university libraries in research is so relevant in the modern era. The arrival of information sources in various formats and new features of delivering information are adding new roles and responsibilities for the university libraries. Libraries have always been in the forefront for adapting

change. It is really a growing organism. The university libraries in Kerala must be able to bring this philosophy to their environment despite constrains of financial, technical and personnel limitations. University libraries have an important role in the knowledge society.

7.5 Suggestions for Further Research

Investigator feels that further studies can be conducted on individual university libraries in the State for drawing more information that is specific on a system. The role of public and special libraries in research can also be examined as many scholars pointed out that they used the services of other libraries for obtaining literature relevant for their study. Comparative studies of university libraries in the country and those libraries abroad can be made to understand the status of our libraries in the age of globalization.

ROLE OF UNIVERSITY LIBRARIES IN RESEARCH IN KERALA: A CASE STUDY

Thesis Submitted to the University of Calicut
for the Degree of

DOCTOR OF PHILOSOPHY

in

LIBRARY AND INFORMATION SCIENCE

By

SHEEJA N.K.

Under the Supervision of
Dr. JALAJA V.

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
UNIVERSITY OF CALICUT
KERALA
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BIBLIOGRAPHY

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Abifarain, Abimbala. "Information Seeking Behavior of Agricultural Students in Nigerian Universities." Journal of Library and Information Science 19.20 (1994): 140-147.

Agrawal, Anil, and Chakraborty, K. "Information Use Pattern of Earth Science Scholars of Banarus Hindu University." IJLIS 8.3-4 (1995): 219-227.

Ahmed, S.S. "Managing Change to Enhance Web-based Services in the Arabian Gulf Libraries" Online Information Review 26.4 (2002): 265-270.

Amekuedee, J.O. "An Evaluation of Library Automation in Some Ghanaian University Libraries." Electronic Library 23.4 (2005): 442-452.

Ammini, V.K. "Information Needs of the Students of Ship Technology, Cochin University of Science and Technology, Cochin: A.Survey." International Library Movement 23.2 (2001): 77-84.

Amusa, O.I., and Adekunnisi S.R. "Collection Development Practices in a Nigerian Third Generation University Library." Library Herald 4.1 (2003): 38-49.

Ani, O.E., Esin, J.E., and Edem, N. "Adoption of Information and Communication Technology (ICT) in Academic Libraries: A Strategy

for Library Networking in Nigeria" Electronic Library 23.6 (2005): 701-708.

Asemi, Asefeh. "Familiarity and Use by the Students' of Digital Resources Available in the Academic Libraries of Medical Science University of Isfahan (MUI), Iran". Proceedings of the Third International CALIBER, 2-4, 2005: Multilingual Computing and Information Management in Networked Digital Environment. Ed. T.A.V. Murthy et al. Ahmedabad: INFLIBNET Centre, 2005. 648- 657.

Ashoor, Mohammed Saleh. "Evaluation of the Collections of Saudi University Libraries Based on ACRL Standards." Information and Library Review 24.1 (1992): 3-14.

Association of American Universities. 2006 Association of American Universities October16 2006. <http://www.aau.edu/resuniv/SocContr.html>.

Australian Subject Gateways Forum. 2006. Australian Subject Gateways Forum. October 24 2006 < http://www.nla.gov.au/initiatives/sg>.

Best, John W. and Khan, James V. Research in Education.7th ed. New Delhi: Prentice- Hall of India, 1995.

Biradar, B.S., and Sampath Kumar, B.T. "Periodicals Use Pattern by Teachers, Research Scholars of Kuvempu University: A Case Study." SRELS Journal of Information Management 37.4 (2000): 301-314.

Boakye, Joseph. "Users' Awareness and Use of Science and Technology Collections at the University of Science and Technology (UST) Libraries." Journal of Librarianship and Information Science 31.4 (1999): 204-211.

Buck, Paul. Libraries and Universities. Cambridge: Harvard University Press, 1964.

Burns, Robert B. Introduction to Research Methods. 2nd ed. Melbourne: Langman Cheshirey, 1994.

Bushan, Ved. "User's Survey of IIT (Delhi) Library." Annals of Library Science and Documentation 19.4 (1972): 194-199.

Cao Yi "The Reorientation of Libraries in the Knowledge Economy Era". Library Work and Research 6 (1999): 17-19.

Chataway, J. and Wield, D. "Industrialization, Innovation and Development: What Does Knowledge Management Change?." Journal of International Development 12 (2000): 803–824.

Chaya Devi, V. "Attitude of the End User's towards On-line Information Retrieval: A Case Study of NSDRC Library Vishakapatanam." Annals of Library Science and Documentation 44.1 (1997): 18-311.

Cholin, Veeranna S. "Study of the Application of Information Technology for Effective Access to Resources in Indian University Libraries." The International Information & Library Review 37(2005): 189–197.

Crawford, John C., and Daye, Andrew. "A survey of the Use of Electronic Services at Glasgow Caledonian University Library." The Electronic Library 18.4 (2000): 255- 265.

Decor, Sunday K. "Attitude and Perceptions of Student Patrons." International Library Review 21.4 (1989): 373-386.

Detlor and Lewis, Vivian. "Academic Library Websites: Current Practice and Future Directions." The Journal of Academic Librarianship 32.3 (2006): 251-258.

Devi, A.S., and Lahiri Ramansu. "Information Seeking Behavior of the Agricultural Scientists in Manipur." Indian Journal of Information Library and Society 10.1-2 (1997): 78-86.

Devarajan, G. User Approach to Information in Libraries. New Delhi: ESS ESS, 1989.

Doaj.com. 2006. Directory of Open Access Journals. 14 December 2006 <http://www.doaj.org/>

Drucker, Peter F. The Post capitalism society. Oxford: Butterworth Heinemann, 1993.

Dulle, F.W. et al. "Application of Information Technology for Researchers in Tanzania: A Feed Back From Agricultural Researchers." Journal of Information Science 28.2 (2002): 157-162.

Edward, Owusu-Ansah K. "The Academic Library in the Enterprise of Colleges and Universities: Toward a New Paradigm." The Journal of Academic Librarianship 27.4 (2001): 282–294.

Erens, Bob. "How Recent Developments in University Libraries Affect Research." Library Management 17.8 (1996): 5–16.

Gelles, Richard and Levine, Ann. Sociology: An Introduction. 6th ed. Boston: McGraw- Hill, 1999.

Goodall, Amanda H. "Should Top Universities be Led by Top Researchers and are They? a Citation Analysis." Journal of Documentation 62.3 (2006): 388-411.

Gopal Reddy and Pulla Reddy, V. "User's Survey of Kendriya Sanskrit Vidyapeetha Library: A Case Study." Indian Journal of Information Library and Society 2.3-4 (1989): 244-256.

Grinnell, Richard. ed. Social Work, Research and Evaluation. 4th ed. Illinoise: F.E Peacock, 1993.

Herman, Eti. "End-users in Academia: Meeting the Information Needs of University Researchers in an Electronic Age". Part 1 Aslib Proceedings 53.9 (2001): 387-401.

---"End-users in Academia: Meeting the Information Needs of University Researchers in an Electronic Age Part 2 Innovative Information-Accessing Opportunities and the Researcher: User Acceptance of IT – Based Information Resources in Academia". Aslib Proceedings 53.10 (2001): 431-457.

Hiller, Steve. "The Impact of Information Technology and Online Library Resources on Research, Teaching and Library Use at the University of Washington." Performance Measurement Metrics 3.3(2002):134-139.

Ho, Jeannette, and Crowley, Gwyneth, H. "User Perceptions of the Reliability of Library Services at Texas A&M University: A Focus Group Study." The Journal of Academic Librarianship 29. 2 (2003): 82–87.

Inamdar, N.B. and Ramaiah, L.S. eds. National Policy for University Libraries in India. New Delhi: Concept, 1989.

India, Education Commission 1948. Report 1949, Vol.1. Delhi: Manager of Publications, 1950.

Grinnell, Richard. ed. Social Work, Research and Evaluation. 4th ed. Illinoise: F.E Peacock, 1993.

Herman, Eti. "End-users in Academia: Meeting the Information Needs of University Researchers in an Electronic Age". Part 1 Aslib Proceedings 53.9 (2001): 387-401.

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Hiller, Steve. "The Impact of Information Technology and Online Library Resources on Research, Teaching and Library Use at the University of Washington." Performance Measurement Metrics 3.3(2002):134-139.

Ho, Jeannette, and Crowley, Gwyneth, H. "User Perceptions of the Reliability of Library Services at Texas A&M University: A Focus Group Study." The Journal of Academic Librarianship 29. 2 (2003): 82–87.

Inamdar, N.B. and Ramaiah, L.S. eds. National Policy for University Libraries in India. New Delhi: Concept, 1989.

India, Education Commission 1948. Report 1949, Vol.1. Delhi: Manager of Publications, 1950.

India, Education Commission 1964 Report 1966 Delhi: Ministry of Education, Govt.of India, 1966.

Jankowska, Maria Anna. "Identifying University Professors' Information Needs in the Challenging Environment of Information and Communication Technologies." The Journal of Academic Librarianship 30.1 (2004): 51–66.

Jasmer Singh and Hari Singh. "Needs and Expectations from a University Library." Indian Journal of Information Library and Society 66.3-4 (1993): 193- 230.

Jhon, Jessy. "Information Needs, Use Pattern and Use Behavior of Social Science Researchers." Indian Journal of Library and Society 10.1-2 (1997): 78-86.

Kale, R.K. "Higher Education and Development of the Nation." University News 44.33 (2006): 1-11.

Kanungo, Neena Talwar. "Methods of Searching Information by Women Research Scholars in History and Political Science: A Case Study of University of Delhi and Jawahar Lal Nehru University." Library Herald 35.1-2 (1997): 37-43.

Kaur, Amritpal, and Nandan, Naresh. "Impact of IT and University Libraries: A Case Study of Bhai Gurudas Library, Guru Nanak Dev University, Amritsar." Library Herald 38.1 (2000): 124-128.

Kawatra, P.S. "Attitude of Research Scholars towards the Resources and Services of University Libraries in Rajasthan: A Study." Annals of Library scienceand Documentation 35.4 (1988): 17-25.

Kerala.gov.in. 2006. Government of Kerala. 4 October 2006 <http://www.kerala.gov.in/>

Kerala university.edu.2006. University of Kerala. 12 October 2006. <http://keralauniversity.edu>

Kent, Allen and Lancour, Harold ed. Encyclopedia of library and information science Vol. 4. New York: Marcel Dekker, 1970.

Krishan Kumar. "User's Survey Concerning Teachers and Research scholars in the Department of Chemistry, University of Delhi." Annals of Library Science 15.4 (1968): 175-207.

Kumar, Ranjit Research Methodology: A Step by Step Guide for Beginners 2nd ed. Delhi: Dorling Kindersley, 2005.

Lahiri, Ramansu. "A Study on the Users of a University Library." IASLIC Bulletin 33.2-3 (1988): 81-91.

Leeds University Library "How Can We Improve Library Services for You: Staff and Researchers' Satisfaction Survey Report 2004" 12 Dec 2006http://www.leeds.ac.uk/library/survey/2004report04pdf

Line, Maurice B. "Students Attitude to the University Library: A Survey of Southampton University." Journal of Documentation 19.3 (1963): 100 - 135.

Line, Maurice B. "Students Attitude to the University library: A Second Survey of Southampton University." Journal of Documentation 22.2 (1966): 123-125.

Lombardo, Shawn V., and Miree, Cynthia E. "Caught in the Web: The Impact of Library Instruction on Business Students' Perceptions and Useof Print and Online Resources." College & Research Libraries 64.1 (2003): 6-21.

L'o'nnqvist, Harriet. "Scholars Seek Information: Information Seeking Behavior and Information Needs of Humanities Scholar's." International Journal of Information and Library Research 2.3 (1990): 195-204.

Maheswarappa, B.S., and Hosamani, H.G. "The Awareness and Usefulness of Information Services of NASSDOC, New Delhi, and Among Indian Social Scientists in a University Environment." ILA Bulletin 41.4 (1996): 167-172.

Maheswarappa, B.S., and Havanur, Bagyashree, K. "Use of Information Sources Versus the Personal Attributes of Biological Scientists in a University Environment in India." Annals of Library Science and Documentation 45.3 (1998): 85-105.

Mallaiah, T.Y., and Badami K.K. "Library and Information Service Facilities in Mangalore University form Research Scholar's Point of View: A Survey". Annals of Library Science and Documentation 40.4 (1993): 155-165.

Mallaiah, T.Y., and Sumangala, K.S. "Library and Information Service Facilities in Mangalore University Library Postgraduate Students Point of View: A Survey." Indian Journal of Information, Library and Society 12.3 (1999): 198-213.

Marghalani, Mohammed Amin., and Hafez, Abdul Rashid. "Online Search Service in the King Abdul Aziz University Library, Jeddah, Saudi Arabia." International Information and Library Review 25.1 (1993): 27-41.

Mgaywa, Robert M. "The Use of Foreign Language Journals by Social Science Faculty of the University of Dar-es- Salam." International Library Movement 15.1 (1993): 26-32.

Monopoli, Maria et al. "A User Oriented Evaluation of Digital Libraries: Case Study of the Electronic Journals Service of the Library and Information

Service of the University of Patras, Greece." Aslib Proceedings 54.2 (2002): 103-117.

Moor, Nick. How to do research. London: Library Association, 1983.

Morris, Sally. "Open Access: How Are Publishers Reacting?." Serials Review 30.4 (2004): 304–307.

Murthy T.A.V., et al. "UGC-Infonet: E-journals Consortium an Indian Model-Bridging the Gap Between Scholarly Information and End User". Proceedings of the Third International CALIBER, 2-4, 2005: Multilingual Computing and Information Management in Networked Digital Environment. Ed. T.A.V. Murthy et al. Ahmedabad: INFLIBNET Centre, 2005. 658-667.

Mutula, Stephen M. "The IT Environment in Kenya: Implications for Libraries in Public Universities" Library Hi-Tech 19.2 (2001): 155-166.

Noushad Ali, P.M. and Hasan, Md Ehsan. "The Use of Electronic Services at IIT library Delhi: A Case Study of User's Opinion." IASLIC Bulletin 48.2 (2003): 71-82.

Olankun, Simenon Olajire. "A Survey of the Attitudes of Nigerian University Faculty, Students, and Librarians towards Library Policy, Use and Service." Dissertation Abstracts International 44.4 (1983): 900A.

Onadiran, G.T., and Onadiran, R.W. "Nigerian University Library Services Students Opinion." Journal of Library and Information Science 11.1 (1986): 45-60.

Pangannaya, N.B., and Ramakrishna Rao, R. "Information Gathering Habits of R & D Personnel's of Selected Large Scale Industries." INICAE 12.1 (1993): 25-42.

Panwar, B.S., and Vyas, S.D. "Users Survey of the Women College Libraries." Herald of Library Science 15.1 (1976): 13-25.

Prasad, H.N., and Tripathi, Manorama. "Information Seeking Behavior of Physical Scientists and Social Scientists." Annals of Library Science and Documentation 45.2 (1998): 41-48.

Prasher, R.G. Managing University Libraries. New Delhi: Today & Tomorrow, 1991.

Prodhani, M.A., and Gautam, J.N. "Study of Current Status of University Libraries in North Eastern India." Annals of Library Science and Documentation 44.4 (1997): 126-137.

Raina, Roshan, and Dayal, Kavita. "An Analysis of Students Feed Back on the Library Utilization and Resource Evaluation at IIML" ILA Bulletin 23.3-4 (1998): 39-46.

Rajagopal, B. "User Survey of Sri Krishna Devaraya University Library." Library Herald 28.1-2 (1989): 17-25.

Rajesh, Singh. "User Survey: Findings and Suggestions." IASLIC Bulletin 42.4 (1997): 179-184.

Rajeswari, D. "Use of Information Sources in Digital Environment: a Case Study". Proceedings of the Third International CALIBER, 2-4, 2005: Multilingual Computing and Information Management in Networked Digital Environment. Ed. T.A.V. Murthy et al. Ahmedabad: INFLIBNET Centre, 2005.705-711.

Rawat, P. P. and Kumar T. ed. International Encyclopaedia of Information Technology and Library Science. Vol. 4. New Delhi: Castle Books, 1992.

Rout, R.K. "Measuring User's Satisfaction a Quantitative Model." IASLIC Bulletin 27.1 (1982): 1-8.

Saraf, Veena et al. "A Study of Relationship among Information Needs, Channels and Sources." Library Herald 35.3-4 (1998): 115-125.

Sehgal, Premchand, and Navalani, K. "Growth and Development of Punjabi University Library, Patiala." ILA Bulletin 35.3-4 (1999-2000): 46-53.

Sharma, M.M. "Scientific Research and Economic Growth." University News 44.35 (2006): 19-20.

Siddiqui, Asif Fareed. "Use of Library Collection in the JNU University Library, New Delhi." IASLIC Bulletin 46.4 (2001): 184-196.

Sills, D.R. ed International Encyclopedia of Social Sciences. New York: Macmillan, 1968.

Simon Fraser University Library "Faculty Survey Report". 12 Dec 2006 <http://www.lib.sfu.ca/about/reports/survey2003/FacultySurveyReport2003.pdf>

Singh, S.P. "Survey of IIT Library, Delhi." Library Herald 35.3-4 (1997-98): 79-114.

Somaraju, P. Role of University Libraries in Support of Research: A Case Study of Andhra University Library. Vishakapatanam: A.V. Press, 1992.

Sudharani, D.V., and Veeranjaneeulu, K. "Information Use: A Survey of the Faculty Members of Sri Padmavati Mahila Visvavidyalayam (SPMVV) Thirupathi, A.P." Indian Journal of Information Library and Society 12.3-4 (1999): 219-226.

Suku, J., and Pillai, G. Mini. "Automation of University Libraries in Kerala Status, Problems and Prospects." The Journal of Academic Librarianship 31.2 (2005): 151–159.

Surya, M. et al. "Evaluation of Collection Effectiveness in University Libraries: A Case Study." Proceedings of the Thirty-Fourth All India Library Conference, Calcutta, 1988.141-161.

Tadasad, P.G., and Meteseela, D. "Use Pattern of Information Sources by Post Graduates in a University Environment: A Case Study of Gulberga University, Gulberga." SRELS Journal of information Management 38.3 (2001): 231-254.

The Oxford English dictionary.Vol. 8. Oxford: The Clarendon Press, 1933.

The World Bank. World Development Report 1998/99: Knowledge for Development. New York: Oxford University Press, 1999.

Toffler, Alvin. Power Shift: Knowledge Wealth and Violence at the Edge of the 21st Century. London: Bantam Book, 1992.

Tumba, Joseph, and Daya, A. "Information Needs of Geologists in Maiduguri Metropolitan, Borno State, Nigeria." International Library Movement 22 .1 (2000): 39-49.

Veeranjaneyulu, K., and Ramesh, L.S.R.C.V. "Useful Information Requirements of Agricultural Scientists an Opinion Survey in Andrapredesh." Indian Journal of Information Library and Society 12.3-4 (1999): 253-261.

Wander Zanden, James. The social Experience: An Introduction to Sociology. 2nd ed. New York: McGraw-Hill, 1990.

Washington-Hoagland, Carlette and Clougherty, Leo. "Faculty and Staff Use of Academic Library Resources and Services: A University of Iowa Libraries Perspective." Libraries and the Academy 2.4 (2002): 627–646.

Webster's Third New International Dictionary of the English Language and Seven Languages. Vol. 2. Chicago: Encyclopedia Inc., 1768.

Wolpert, A. "Services to Remote Users: Marketing the Library Role". Library Trends 47.1(1998): 21-41.

Zehery, M.H. "University Library Development in the Arab Gulf Region: A Survey and Analysis of Six State University Libraries." The International Information & Library Review 29.1 (1997): 13-44.

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APPENDICES

APPENDIX-I
INTERVIEW SCHEDULE
FOR UNIVERSITY LIBRARIANS

I. General Information

1. Name of the University library _____

2. Year of establishment :

5. Library working hours : Week days:

: Holidays:

II. Collection Development and Preservation

1. What is your collection development policy?

2. How do you select materials for acquisition?

3. In what ways has the introduction of ICT affected collection development?

4. What are the strategies you adopted for maintaining a balanced collection?

5. What are the obstacles in maintaining a balanced collection?

6. What are the major changes happened in collection development process over the last five years?

7. How do you preserve the print and non-print materials?

8. How do you manage weed out and write off process?

III. Library Resources

1. Total collection of books :

2. No. journals subscribed :

3. Details of CD databases :

4. No. of E-journals subscribed :

5. Details of Online journals available through library consortia :

6. Details of Full text and bibliographic databases:

7. Total No. of Audio/ Video Cassettes :

8. Details of Multimedia reference collection :

9. Details of special collections :

IV. Library Funding

1. What are major sources of funds :

2. Has there been any change in university funding to the library over the past five years? (e.g. in methods of allocation, in methods of expenditure control, in amounts allocated)

3. Does the library generate income? Are any services maintained on a cost recovery basis? Do you generate income from selling services?

4. If yes, how is this income utilized for the development of library?

V. Human Resources

1. Total number of professional staff :

2. Details of staff structure (hierarchical) :

3. Whether the top position is vacant? : Yes/ No

4. Whether staffs are able to work with IT Enabled environment?

5. Whether there is any provision for financial assistance for attending carrier advancement programs? : YES./No

6. No. of in house training programmes conducted:

7. No. of recent events conducted by the library :

8. What necessities are lacking in the library :

VI Library Automation

1. Year of commencement of the automation :

2. Status of automation :

3. Name of the automation package using :
4. Package developed by :
5. List of house keeping activities automated : (Acquisition, Catalogue, Circulation, Maintenance, Serials control)
6. Whether there is any provision for customization? : Yes/ No
7. Name of the operating system :
8. Your level of satisfaction : (Satisfactory/ Not satisfactory)
9. Data base creation completed or not : Yes/No
10. Whether any initiatives in Union Catalogue? : Yes/No
11. Details of digital library projects : Yes/ No

VII. ICT Infrastructures

1. Whether any special facilities provided to research scholars : Yes/ No
2. Whether the Internet facility is free or fee based : Free/Fee based
3. Name of your internet service provider :
   b. Type of connectivity :
   c. Bandwidth :
4. No. of user terminals in the library for Internet, OPAC and CD ROM search : Internet:
   CD search:
   OPAC:
5. Is there a Campus LAN in your university? : Yes/ No
6. No. of Printers :
7. No. of Scanners :
9. No of Barcode scanners :
10. Number of CD Servers :

11. Is there any CD-ROM Networking facility : Yes/ No

VIII. User Population

1. No. of registered users in the University library :

a. Teachers :

b. Students :

c. Research scholars :

d. Non teaching :

e. Others (Pl specify) :

IX. Information Services

1. Name the services offered by the university library:

1. 5.

2. 6.

3. 7.

4. 8.

2. Details of lending facility :

a. Loan period :

b. Renewal details :

c. overdue charges :

3. No. of borrowers tickets issued to

a. Students :

b. Research scholars :

c. Non- teaching :

d. Teachers :

e. other members(specify) :

f. other members(specify) :

4. What are the methods used for user education ?:

X. Technical Process

1. Library classification scheme : DDC/ UDC/ CC/ other
2. Library catalogue code : AACRII/ CCC/ other
3. Availability of OPAC : Yes/ No
4. Availability of Web OPAC : Yes/ No

XI. Networking & Consortia

1. Is there any Involvements in library networking/ membership in any consortium etc. (Pl. specify) :

XII. Library Building and Environment

1. Is there any changes made structurally in the library building at time to time?
2. Is there special reading spaces provided to research scholars?
3. What is your view on existing library building?

APPENDIX-II
QUESTIONNAIRE FOR RESEARCH SCHOLARS

QUESTIONNAIRE

Sir/Madam,

You are kindly requested to assist me in collecting the following information for my study on "The Role of University Libraries in Research in Kerala: a case study", under the guidance of Dr. Jalaja.V., Reader, Department of Library and Information science, University of Calicut. I appreciate your cooperation and I assure you that the information provided shall be kept confidential.

Thanking You

Sheeja N. K.
Research Scholar,
Department of Library and Information Science
University of Calicut.

Name of the University library_____

I BIODATA

1. Name : _____

2. Age (Please (√) mark)

20-25 Years	25-30 Years
30-35 Years	Above 35

3. Gender

Male	Female

4. Department : _____

5. Experience as a user of this library : Below 1 Year | 1-2 Years | 2-3 Years | More than 4 Years

6. What is the reason behind your choosing this particular center for conducting research (Please (√) mark) : Eminent Faculty | Good Library | Eminent Faculty and library | Other Reasons

II. LIBRARY USE

1. How many hours do you spend a day in your library: .....

2. How many days you visit the library in a week : .....

3.Main purpose of your visit to the library : (Please put 1, for main reason)

- Reading journals ☐
- Borrowing books ☐
- Accessing E-journals ☐
- Accessing Internet ☐
- E-mail checking ☐
- Other purposes ☐

4. Do you depend other libraries for your study? : Yes | No

5. If so, please list name of the libraries you have used for research purpose

A._____
B_____
C_____
D_____

6. How often do you visit the university libraries Website for accessing information

- Frequently
- Occasionally
- In frequently

III. LIBRARY RESOURCES

1. Please (√) mark your opinion on the following sources of information that support your research

Resources	Excellent	Good	Average	Poor	Bad
Journals					
Theses					
Research reports					
Patents					
Abstracting periodicals					
Indexes					
Reference Books					
Books					
E-Journals					
Bibliographic databases					
CD-ROMs					

2. What is your opinion on the uptodateness of library collection : Excellent | Good | Average | Poor | Very Poor

IV LIBRARY SERVICES

Please (√) mark your opinion on the following information services provided by your library. In addition, if a particular service is not available, mention it in the appropriate box.

(Note: In the case of Internet search, E-journal search, Bibliographic database Search and CD-ROM search services speed, staff assistance, searching facilities and retrieval aspects are taken to account)

Services	NA	Excellent	Good	Average	Poor	Very poor
SDI						
Current Awareness Service (CAS)						
Internet Access						
E-journal search						
Bibliographic database Search						
CD-ROM search						
New addition alert service						
Document delivery services						
Inter library loan						
Reprographic services						
Compilation of Bibliographies						
Lending service						
Reservation facility						

V. LIBRARY TOOLS AND TECHNIQES

1. Do you find the arrangement of books on : shelves easy to locate

Extremely Easy | Easy | Average | Difficult | Very difficult

2. How do you feel about the cataloguing system: of your library

Extremely Easy | Easy | Somewhat easy | Difficult | Very Difficult

3. How do you feel about the OPAC :

Extremely Useful | Useful | Some what useful | Not useful | Not at all useful

4. Do you get sufficient number of library tickets : to borrow books

Yes | No

5. Do you have any voice in the document selection procedure :

Yes | No

6. Do you get any user education programme to you? :

Yes | No

7. If no, do you need that service? :

Yes | No

VI. FACILITIES

Please (√) mark your opinions towards facilities available in your university library and assess the staff support.

Facilities	Excellent	Good	Average	Poor	Very poor
IT based infrastructures (Computers, printers and scanners)					
Reading area					
Reading atmosphere					
Library architecture					
Library timings					
Lighting and Ventilation					
Competence of library staff					
Competence of library staff					

VII. SUGGESTIONS

1. Please, write your suggestions for the improvement of the library services.