INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) SKILLS AMONG THE LIS PROFESSIONALS WORKING IN SPECIAL LIBRARIES IN KARNATAKA.AN EVALUATIVE STUDY

A Thesis submitted to the Kuvempu University in partial fulfillment of Requirement for the Award of the Degree of Doctor of Philosophy in Library and Information Science

By

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CERTIFICATE

I certify that the work presented in the thesis entitled **"INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) SKILLS AMONG THE LIS PROFESSIONALS WORKING IN SPECIAL LIBRARIES IN KARNATAKA".AN EVALUATIVE STUDY.** embodies the results of bonafide research work carried out by **Mr.Ravi.K.B** submitted to the School of Physical Sciences, Kuvempu University for the award of the degree of Doctor of Philosophy in Library and Information Science under my supervision and guidance in the Department of PG Studies and Research in Library and Information Science, Kuvempu University, Jnana Sahyadri–577451, Shimoga.

I further certify that this thesis or part thereof has not been previously formed the basis of the award of any degree, associationship, fellowship etc., of any other university or Institute.

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DECLARATION

I hereby declare that the work presented in the thesis entitled **"INFORMATION AND COMMUNICATION TECHNOLOGY(ICT) SKILLS AMONG LIBRARY AND INFORMATION SCIENCE PROFESSIONALS WORKING IN SPECIAL LIBRARIES IN KARNATAKA"** submitted to the School of Physical Sciences, Kuvempu University for the award of the degree of Doctor of Philosophy in Library and Information Science is the bonafide result of the research work carried out by me in the Department of PG Studies and Research in Library and Information Science, Kuvempu University under the guidance of **Dr. B U Kannappanavar, Librarian, Sahyadri Arts College, Shimoga – 577203.**

I further declare that this thesis or part thereof has not been previously formed the basis of the award of any degree, associationship, fellowship etc., of any other University or Institute.

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ACKNOWLEDGEMENT

The successful completion of any task would be incomplete without acknowledging the person(s), who have been instrumental in the successful of this research work. This is my duty to place my heartfelt thanks and gratitude to their help, encouragement, constant support and intellectual influence during the course of this research work.

I dedicated this research work to my beloved parents Late Smt.Yashodamma.K.B, Mr.Basavarajappa.K.T to fulfill their dream. I am indebted to them, for teaching me all the lessons in life and particularly the lesson that I shall never cease to be a learner. No words can express the gratitude and indebtedness, which my parents and brother deserve as they did bring me up, and have always been overwhelming, supported me with their prayers. I always pray to god the Almighty to my beloved mother soul remain in peace forever.

I would not have reached my destination without the help of all those who were always besides me to pursue this unfathom able journey. Amongst them, I would first of all thank my research supervisor Dr.Kannappanavar.B.U, whose profound knowledge, divine wisdom, timely advice, stimulating suggestions, his great efforts to explain things clearly and simply, encouragement, impeccable supervision and prayers strengthened me to carry out the research work enthusiastically, smoothly and successfully. Without his knowledge, patience and support this thesis would not have taken up this form. Knowledge which I gained from him will definitely influence me rest of my life.

I am thankful to Prof. Jogan Shankar Hon'ble Vice-Chancellor, Kuvempu University, Jnana Sahyadri, Shimoga and all the authorities of the Kuvempu University for giving me an opportunity and provide facilities to complete my Ph.D work successfully.

I also express my gratitude to all the library and information science professionals working in special libraries in Karnataka State for their kind co-operation in collecting data who have responded to my Questionnaire in due course.

It is with pleasure I wish to thank Dr.B.S.Biradar, Professor and Chairman, Dr.S.Padmamma,Professor, Dr.P.Dharani Kumar, Assistant Professor and Non-teaching Staff

Members of Department of PG Studies and Research in Library and Information Science, Kuvempu University, Shimoga for their help, co-operation and encouragement.

I am indebted to my wife Mrs.Drakshayini.G.N, daughter Kampana.K.R and my relatives and friends who have patiently put up with all the inconvenience caused due to my research.

I would also pay my special thanks to my special friend Mrs.Yashodamma.A, Library Assistant, MSRIT, Bangalore, for their cooperation and moral support. There are many friends with whom I shared unforgettable memories who I cannot recall at the moment. So I pray to god to reward them abundantly.

Above all, I thank and praise the God Almighty for giving me the spirit and moral strength to complete this study.

Finally, my heartfelt thanks to all those who helped me directly or indirectly in the successful completion of my research work.

List of Tables

List of Figures

CONTENTS

5.1.14 Awareness of Library Management Software

5.1.15 Details of Library Automation

5.1.16 Type of Internet Connection

5.1.17 ICT Based Library services

5.1.18 Library databases

5.1.19 Library Usage Statistics since the last five years

5.1.20 Attitude towards application of ICT in Library

ICT Skills of Librarians

5.1.21 Proficiency rate on Information Technology Components

5.1.22 Proficiency rate on Software

5.1.23 Proficiency rate on Library Automation Software

5.1.24 Proficiency rate on Network Connection and Access

5.1.25 Proficiency rate on Use of Website

5.1.26 Proficiency rate on Use of Web Tools

5.1.27 Proficiency rate of knowledge on Digital Library

Training and Development for LIS Professionals

5.1.28 Nature of training need for Library Professionals

5.1.29 Barriers to ICT application in Libraries

5.1.30 Training Methods for LIS Professionals

5.1.31 Library staff is attended the Special ICT training/Course/Workshop/Seminar/Conferences during last five years

5.1.32 Training Methods contributed to update library staff skills

5.1.33 Suggestions for updating the Knowledge /skills of LIS professionals

Part – 2: Demographic Features of LIS Professionals

5.2.0 Introduction

5.2.1 Response Rate of LIS Professionals

5.2.2 Designation Wise Distribution of LIS professionals

5.2.3 Category Wise Distribution of Libraries

5.2.4 Gender and Age wise Distribution

5.2.5 Qualification and Experience Wise Distribution

ICT Skills among LIS Professionals

5.2.6 Proficiency rate on Information Technology Components

5.2.7 Proficiency rate on Software

5.2.8 Proficiency rate on Library Automation Software

5.2.9 Proficiency rate on Network Connection and Access

5.2.10 Proficiency rate on Use of Website

5.2.11 Proficiency rate on Use of Web Tools

5.2.12 Proficiency rate of knowledge on Digital Library

Means and methods of acquiring ICT Skills through CEP

5.2.13 Attendance in Continuous Education Programme

5.2.14 Reasons for attending the Continuous Education Programme (CEP)

5.2.15 Reasons for not attending the Continuous Education Programme (CEP)

5.2.16 Effect of Continuous Education Programme (CEP) on updating ICT Skills of LIS Professionals

5.2.17 Suggestions for updating the Knowledge /skills of LIS professionals

5.2.18Conclusion

CHAPTER -01

INTRODUCTION

1.1 Introduction

Information is an asset for more than the actual hardware that houses it. We are in the information age and our society is moving through a cyber-culture. Digital information and new forms of Information Technology have become a potent force in transforming social, economic and political environment globally. The impact of Information Technology has paved way to paperless society. This excitement is seen not only in the business world and the general society, but also in the field of academics where computer scientists, cognitive and social scientists are thinking about information and the social impacts of information technology in a new way.

Availability of the information is very much important for the users to updating their knowledge. Development in Information and communication technology has made greater impact on print media. In 1990's CD-ROM Technology emerged as a tool, storing vast amount of data in a small optical disc and has inroads into library and information centers. The information explosion has opened up electronic information to the masses. Latest developments of IT contribute to the significant improvement in the library services. Information Communication and Technology developments tremendously improved the types of information handling. A mix of tools and procedures of ICT facilitate generation, acquisition, storage, organization, retrieval, searching, viewing, updating and transmission of information using electronic data.

Some of the methods involved in ICT are databases, programming languages, computer programs, communication networks, artificial intelligence, knowledge bases, analysis and design methodology, etc. Information Communication and Technology influences most of the human activity in daily life. Past two decades libraries has seen dependent increasingly on the revolutionary impact of developments in ICT on their key functions. It provides easy and instantaneous access to data information. It gives more chances to libraries for widening the scope of their resources and services to develop their existence in the organization.

Rapidly growing of information in machine readable form helps requirements of library readers to be satisfied with the involvement of libraries. Even vast information is investigating for the application of ICT in libraries; our study tries to focus on ICT skills among LIS professionals working in special libraries in Karnataka. ICT developments have led to made changes in almost all field. The improvements identified as information society, information age, digital age and information superhighway. Movements in the ICT over the world, and its influence on our day to day life and each area of knowledge.

Present scenario, library has grown in the context of study resources, furniture, space, staff, users, etc. Due to information explosion and rapid developments in ICT, library resources are shifting from print to machine readable and now web media. In addition to, there is change in the need, requirement and interest of the readers. Hence, there is a dramatic change in the role of library and information professionals. To fulfill the overall demands of the readers, LIS professionals have to do many jobs in the rapidly changing IT environment.

The role of LIS Professionals has changed rapidly in recent years in response to new forms of information technology and new methods of teaching and learning. Thus ICT based special libraries have created virtual environment in the modern digital environment. The present study describes about the Information communication technology skills among LIS Professionals working in special libraries in Karnataka.

1.2 Statement of the problem

A Survey of literature reveals that the Librarians are the most developed strata among the special library. The responsibility is thrust on these libraries to function effectively as active research and development instrument in modern research and development. Very few research/study were carried out in this area.

The studies conducted so far, focus on the available library facilities in special libraries, and no comprehensive study was undertaken to critically evaluate the ICT skills of the librarians in special library.

The problem taken for the study is **"Information and Communication Technology (ICT) Skills among the LIS Professionals working in Special Libraries in Karnataka": An Evaluative Study.**

1.3 Need of the study

In a developing country like India, it becomes necessary to recognize the situation that currently exists regarding the ICT developments. Studies conducted so far reveal that, it is important for LIS Professionals not only to be well equipped with qualities like motivation, morale and zeal, also to have competent ICT skills to face the new technological challenges. Information and knowledge have increased importance in the contemporary globalized economy. Progress in ICTs has led to vast amount of information to circulate at higher speed and lower costs. It is being observed that, the need for ICT skills has an influence on LIS professionals. Evolution of the digital resources and ICTs have become basic ingredients in the operations of libraries, and the education sector in general. It is very difficult for libraries to acquire and make available information to their readers in print form due to information growth and scattered use of digital information resources. Besides, electronic information sources (EIS) are becoming more popular with users who find them rewarding and preferred over the print sources. Effective usage of ICT in libraries helps the functions and services effectively for the users.

The review of literature shows that, studies on these issues have been conducted in general and not in particular like **"Information and Communication Technology (ICT) Skills among the LIS Professionals working in Special Libraries in Karnataka": An Evaluative Study.** Adequate studies have not been conducted in this area to identify the constraints and to suggest measures for continual improvement.

The study intends to project the competency of LIS Professionals with ICT Skills in providing information services to the user community and stake holders and tries to bring out the factors affecting the lack of ICT skills among the LIS Professionals and semiprofessionals including LIS Apprentice Trainees. There is need to know the level or competency of ICT skills of LIS Professionals, particularly in special libraries. It is appropriate to find out the ICT skills of the LIS Professionals working in special libraries in the modern digital environment. This study is required not only to identify the lacunae, but also to find out the solutions to improve the quality of services of the library and LIS Professionals. Hence the researcher chose **"Information and Communication Technology (ICT) Skills among the LIS Professionals working in Special Libraries in Karnataka": An Evaluative Study** for the percent study.

1.4 Significance of the Study

The shift from print to digital information has a high impact on all components of the special library system in India, especially the users, the services and the staff. Though information is considered as an important resource, the use of ICT tools to collect and disseminate information has been in a slow pace in majority of the special libraries. This may be due to various factors like insufficient funds, inadequate staff trained in handling computers and software packages, administrative concerns, etc. In Karnataka, automation has been initiated in almost all special libraries using library automation software and is under different stages of completion. The application of ICT has changed the type of services delivered through special libraries in the state, but a dynamic change is not yet reflected in the infrastructure and manpower development in the special libraries and the whole of library profession.

Most of special libraries are not full-fledged in terms of implementing ICT based applications in their services, but there has been an obvious change in the attitudes of LIS Professionals towards ICT application. To meet the demands for individual and collective information of the user community, the constant improvement of the professional performance of those who provide

information is very important. To develop in this direction, there is a need for LIS Professionals to gain a comprehensive perception of the role of computers and communication technology.

There are not much studies conducted about the effects of information communication technologies on the professional activities of LIS Professionals working in special libraries in Karnataka. It is important to evaluate whether progress in ICT has had any impact on the LIS Profession in these special libraries. Hence, this study is considered relevant to assess the infrastructure of special libraries in Karnataka, the professional development of LIS Professionals, their skills and expertise in handling ICT and also the methods of educational needs of LIS Professionals.

The study stresses the urgent need for administrators and library educators to evaluate the effectiveness of present day library education in molding the LIS Professionals to meet the demands of future information work. It is the responsibility of the employers to provide opportunities for LIS Professionals to update their skills, knowledge and competencies to keep pace with the rapidly changing environment of special libraries.

1.5 Scope and Limitations of the study

If LIS Professionals are to use the new technology, they must possess IT knowledge and ICT skills too. The scope of the study encompasses the ICT skills of the LIS Professionals working in special libraries in Karnataka State. The present study is intended to cover LIS Professionals, Semi-professionals including LIS Apprentice Trainees working in special libraries in Karnataka State. The study will mainly focus on the Information Communication Technology Skills of the LIS Professionals working in special libraries in Karnataka State.

The usual limitations of the survey method and case study, namely time, human inadequacies, resource constraints, recollection and communication were experienced by the researcher. Though online survey was sent via email to each LIS professional individually, and some of the

libraries visited directly to collect data from the respondents. Due to technical constraints, some have not taken the survey.

However the study has following limitations.

a. The study is limited to selected special libraries in Karnataka state only.

b. The study includes only Research and Development Libraries, Government Libraries, Business, Trade and Industry Libraries, Socio-Economic Development Research Libraries, Media Libraries, Hospital Libraries, Children Libraries, Blind, Physically Challenged Libraries and Autonomous Libraries in Karnataka.

c. The study cover only LIS professionals, Semi-Professionals including LIS Apprentice Trainees working in some selected special libraries in Karnataka State.

d. Finally, among various aspects of LIS Professionals, the study is limited to ICT Skills only.

Professional staffs are those having professional qualifications like, either a bachelor's or a master's degree in Library and Information Science including M.Phil, Ph.D with added qualification like PGDLAN, PGDCA. They discharge professional duties like overall administration of the library functions, acquisition of documents, technical processing, reference services, etc.

Semi-professional staffs are those possessing a basic degree or diploma or certificate course in Library and Information Science and who discharge semi-professional duties like accessing of documents, filing of cataloguing entries, maintenance of stacks, assist in IT wing and engaged in making online catalogue entries.

LIS Apprentice Trainees are those having professional and semi-professional qualification like, bachelor degree or master degree or diploma or certificate in Library and Information Science. After successful completion of their courses, they will join for the specific libraries to learn the activities of the library for the specific period of time.

1.6 Objectives of the study

The main aim of the study is to know ICT Skills among LIS Professionals, which includes semi-professionals, LIS Apprentice Trainees of the particular designated libraries. To determine the method of training and orientation is needed for the LIS Professionals to handle information technology infrastructure for the provision of effective information services. Keeping these in mind, the following objectives have been framed.

The study proposes to focus:

1. To carry out study of ICT infrastructure of Special Libraries in Karnataka
2. To assess the availability and use of certain ICT applications in the Selected Special Libraries in Karnataka.
3. To evaluate the ICT Skills possessed and constraints faced in acquiring the ICT Skills by LIS Professionals.
4. To study the nature of training required for LIS Professionals to update or improve their knowledge on ICT Skills
5. To study about the reasons and impact on improving ICT Skills of LIS Professionals working in special libraries in Karnataka through attending training programmes.

1.7 Hypothesis

A hypothesis assumes relations variables with a tentative explanation for research and the researcher has a general, diffused and sometimes confused thinking about the problem. It may take more time for the researcher to know what he wants to do. Hence the research problem is to be started properly as mentioned below:

H1: Majority of the LIS Professionals working in Special Libraries in Karnataka have good work knowledge of ICT Skills and Competencies.

H2: LIS Professionals working in Special Libraries in Karnataka face constraints in acquiring ICT Skills due to various reasons.

H3: LIS Professionals working in Special Libraries in Karnataka need more exposure and training in ICT Skills to render ICT based information resources and services.

H4: ICT skills training updates/ improves the knowledge and skills of the LIS Professionals working in Special Libraries in Karnataka.

1.8 Methodology

Researcher has chosen the survey method of research to collect data from the LIS Professionals working in special libraries in Karnataka. An appropriate customized Questionnaire tool was designed to collect the data of individual LIS professionals working in special libraries in Karnataka. The researcher had put in continuous efforts to see that, the LIS professionals of even remotely located special libraries took the online survey (E-Mail). The researcher personally visited some of the special libraries in order to obtain additional data and information through observation of available ICT infrastructure and also informal discussions were held with the LIS professionals. Some of the questionnaire was administered and collected in person and some by via email. It is proposed to distribute 280 Questionnaire to selected LIS Professionals out of 400 LIS Professionals working around 100 Special libraries in Karnataka. 272 (97.14 percent) LIS Professionals responded to the survey out of 280 Questionnaire distributed for the survey method of research. And also separate questionnaire was designed for Librarian and LIS Professionals working in special libraries in Karnataka. All the statistical methods were carried out through the SPSS for Windows (version 16.0).

Questionnaire for Librarians

Pre designed questionnaire with open ended and closed ended questions to collect relevant data about the existing infrastructure facilities available in the selected special libraries in Karnataka along with to evaluate the ICT Skills of Librarians. Also collect the data regarding nature of training required for LIS Professionals to improve their ICT Skills and knowledge as recommended by Librarians. 66(94.28 percent) Librarians were responded to the survey out of 70 Questionnaire were distributed in the Librarian category.

Questionnaire for LIS Professionals

Pre designed questionnaire with open ended and closed ended questions to collect relevant data to evaluate the ICT Skills among LIS Professionals working in special libraries in Karnataka. And also it is intended to collect data regarding nature of training required for LIS Professionals to improve their ICT Skills and knowledge as opined by LIS Professionals working in special libraries in Karnataka. 206 (98.09 percent) of the LIS Professionals responded to the survey out of 210 Questionnaires were distributed in the LIS Professionals category.

1.9 Chapterization

The entire study has been organized into 6 chapters.

1. Introduction:

In this chapter, a brief introduction about the Need for the study, Significance of the study, Statement of the problem, Scope of study, Objectives, Hypothesis, Methodology and Chapterization.

2. Review of Literature

This chapter deals with literature survey of related studies covering ICT in Libraries, ICT based library resources & services, ICT Skills of LIS Professionals, ICT and Special Libraries, Educational and Professional Development of LIS Professionals have been reviewed.

3. Information and communication technology Skills

This chapter includes Introduction, Definitions, Need for ICT Application, Different facets of ICT, Historical development of ICT, Impact of ICT on Special Libraries, Conclusion.

4. Special Libraries in Karnataka:

This chapter covers Background, Definitions, Observed Generalizations, Characteristics, Functions Historical Perspectives of Special Libraries in India, Designations used for Special Library Professionals, Types of Special Libraries, General v/s Special libraries, Conclusion.

5. Data Analysis and Interpretation:

This chapter will be dealing with Analysis and Interpretation of the data.

6. Finding, Suggestions and Conclusion:

This chapter deals with finding, suggestion and conclusion of the study.

1.10 Summary

The crucial importance of ICT Skills among LIS Professionals working in special libraries in Karnataka becomes highly relevant in the present scenario. The development of ICTs in special libraries has changed the intellectual environment in general and the role of the LIS Professionals in particular. Application of ICT in special library environment in Karnataka has increased remarkably in the recent decades. The present study examined the Information Communication Technology Skills among LIS Professionals working in Special Libraries. The analysis of the data represents the extent and level of ICT Skills possessed by the LIS Professionals of these Special Libraries. Modern Special Libraries have to provide adequate means and methods of acquiring ICT Skills by the LIS Professionals. Scholars have outlined the ICT Skills of the LIS Professionals which make them suitable for a variety of designations in the diverse field such as software, database and information area, publishing trade and outsourcing opportunities. Efforts should be made by the LIS Professionals to develop various sources for gaining more ICT knowledge and skills. Constant use of ICT Skills will not only develop and update the knowledge of the LIS Professionals but also will improve the speed and accuracy to bring a faster and easier means of communication globally. Hence the present evaluation assumes profound professional significance in the age of content management in networked environment.

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CHAPTER –02

REVIEW OF LITERATURE

2.1 Introduction

The Research in Library and Information Science can help to understand the mechanism of information transfer and to improve this process both in quality and in quantity. The review of literature assesses not only the length and breadth of the topic of research but also vastness and depth of the subject itself. This will also help in identifying the gaps in the research. The application of ICT has created new library models like digital libraries, virtual libraries and digital repositories which are aimed to knowledge sharing online. The impact of ICT has been evident in railway, air reservations, banking and insurance sectors, postal services, biotechnology, health care, telemedicine, media and communications, teaching, learning, library and information services, printing technology, e-resources, digitization of documents, digital library, library networking, e-commerce and trade, etc. The past studies dealing with application of Information Communication Technology in modern institutions in general and development of Information Communication Technology skills among modern library professionals are presented in this chapter under the following headings namely:

- ✓ ICT in Libraries
- ✓ ICT based library resources & services,
- ✓ ICT Skills of LIS Professionals
- ✓ ICT and Special Libraries
- ✓ Educational and Professional Development of LIS Professionals

Researcher has made an elaborative review of literature available on this topic using sources like LISA, Internet, research articles, journals, theses, primary and secondary sources published during the past two decades. Since focus of literature review is to summarize and synthesize the arguments and ideas of others that has already been written on this topic, related literature has been listed as below.

2.2 ICT in Libraries

Barlow & Graham (1999). Used questionnaire survey undertaken between January and March 1998 to investigate the use of information and communication technologies (ICT) in a sample of 120 industrial and commercial libraries. 96 percent of the organizations which responded as use computers for some aspect of their library and information services. ICT was used for a range of office and other applications including, in rank order, electronic mail, word processing, spreadsheets, presentation packages and database management systems. 91 percent of the sample used various Internet facilities including electronic mail, World Wide Web, file transfer protocol (ftp) and telnet.

Gulati, A. (2004). Studied status of information and communication technologies usage in Indian libraries with special reference to special libraries and the efforts made by various institutions to propagate e-information products and services. This paper highlights the consortia efforts in India like JCCC Consortium, INDEST Consortium, CSIR E-journal Consortia, and UGC Infonet. It further discusses digitization efforts in India at NISCAIR, New Delhi, IIITM, Kerala, C-DAC Pune, and the Digital Library of India. In addition it incorporate details on major information systems in India (such as NISSAT)and major library networks in India (such as INFLIBNET, DELNET, CALIBNET etc.).

Ani & Edem (2005). Author used Postal survey was the instrument used for data collection. Almost 60 percent of the University Librarians out of the 29 university libraries surveyed completed their questionnaires. The results of the survey shows that only six university libraries are fully "computerized", nine are "about to be computerized"; seven of the surveyed libraries have installed local area networks, five have online public access catalogue and only four libraries provide internet service. The major obstacles that influence effective adoption of ICT in university libraries are inadequate funds and the poor state of electricity in Nigeria. The federal government should increase the present level of funding of Nigerian university to

improve the library development fund, which is the major source of funding available to university libraries. The poor state of electricity in Nigeria should also be improved by the federal government for sustainable adoption of ICT by university libraries. The paper proposes that computer networking of university libraries is feasible and recommends the development of the Nigerian university libraries network and academic libraries network.

Wijayasundara, N (2005). Opined that, nowadays libraries need to play a major role in satisfying informational, instructional and personal needs of their clientele. During the last half-century, computers and telecommunications began to converge to produce so called Information and Communication Technology (ICT). A drastic change can be seen in library systems throughout the world due to ICT. In priority order the barriers in the application of ICT in libraries are identified as technological, managerial, infrastructure, human, and political and social. Points are suggested to overcome these barriers.

Walmiki & Ramakrishnegowda (2009). Studied the status of ICT infrastructure in six selected university libraries of Karnataka found that, the libraries greatly vary from one to another as far as the ICT infrastructure is concerned. Most of the libraries lack sufficient hardware & software facilities and do not have adequate internet nodes & bandwidth. The campus LANs of the universities are not fully extended to exploit the benefits of digital information environment.

Mulla, Chandrashekara & Talawar (2010). Author studied library automation began in India, late 1970s in a few special libraries and has now reached most of the university libraries. It has yet to take off in college libraries in Karnataka owing to various problems. Many studies on library automation have been undertaken in the developed countries, but few have been undertaken in India. This study is a survey of engineering college libraries that have computerized their operations and services in Karnataka. The study is limited to the automated libraries of engineering college libraries in Karnataka. It gives a status on the software packages used by the various libraries, and opinions of the librarians about the performance of the different modules of the software they have used.

Sampathkumar & Biradar (2010). Comprehensive study on the use of ICT in Indian college libraries. The purpose of this paper is to examine the use of information communication technology (ICT) in 31 college libraries in Karnataka, India by investigating the ICT infrastructure, current status of library automation. Application of ICT in Indian college libraries has not reached a very high level. Lack of budget, lack of manpower, lack of skilled staff and lack of training are the main constraints for not automating library activities. Even though library professionals have shown a positive attitude towards the use of ICT applications and library automation, they need extensive and appropriate training to make use of ICT tools. Its findings should help college librarians, local government and also the University Grants Commission, New Delhi.

Kamba(2011). Opined that, Information and Communication Technology (ICT) has helped higher education libraries improve the provision of library and information resources and services. African libraries are also adopting ICT to improve a positive impact to the development of research and information utilization. The key success factor of this implementation is mainly of availability and the good quality of services, adequate resources, and communication infrastructure. The paper has analyzed the efforts made by the higher education libraries in Africa to recognize, restructure and re-oriented the library facilities and personnel with ICT adoption. In addition, the paper also highlights the various efforts to establish networking and consortia among the libraries, and the implications that could be derived by applying ICTs into higher education libraries.

Tiwari, Braj Kishor (2013). Libraries use ICT to maintain housekeeping operations, services, uniformity and extension of library facilities. University libraries of Rajasthan (India) are using computer and associated technology for library activities. This study attempts to reveal the basic infrastructure, use, implementation of ICT in University libraries of Rajasthan. The data have been collected using the survey method. The paper encompasses the information about the staff, collection, financial sources, hardware, software, networking infrastructure, housekeeping operations, user's services, training and problems areas encountered during implementation of

ICT in university libraries. It is revealed that ICT activities are under developing stage in the university libraries of Rajasthan.

Niraj (2015).Purpose of this paper is to discuss the prospect of Human Resource Development (HRD) in the libraries of Higher Education Institutions (HEI) in North East India with special reference to library automation. A group of 172 libraries of North East India was selected for the questionnaire based survey conducted during the period 2007-2010 using Likert Scaling method. The analysis of the data collected in this survey shows that, there is lack of HRD practices in majority of these libraries. Results of this survey shows that the library professionals working in these libraries, need proper training in different aspects of automation like basic computer operation, maintenance, design websites, searching OPAC etc. The responses received in the survey provide ample evidence for the authorities to develop proper training programs to keep the library manpower abreast of latest technologies.

2.3 ICT Based Resources and Services

Garg & Gupta(1986). Author assessed Special libraries customarily maintain a regular and systematic information service covering the immediate and future interests of the organizations of which they are part. This necessitates the development and management of an adequate collection of books, periodicals, reports, patents, standards, government publications, maps, audio-visual records. In house publications, market surveys, data files, are also brought together in these collections.

Maheswarappa, B S, Karisiddappa, C R (1993). Studied collection development as a systematic approach to the building of the library's collection in the context of economic recession and involves the application of community analysis and user studies, collection development policy, selection, acquisitions and collection management aspects such as weeding, storage, preservation and collection evaluation, and notes the problems associated with each of these processes in special libraries in India.

Shukla(1995). Author studied about 78 information scientists from 287 institutions in India. Aimed to identify the types of services and the corresponding qualifications required by information staff in special libraries and information centers. Studying the effects on information services of different library staff qualifications; assessing the career paths for library students as information scientists; and suggesting measures for better information services and manpower planning. Results indicated that, since 52 percent of posts were occupied by non-library and information science staff, the services and functions of these libraries must have been affected. Manpower planning of libraries and information centers should be based on the type of services provided. The practice of filling library staff posts with untrained professionals should stop and provision should be made in the budget for in service training and participation in seminars and workshops.

Arora & Lekhi (2000). Author explains the characteristics of multimedia as a convergence of computers and communication technology, which integrates different media, such as images, full motion, video, voice text, graphics and other computerized data for enhanced human-computer interaction. Presents an introduction to multimedia and the role played by multimedia technology in modernizing library services. Highlights the problems in the applications and uses of multimedia and its impact on libraries and information centers.

Moorthy and Karisiddappa(2001). Assessed the use of information technology infrastructure and the extent use of electronic media in libraries in India. They reported that, majority of libraries were using CDS/ISIS as library software and LibSys software was a distant second. They also found that majority of libraries have purchased the software, while a few libraries reported to have developed the library automation software in-house.

Bilawar(2004). Today information is a prime resource and a dominant factor in decision making. Now access to information is of first priority than the document. This paper mainly focuses on the nature of communication technology and highlights various modes of mass

communication through Computer and Internet, thereby having impact on libraries and information services. Great reliability, storage and universal availability are the vital characteristics possessed by Communication Technology. This paper concerns with how library services are best served by the adaptation of such technology in this digital era. Paper further focuses on digital library concept and comparison of traditional to the modern library. The speed of Information Technology (IT) revolution is in top gear, during this decade, and makes the library to a global library system to operate it at our finger tips. Finally, the paper concludes with many advantages of the communication technology with respect to library requirements.

Haneefa (2007). The study was performed via a questionnaire survey of the library users and confined only to special libraries with ICT based resources and services. The study also investigated further areas, including: library professionals' help in the use of ICT based resources and services; any change in speed in academic/research work by using ICT; users' satisfaction with the application of ICT; reasons for their dissatisfaction; users' suggestions for training; and their opinion about the user education on ICT. The data collected were analyzed and inferences made based on standard statistical methods. The results of the study revealed that the ICT based resource used by the largest percentage of users was the e-mail. The next most widely used resource was WWW, which was being used by nearly 60 percent of the library users. A good number of the users were not satisfied with the application of ICT in their libraries and indicated 'inadequate ICT infrastructure' as their reason for dissatisfaction. Users proposed a variety of measures of formal orientation and training in ICT based resources and services to become more effective users.

Vasishta (2007). The study is based on the analysis of physical facilities (building, open access and working hours), budget, professional staff, organizational structure, library holdings (print as well as non-print), users, technical processing, etc. Questionnaire method was used to collect the data. Comparative data in tabular form of six technical deemed universities are drawn for showing the strengths and weaknesses of these libraries. Based on the results of the survey, few

suggestions have been given. These suggestions will be useful for planning and policy making of libraries in technical deemed universities.

Dhanavandan,Esmail & Mani (2008). Developing countries are being encouraged to invest in their national information infrastructure so that they can participate in knowledge-based development. Advances have brought many changes in libraries. Information and communication technology (ICT) has provided libraries with new opportunities to improve their resources and services. This study looks at the use of ICT tools by a population of library professionals in the Indian state of Tamil Nadu, exploring the use of various tools, cross-tabulated by gender and age, and compiling a list of uses for these tools in professional settings. 175 questionnaires were distributed among the library professionals in Tamil Nadu. 170 responses (97%) were received. All respondents are using some kind of ICT tool.

Haridasan & Khan (2009). Purpose of this paper is to present the fact that, electronic resources are a significant part of library collections. A large amount is invested in the development and management of e-resources in the libraries. The study aims to identify the acceptance of e-resources in the National Social Science Documentation Centre (NASSDOC) library in New Delhi, India and determine their usage, performance, degree of user satisfaction, and barriers faced in the access of e-resources. It also attempts to find out the users' views about computer literacy among the social scientists. The study focuses on the impact and use of e-resources by social scientists pursuing research in the NASSDOC library. The data were collected from the entire population of social scientists at NASSDOC through a questionnaire accompanied by personal interview. This was further analyzed using statistical techniques and percentages to arrive at qualitative and quantitative results. The major findings of the study indicate that respondents are aware of the e-resources (such as e-books, e-journals, e-encyclopedias, e-theses, CD-ROM databases, e-mail, internet and the OPAC). Large numbers of research scholars and faculty members are using these e-resources for their research work. Many faculty members strongly agreed with the necessity for computer and internet literacy to access information. A majority of users were satisfied with the e-resources available at the NASSDOC library. This is

one of the first surveys conducted to identify the need and importance of e-resources in a specific Indian library (NASSDOC) as well as the requirement for information literacy to enhance the use of available resources in the social sciences.

Naveed & Fatima (2009). Researcher of this paper investigated the finding of a study related to social sciences researchers' use of information and communication technologies (ICTs) in the Aligarh Muslim University (AMU). The study shows that researchers use a variety of ICT products and services for their research work as these products prove very helpful in finding needed information quickly and easily and also help the researchers to access, manage, integrate, evaluate, create, and communicate information more easily. The study also identifies lack of training and technical knowledge to use ICTs as the major hindrances faced by the researchers in AMU. The paper recommends proper training and guidance for use of ICT-based technologies for the optimum utilization of these services by the researchers.

Emojorho,Daniel (2010). Focused on the use of information communication technology (ICT) in public libraries in Nigeria. It states that ICT applications have resulted in knowledge resource globalization and that libraries in developing countries such as Nigeria may lack ICT to utilize global information. It mentions that, questionnaires were used to determine slightly more than half of Nigerian public libraries are computerized, and most of the libraries still utilize card catalogs, while only around 30 percent have electronic resources and Internet access.

Abubakar(2011). Author studied about the use of information and communication technologies (ICT) in six university library schools in Nigeria. The survey included library schools at the University of Ibadan, University of Maiduguri, and University of Nigeria Nsukka. Data shows how information technology was used at the library schools. A brief review of library and information science (LIS) research literature is presented. The study concludes that, more ICT should be acquired and the universities' sponsoring authorities should provide the funds for ICT.

Maharana & Panda(2011). Identified revolution of information technology has forced the world to depend more and more on information and communication technology products and services. Due to this rapid growth, the ICT products and services are being overwhelmingly used in all spheres of life. This paper studied the usage of different ICT products and services by the students and faculty members of Veer Surendra Sai University of Technology for fulfilling their information needs.

Khan(2012). Author studied about the availability of Information Communication Technology infrastructure facilities in high court libraries in India. The court libraries need rapid Information Communication Technology infrastructure and in this context, there is a need for adequate development of electronic resources. This study traces out the nature of electronic resources, internet services, Xeroxing, printing facilities and so on with reference to the selected institutions of India.

Singh, Archana (2014). Author studies related to the use of Information and Communication Technology (ICT] based resources and services and its impact on users. The study was performed via a questionnaire survey of the library users. The papers also determine the satisfaction level of users regarding online services, favorite search engine and problems faced by the users in using the ICT in libraries. Users proposed a variety of measures of formal orientation and training in ICT based resources and services to become more effective users.

Husain, Shabahat(2015). A survey method was used for the collection of data. A structured questionnaire, containing close-ended questions, was sent by postal mail to 30 librarians of the Central University Libraries in India, of which 15 questionnaires were returned. Academic libraries in India have mostly been involved in applying traditional ICT-based solutions for the management of various library functions and services, particularly for organizing and retrieving information. Use of modern ICT-based tools of knowledge creation and sharing such as web discovery tools, blogs, wikis, Real Simple Syndication feeds, social networking and social

bookmarking seems uncommon in academic libraries. Lack of trained staff in ICT, low level of ICT skills among library users, unawareness of potential benefits of ICT and inadequate ICT infrastructure were found as the major barriers of ICT applications in academic libraries. Academic libraries in India are still in the early stage of understanding the importance of modern ICTs. Librarians should renovate existing library environment and develop knowledge and skills among their staff in the fields of computer programming, website or portal development, hardware maintenance and metadata or e-resource management for providing quality information services to their users.

2.4 ICT Skills of Library and Information Science Professionals

Adeyoyin (2005). A survey was conducted among the professionals, paraprofessionals and "other" members of staff of 18 Nigerian university libraries. Analysis of the data showed that, on a self-assessment basis, out of about 268 professional librarians, only 87 (approximately 32 percent) were ICT-literate, implying that the remaining 181 (approximately 68 percent) of professional librarians were ICT-illiterate. Of the 358 paraprofessionals in those libraries, only 28 (approximately 8 percent) were ICT-literate, while the vast majority, some 330 (approximately 92 percent), were ICT-illiterate. Of the 1,133 "other" staff members in the survey, a minimal 69 (6 percent) staff were ICT-literate, while 1,064 (approximately 94 percent) were ICT-illiterate. The investigation only considered two categories of skills, "literacy" and "illiteracy", without gradations between these categories. The conclusion reached was that, Nigerian university library professionals and paraprofessionals should acquire an enhanced level of ICT literacy: both staff training and an adequate ICT infrastructure were recommended. The paper gives a representative overview of the attainment level of library staff in an important area of professional competence, and shows the importance of addressing the gap between the desired levels of ICT literacy and the actual levels.

Ashcroft,Linda;Watts,Chris(2005). Author states that, Information professionals are now expected to be aware and capable of using emerging information communication technologies, as well as having essential communication skills. Professional bodies, such as CILIP in the UK and the ALA in the US, recognize the importance of continuing professional development in order to keep skills and expertise up-to-date for all aspects of work. The necessity of ICT skills has a clear impact on reference service professionals, with the emergence of digital reference services.

Omona & Ikoja-Odongo (2006). A study which assessed the application of information and communication technologies (ICT) in health information access and dissemination in Uganda. The project focused not only on information obtainable through libraries for research, teaching, learning and practice, but also on ICT applications concerned with the administration and planning of health services in Uganda. A thematic analysis highlighted the current state of ICT applications, the extent of applications, the role played and problems faced. It concludes that a number of challenges must be addressed, if the full benefit of the use and application of ICT in health information access and dissemination is to be realized in Uganda, and draws the attention of all the stakeholders in the health sector in support and promote ICT as the most effective tool for health information access and dissemination.

Adekunle & Omoba(2007). Author used a descriptive survey to study the attitude of selected librarians in Ibadan, Oyo state, Nigeria, toward information communication technology (ICT). The population includes 41 librarians in four institutions. Data were collected using an instrument adapted from the Igberia and Chakrabarti (1990) Computer Anxiety and Attitude towards Microcomputer Utilization (CAATMU) scale, and the librarian attitude questionnaire developed by Ramzan (2004). Two research questions were developed to guide the study. The results show that librarians have a positive attitude toward ICT training and knowledge are the sine quanon for a positive attitude. The fear of ICT that some librarians in Africa demonstrate is widening the digital divide. Librarians in Africa are called upon to rise to the challenges posed by ICT and to help bridge the digital gap.

Buarki & Murray (2011). Author's aim of this paper is to provide a comprehensive literature review on information and communication skills (ICT) of library and information science (LIS) students in Kuwait. In addition, content analysis of relevant web sites, reports, and LIS syllabus were used to provide further documentation and interpretation. The paper reviews ICT skills from the published research perspective; curricula review; professional association guidelines; employers' ICT skills needs; barriers and challenges of ICT adaption; and the ICT situation in Kuwait. ICT skills have been recognized as essential qualities for LIS graduates' employment. A more comprehensive literature review on the importance of ICT skills and the job market needs is attempted. This review will help professionals in reviewing/adding to their curriculum and collaborating with employers to know their ICT skills needs. It will help employers and stakeholders to understand the ICT skills needed for LIS employability. It will also help students and graduates to improve their ICT skills to meet the needs of the job market. The paper was built upon previous articles, review of literatures, and has identified certain gaps that have set the ground for further research in ICT skills, curriculum review, and employers' skills needs.

Satpathy & Maharana (2011). Purpose of the paper is to study the ICT skills of LIS professionals working in various engineering institutes of Orissa (India) to examine their exposure to ICT tools and services. It also attempts to evaluate the use of these skills by professionals in libraries. Moreover, it intends to elicit the barriers in acquiring the ICT skills by the LIS professionals. The paper examines the ICT skills of LIS professionals working in engineering institutes of Orissa (India) through structured questionnaires. Statistical methods such as percentage, weighted arithmetic mean, ranking method etc. are used for data analysis. The LIS professionals are computer literate and they have acquired considerable basic skills in ICT such as library automation, web based services, digital libraries, institutional repositories etc. However the study reveals that the ICT skills acquired by the professionals are not fully used in their libraries. The paper highlights the necessity and benefits of ICT skills of LIS professionals for managing the modern engineering institute libraries of Orissa.

Fatima & Firdous (2012). Authors aim at examining the level of ICT skills of LIS students (final year) at the University of the Punjab, Lahore (PU) and the Islamia University of Bahawalpur (IUB). It also finds out the LIS students' satisfaction with the teaching methodologies and ICT facilities provided by their institutes. The study not only identifies the situation of ICT skills of LIS products, but also highlights demands of LIS market in Pakistan. The research design was the survey method using questionnaire. For in-depth understanding of the phenomenon, semi structured interviews of a purposive sample were also conducted.

Murugan,B.O (2012). Author Surveyed that, medical college libraries has various resources such as textbooks, reference books, medical journals, online journals, databases, etc., and also provide various services including reprographic, audio-visual and computer based services to their staff and students. Use of Information and Communication Technology (ICT) is on the rise in medical college libraries. Tele-medicine, teleconferencing, e-databases, e-books, e-journals, etc., are being increasingly made available on the net. Present study examines the use of the traditional and digital resources by the undergraduate medical internees of a medical college - Rural Medical College in Tamilnadu. It also aims to study the level of computer literacy among the internees. This survey predominantly uses questionnaire for data collection. The study results reveal that, reference books are the most often used reference sources in the library in comparison with other sources such as textbooks, journals, and back volumes. Another important finding is that the ICT knowledge among the respondents is not at optimum level.

Ansari (2013). Purpose of this study is to investigate the information and communication technology proficiency of the library professionals at the universities in Karachi, Pakistan as well as to find out their software development, system analysis, and design skills. The findings of this study can be utilized in the design of training programs and refresher courses and also in the evaluation of librarians' training need.

Arokyamary,R(2013). Researcher surveyed Information Communication Technology (ICT) facilitates access to electronic information, which has become invaluable and complementing traditional library services. ICT have enabled individuals to handle information possessing effective with greater speed and accuracy regardless of the time and distance. ICT and its tools have always been helpful in extending information services. This paper is a study of mapping the existing ICT skills and competencies of the LIS professionals working in the Engineering colleges of Karnataka. And thus comes out with suggestions in the gap by stating the required knowledge, skills and competencies that has not only brought in change in the working style of LIS professionals.

Kattimani, Shivaputrappa Fakkirappa (2013). Author surveyed the competences in librarianship and information communication and technology (ICT) skills between different designations of library professionals working in the engineering college libraries affiliated with Visvesvaraya Technological University (VTU), Belgaum in Karnataka state. The study adopts a combined methodology of theory, fieldwork and the data gathering tools used which included questionnaire, observation and interaction with library and information professionals. The majority of the library professionals working in the engineering colleges in Karnataka state have chosen this profession by accident. The significant difference is observed between different designations towards competence on operation of computers, creation of files and folders, radio frequency identification, library automation software modules, various operating systems, internet-related skills, web design/web editors, search engines and digitization of IR. The majority of the professionals are facing financial problems, overload of work and negative attitude of the higher authority in acquiring ICT skills.

Kumar.K (2013). Author studies that, over the decades, there has been a remarkable transformation in the information globe. Everyone has to adapt to these changes. Changes in society and demands for information utilization have forced the information professionals to look for more effective and efficient methods for processing, storing, and retrieving information to cope up with the application of modern information technology. This paper highlights

knowledge of information communication technology in engineering institutional library and information science professionals working in engineering institutions of Rayalaseema region of Andhra Pradesh.

Akande, S. (2014). Author tries to find out the results through survey method, related to ICT skills of library personnel working in academic libraries in Oyo state. The sample used consists of 155 professional and Para-professional library personnel working in government-owned tertiary institutions in Oyo state. A questionnaire tagged ICTSQ with a Cronbach alpha measure of 0.91 was used to collect data. Two research questions were raised and one hypothesis was formulated for the study. The data collected were analyzed using descriptive statistics of frequency counts, percentages, mean scores and standard deviation. Inferential statistics of Pearson correlation was used to analyze data for the hypothesis. The result showed that library personnel have acquired basic ICT skills for using the Internet, computer and e mail.

Israel & Edesiri (2014). Author studied ICT skills and internet usage of undergraduates of Library and Information Science Departments in Delta and Edo States. The descriptive design was employed for the study. Sample consists of 238 undergraduates. The questionnaire was used to collect data from respondents. Findings revealed that, there was no significant relationship between the ICT skills possessed by undergraduates of LIS Departments in Delta and Edo states and their internet usage. However, the undergraduates possessed ICT skills and adequately make use of the Internet. Findings also revealed that, most popular way of acquiring ICT skills by the undergraduates was self-taught with manuals and handbook, through courses of study at the university and friends.

Seena & Pillai (2014). Conducted the study to investigate the awareness, skills and attitude towards, Information and Communication Technology among library professionals in Kerala University Library, Thiruvananthapuram. The study is based on a questionnaire survey method of library professionals employed in the central and departmental libraries of the University of

Kerala. The analyses revealed that, the library professionals in the Kerala University library system have relatively average level skills in various ICT related tasks in libraries. Libsys software was more used in libraries and a good number of professionals indicated that the main constraint in the application of ICT in libraries is inadequate training in ICT applications. All the professionals expressed a positive attitude towards the application of ICT in libraries.

2.5 ICT and Special Libraries

Das Gupta & Gupta (1980). Describes the present condition of children's libraries in India; explains the importance of the correct use of books; discusses the plight of teenagers, for whom there are no special libraries and access to adult libraries is often forbidden; stresses the special qualities of children's librarians; points out the difficulties due to shortage of staff and improper conditions; and suggests regular seminars, meetings, and workshops involving parents, teachers, librarians, authors, publishers, and illustrators.

Cope (2000). Studied the new information and research orientation of parliamentary libraries, accelerated by the advent of information technology, the changing pattern of parliamentary politics with new social and economic developments, raises the question of where they should be placed among special libraries. Speculates about the prospective role of parliamentary libraries in a society increasingly critical of existing political party realities, politicians and of Australian public institutions. Contradictions facing parliamentary libraries are pointed out, suggesting a more clearly differentiated 'special' role for them as part of a parliamentary 'information ecology'. By accepting a wider social responsibility for political communication and political education extending beyond the already richly served parliamentary elite, parliamentary libraries can contribute by way of their information expertise to the evolving concept of participatory democracy in Australia.

Kiskis & Petrauskas (2004). Discussed about one of the practical problems of information communication technology use in the judiciary - classifying and categorization of legal information. This problem that plagues the judiciary in Lithuania is very important to solve in order to minimize the digital divide of the courts, increase transparency of judicial decisions, and increase uniformity of judicial practice and interpretations of the law. The problem is usually approached by applying standard ontological legal classification schemes from legal philosophy. However, such an approach is extremely demanding in terms of human time and labor. Suggestions are made that Artificial Intelligence- (AI-) based XML or Resource Description Framework (RDF) tools may be employed in order to facilitate such classification.

Fombad, & Moahi (2005). Results of a study, which aimed to establish the perceptions by lawyers in law firms in Botswana of information and communications technology (ICT) and whether these technologies affected the adoption and use of ICTs. Semi structured questionnaires and interviews revealed that, law firms are still at the early stages of adoption and use of ICT but lawyers' perceptions, if ICT were not the overriding factor that determined the adoption and use of ICT in law firms. Other major factors were the lack of in-house expertise, high cost of ICT consultants, and the lack of interest and skills in ICT.

Obioha (2005). Studied Information Communication Technology is on the lips of every nation of earth because it brings innovation into information seeking and knowledge acquisition. It is on this premise that, this study is embarked upon to identify the roles ICT plays in information seeking and use amongst research officers in Research Institutes in Nigeria. One hundred and seventy two research officers of the institute were sampled upon. The study examines awareness, use, exposure to ICT; role of ICT and improvements on ICT tools among other things. Results show that ICT plays an immense role in information sourcing, generation, processing, storage/retrieval, dissemination and even entertainment. Also, it shows that for ICT to be used optimally and maximally, there is need to have steady/regular power supply, workable/stable infrastructure and provision of more ICT tools and centers. Recommendations were made to the Federal Government of Nigeria to provide reliable sources of electricity and infrastructure or

adapt the technology to local conditions and requirements. Manufacturers of ICT tools are urged to use non-radioactive materials in the manufacture of the tools.

Haneefa (2006). Author investigated Information and communications technology infrastructure is an important resource of a modern library or information Centre. This study investigates the current state-of-the-art ICT infrastructure and the extent use of electronic information resources in special libraries in Kerala. The following methods were used to collect data for the investigation: (a) questionnaire surveys of librarians, (b) semi-structured interviews with librarians and (c) observational visits in the libraries. All the special libraries of Kerala that were using information and communication technologies were selected for the study. The data collected were analyzed and inferences made based on standard statistical methods. The investigation provides useful information about the current state-of-the-art ICT infrastructure and use of electronic information resources in special libraries in Kerala. Though the special libraries in Kerala have hardware, software and communication facilities to some extent, ICT based resources and services are not reaching the users to the expected extent.

Singh (2006). The study with the application of the information and communication technology in the libraries and information centers of the DRDO and the CSIR located at Delhi. These libraries are the Defence Science Library of DESIDOC, Laser and Science Technology Centre (LESTEC) Library, Institute of System Studies and Analysis (ISSA) Library, Solid State Physics Laboratory (SSPL) Library, Institute of Nuclear Medicine & Allied Sciences(INMAS) Library, Defence Institute of Physiological and Allied Sciences (DIPAS) Library, Defence Institute of Psychological Research(DIPR) Library, National Science Library of National Institute of Science Communication and Information Resources (NISCAIR) formerly INSDOC, National Institute of Science, Technology and Development Studies (NISTADS) Library, The Central Road Research Institute (CRRI) Library; and The institute of Genomes and Integrated Biology (IGIB) Library formerly CBT. For the study data has been collected through questionnaires administered to the librarians and also supplemented through interview for further

clarity and unambiguously of facts. The questionnaire sent to the librarians includes various aspects of the libraries under study with particular reference to ICT applications.

Singh, S. P. (2006). Indicated Poor infrastructure facilities, outdated mindsets and lack of exposure among professionals to the latest developments have been bottlenecks against progress in Indian libraries for a long time. Today, with the advent of both information and communication technologies and global competition, the scenario for special libraries in India is changing fast. This paper aims to outline the emerging trends and developments taking place in special libraries in India: it aims to provide an overview of how special libraries in India function, particularly as a younger generation of library professionals is now actively becoming involved in developing new skills and competencies in order to become more customer-sensitive and customer-centered. This is a general review and survey of current development areas in special librarianship. In most Indian special libraries, features such as Internet resources and other electronic/digital resources, subject gateways, networks and consortia, are fast gaining acceptance. New trends include the development of libraries' own web sites, the sophisticated application of digital technology, more professional marketing of information products and services, outsourcing, flexi-workforce, knowledge management and participative management, which are becoming the order of the day.

Haneefa (2007). Conducted to investigate the application of information and communication technologies in special libraries in Kerala. The following methods were used to collect data for the study: questionnaire survey of librarians and library users, semi-structured interviews with librarians, and observational visits in the libraries. This study was confined only to the automated special libraries in Kerala. The analyses revealed that, though the libraries had hardware, software, and communication facilities to some extent, ICT-based resources and services were not reaching the users to the expected extent. Library automation in special libraries in Kerala was largely commenced during the period 1990-2000. CDS/ISIS was used more in the libraries than any other software. The library catalogue found to be the most popular area for automation. The ICT-based resource used by the largest percentage of the users was the e-mail. Most of the

libraries were hampered by lack of funds, lack of infrastructure, and lack of skilled professionals to embark on automation of all library management activities and application of ICT. A good number of the library users were not satisfied with the application of ICT in their libraries and indicated 'inadequate ICT infrastructure' as their major reason for dissatisfaction. They proposed a variety of measures of formal orientation and training on ICT to become more effective users. The studies provide recommendations to enhance library automation and effective and efficient application of ICT.

Islam & Islam (2007). Proposed the study in Bangladesh to identify the adoption of information technology in 1964, but library automation is still in its infancy. The results of a survey of nine libraries and information centers in Bangladesh are presented. Public and private universities and research organizations were surveyed to determine the extent of Information and Communication Technology (ICT). Recommendations for solving problems associated with the implementation of ICT are included.

Mansouri & Pashootanizadeh (2007). Identifies that**,** societies have moved from traditional state to industrial, to post-industrial, and finally, to electronic and information states. Obviously, service provision in different areas have been affected by changes occurred due to these movements. To keep up with these changes, workers, to have higher productivity, need life-long education, in order to increase their knowledge, and their technical, professional and work skills. Life-long education aims at achieving conformity with environment, increase in production ability, increase in productivity in the present job, gaining better qualifications for job promotions, being able to provide users with quality services. Library profession is among those professions that faced extensive changes by introduction of modern information and communication technologies. This has forced library managers to move towards a new managerial philosophy that is based on participation, depends on individual skills of the library staff. In this article, above mentioned issues will be analyzed in terms of individual and professional needs of librarians, and the need to establish in-service courses, as well as proposing guidelines for better establishment of such courses.

Utulu (2008). Adopted case study research methodology, to evaluate ICT policy use in ten academic and research libraries in Oyo and Ogun States. Convenient sampling method was adopted. The finding showed that, only six of the ten academic and research libraries have ICT policy, despite the fact that all of them have procured major ICT facilities. The study also revealed that, the existing policies are comprehensive and adequate. However, it was also revealed that, the libraries still face challenges in major areas like capital sharing, access, security, ethics, staffing, understanding users' characteristics and need, procedures required for ICT use and benefit maximization.

Al-Ansari (2011). Author studied the application of information technology in various operations and services in special libraries in Kuwait. The data were collected through a questionnaire accompanied by interviews with head librarians in 25 special libraries in Kuwait. This study provides baseline data on the current status of the application of information and communication technology. The majority of the libraries are partially automated. The library catalogue was found to be the most popular area for automation. More than one fourth of the libraries are still using manual systems in their library operations and services. Lack of adequate personnel, ICT training programs, and low priority of libraries within their organization are major obstacles for ICT application in special libraries. This paper will have implications for the development of special libraries in Kuwait. It also indicates existing obstacles, difficulties, suggestion and recommendations for further development. It is the first study of the status of ICT applications in special libraries in Kuwait.

Al-Daihani, S.(2011). Author explored students' perception and views of the instructors, in relation to information and communications technology education in library and information science (LIS) programs. A questionnaire survey was carried out among students from the two LIS departments in Kuwait. A focus group was conducted with faculty members of the two institutions, who provided qualitative input about the instruction of ICT, needed changes, and relevance of market needs. Participants showed dissatisfaction with the currently available ICT

courses in the LIS programs. Students pointed out deficiencies and inadequacies in ICT resources and facilities, and suggested upgrading software and hardware. They appeared to be satisfied with the ICT skills being targeted by LIS programs. They also appeared to be satisfied with the ICT instructors. The study pointed out a need for collaboration with professional forums for continuing education programs and the need for revisions in curricula to introduce more focused courses that meet the needs of the ever-changing market requirements and give the students access to professional bilingual materials. The faculty members noted the demands of the job market and proposed measures for addressing them through enhanced course content and improved opportunities for hands-on instruction. Earlier studies reported in the literature have discussed ICT education in broader terms. This study reports the situation of ICT education programs in Kuwait, focusing on specific areas such as resource, curricula, and instructors.

Sivakumaren ; Geetha & Jeyaprakash (2011). Presents a study which aims to research the role of information and communication technologies as well as information technology (IT) in university libraries in India since 2011. The objectives of the study aimed to identify the ICT infrastructure facilities available in the selected universities as well as to identify ICT based software and electronic resources available in the libraries. The study concluded that, the application of ICT infrastructure is increasing in university and academic libraries, and recommended that libraries increase the number of computers available to users.

Fagbola (2016). Assessed Research Institute libraries occupy prominent place in the creation, communication, consumption and dissemination of knowledge, data and information. Use of information and communication technologies is gaining ascendancy in libraries in Higher Institutions of learning in Nigeria, particularly in the south western Nigeria. Little attention has been paid to ICTs use at the level of libraries in Research Institutes in south western Nigeria. The study adopted the survey research design, due to its extensive nature. The study population consisted of libraries in Research Institutes in south western Nigeria. The simple random sampling technique was adopted to select Research Institutes libraries. Questionnaire and in depth interview methods were adopted to collect data on availability of ICT facilities, automation of library activities and the challenges of ICTs use in these libraries. Returned data were

analyzed to answer the formulated research question using descriptive statistics. Findings revealed evidence of use of ICTs in these libraries. Automation of library activities is slow and is at different stages of development. Challenges of ICT use in Research Institute libraries include: inadequate funding, irregular power supply, poor infrastructure, absence of good electronic networks and inadequate staff with ICT skills. It is essential for libraries in Research Institutes to have special grants from agencies to facilitate ICTs development and efficient service delivery to their clients.

2.6 Educational and Professional Development of LIS Professionals

Selinger (2001). Author explored the **c**ontribution to special issue on information and communications technology and pedagogy. Seeks to explore the tensions of teaching ICT skills in ways that, enable students to perceive the benefits and potential of using computers to support their work. Also considers how much direct instruction is needed in order for sufficient competence to be acquired which will subsequently enable students to learn to use other features of the application to maximize these benefits. Describes ICT as a cognitive tool and considers the development and design of ICT resources and lessons.

Ocholla, D. N. (2003). Author analyses the status and use of ICT in LIS Departments /Schools in selected Eastern and Southern African countries in relation to learning, teaching, research, academic administration, and resource support. ICT is dealt with in the context of information storage, retrieval, communication, interactive learning uses of technologies. Qualitative methods were mainly used in information collection, analysis and reporting. Opinion of Directors/Heads of LIS Departments/Schools or their representatives in seven countries were collected by an e-mailed open-ended questionnaire that was sampled purposively. The conclusion is reached that although many LIS schools in the region increasingly exploit and use of ICT, underdeveloped infrastructure, inadequate resources and lack of adequate skills among staff to explore the technologies extensively, maintain existing disparities. Although students and lecturers have an overwhelming interest in learning about and using ICT. LIS institutions in South Africa exploit

ICT more effectively and to a far greater extent than their counterparts in other sub-Saharan African countries. Other hidden variables are also identified and discussed. The paper provides useful information for comparative studies as well as an agenda for research on auditing ICT capacity in LIS schools in the region.

Minishi-Majanja & Ocholla (2004). Study concluded with mapped and audited the types, nature and diffusion of ICTs in LIS education in sub-Saharan Africa. Questionnaires were sent to 51 LIS schools in 19 countries of sub-Saharan Africa, of which 29 (57%) were returned. Most LIS schools have a significant ICT content in their programs, and most ICT modules are highly rated as core/required within these programs. Practical training for ICT skills was included in all modules but to a limited extent. ICT use in teaching and learning was largely focused on computer literacy, followed by use of ICT in bulletin boards, distance learning and collaborative teaching. Only a few African LIS schools, with significant growth in South Africa, employ online teaching. ICT is used in research mainly to collect research information, to identify sources for research funds and to apply research tools such as statistical packages. There was also evidence of strong use of ICT for academic administration largely through stand-alone PCs or offline. Computer hardware availability was noted to be low as the number of computers in terms of computer student or staff ratio is extremely low. While a variety of computer software is available in the market with Microsoft products leading the market, software licensing requirements are problematic because of cost and infringements. Most institutions have set up mechanisms to provide staff with ICT competency, and evidently the agenda for ICT development for LIS education in Africa is still quite long. Such an agenda should always include provision of resources and better ICT infrastructure, staff development, ICT policy, ICT accessibility for students and staff, curriculum development, collaboration and networking for resource sharing, distance learning education, practical education/training for skills development, experiential learning, and integration of ICT in LIS education.

Okiy,Rose B (2004). Discussed the training programme organized for non-professional and professional staff of the Delta State University Library, Abraka. Coming about twelve years after the University Library opened, it was obviously overdue as these categories of staff had started to display some shortfalls in the performance of their duties. The areas are: circulation duties, shelving and shelf-reading, collection development, reference and reserved book services, filing and card maintenance, cataloguing and classification, special collection services, computerization activities and library administration.

Adeyoyin (2005). Paper gives a representative overview of the attainment level of library staff in an important area of professional competence, and shows the importance of addressing the gap between the desired levels of ICT literacy and the actual levels. To ascertain the levels of ICT literacy among library staff in a range of Nigerian libraries. A survey was conducted among the professionals, paraprofessionals and "other" members of staff of 18 Nigerian university libraries. Analysis of the data showed that, on a self-assessment basis, out of about 268 professional librarians, only 87 (approximately 32 percent) were ICT-literate, implying that the remaining 181 (approximately 68 percent) of professional librarians were ICT-illiterate. Of the 358 paraprofessionals in those libraries, only 28 (approximately 8 percent) were ICT-literate, while the vast majority, some 330 (approximately 92 percent), were ICT-illiterate. Of the 1,133 "other" staff members in the survey, a minimal 69 (6 percent) staff were ICT-literate, while 1,064 (approximately 94 percent) were ICT-illiterate. The conclusion reached was that Nigerian university library professionals and paraprofessionals should acquire an enhanced level of ICT literacy: both staff training and an adequate ICT infrastructure were recommended.

Adeyoyin (2006). Purpose of this paper is to ascertain the information and communication technology literacy level among the staff of Anglophone (English-speaking) university libraries staff and their counterparts in Francophone (French-speaking) university libraries in West Africa. A survey was conducted among the professionals, paraprofessionals and "other" staff of 28 university libraries comprising 24 Anglophone university libraries and four Francophone. The result of the findings showed that, out of about 370 professional librarians, only 179 of them

were ICT literate, while the remaining 191 professional librarians were ICT non-literate. This constitutes an overall percentage of 48.38 percent for the literate professionals as against 51.62 percent for ICT non-literate professionals. Also, out of 526 paraprofessionals, only 84 of them were ICT literate while the remaining 442 were ICT non-literate. This also constitutes 15.97 percent for the literate paraprofessionals as against 84.03 percent for ICT non-literate paraprofessionals. Other staff totaled 1,471. Only 190 of them were ICT literate while the remaining 1,281 were ICT non-literate. The questionnaires were not design to catch the grades of these two categories of skills. The paper concludes that of all the 28 university libraries surveyed, only the 40 Senegal university professional librarians have an ICT literacy level of 100 percent.

Kousha & Faslname-Ye (2006). Author tries to analyze the results of a survey on educational needs of faculty members of 06 library and information sciences departments that have bachelors, masters and higher educational level in relation with their participation in elementary and professional ICT courses. According to the views and educational needs of library instructors 06 in job training course descriptions developed and suggested. Results show that, most of the faculty members (90 percent) know participating in suggested, ICT courses very effective and useful in the process of their teaching and research in general. This survey has evaluated the range of influence of participating in suggested special courses including search in Internet (90 percent), search in specialized and scientific databases (94 percent), assessment and citation to electronic informative sources (76 percent), designing a personal site(84 percent), Internet publishing: Introduction to electronic books and references and journals (83 percent), much on teaching and research process of the specialized courses, 70 percent of faculty members tended to participate in general ICT courses (including Windows operating system, Internet, Microsoft Word.

Williams, Jamali, & Nicholas (2006). Authors provide a review of the past studies on use of information and communications technology for people with special education needs to inform a major research project on using ICT to facilitate self-advocacy and learning for SEN learners.

Literature review, encompassing academic journals indexed in education, information science and social sciences databases, books, grey literature and government reports. Information was gathered on the perceived benefits of ICT in SEN, and the use of some specific applications with people having various conditions. A number of usability studies, mainly Internet and web technologies, are also outlined. Although the literature shows a great number of ICT initiatives for people with all kinds of disabilities, there has been a surprising lack of research into the usability of the various applications developed, and even less concerning those with learning difficulties. The review of existing literature indicates a lack of attention to the application of ICT for people with SEN, compared to the other groups of disabled people such as visually impaired. Findings highlight the need for more research on usability aspects of current and potential applications of ICT for people with SEN.

Ugwuanyi (2009). Studied the state of ICT literacy among academic librarians in Enugu state. Survey design was applied by using questionnaire to collect data from 55 academic librarians in tertiary institutions in Enugu State. The analysis revealed that the level of ICT literacy skill among academic librarians in Enugu state is low though most of them indicated some elements of computer literacy. There is very poor ICT infrastructural facilities in the libraries studied. Various means such as formal education, informal education, colleagues, training at workplace, attending workshops/seminars are accepted as ideal for the acquisition of ICT literacy skills. However, financial problems, poor infrastructure, lack of library management interest and lack of training opportunity hinder the acquisition of the skills. ICT literacy is a sinequanon for effective functioning of information professionals in the emerging information society. The paper recommend that, ICT infrastructure be given more priority in the institutions' budget and opportunities to attend seminars/workshops and other professional education courses created for librarians to upgrade their professional knowledge.

Dzandu (2010) Studied about the training in the use of Information and Communication Technology and its impact on searching skills among research officers in six selected institutes of the Council for Scientific and Industrial Research (CSIR), Ghana. The libraries of the various

institutes are responsible for providing training for research officers in ICT skills. The objective was to determine the extent of ICT training provided to the research officers, the level of skills acquired, and impact of the training on searching skills. Data was collected through the use of a questionnaire and interviews. The findings of the study revealed that the research officers were given training in the use of computers, the Internet, and databases. It also showed that generally, the level of skills acquired in the use of ICT was high. The research further revealed that the use of ICT enhanced work performance of the research officers. The basic conclusion of this study is that training in the use of ICT facilities among research officers has impacted positively on their searching skills.

Igun (2010). Discussed the influence of librarians' years of working experience and sources of acquisition of ICT knowledge and skills. The study is based on 169 librarians working in thirteen university libraries in the universities of six states located in the South-Zone of Nigeria. The purpose of the paper is to find out if years of working experience has an effect on librarians' sources/means of acquisition of ICT knowledge and skills. The questionnaires used were answered by two categories of librarians. Those with longer years of experience -- 16 years and above and those with fewer years of working experience. It was concluded that librarians with fewer years of working experience explore means of acquiring ICTs knowledge and skills more than librarians with more years of working experience. It was recommended that librarians with longer years of working experience develop more interest in sources through which they can acquire ICT knowledge and skills.

Ahmad & Ahmad (2012). Author conducted survey on Information and Communication Technology offer to the students a wide range and outlook. This topic was selected as the focus of this study, which concluded that LIS students believe that ICT' has eased their learning and its use is useful to make LIS education more striking, however, the lack of e-resources, trained ICT staff, and weak networking is still a serious constraint. In this age of technological advancement, LIS students also use Internet search engines and web pages for acquiring the required information, but another important fact is that, most of the Library and Information Science

students are less satisfied from the available ICT facilities. The improvement of such factors will go a long way towards improving the use of information communication technology in the libraries in future.

Quadri (2012). Author focuses on the influence of an information professional's information communication technology skills on using e-resources. With the advent of digital content, the importance of ICT skills is becoming greater among information professionals as this allows them to easily and quickly access information and other related resources in the World Wide Web. Fourie and Bothman believe that, people's increased exposure to the Internet should prompt information professional to be ready to handle both users of information and attendant technologies.

Talab & Masoumeh (2012). Author conducted a questionnaire survey, to identify and compare the impact of ICT on training of library human resources in two university libraries of India and Iran. Descriptive and inferential statistics were used to analyze data. The findings show that, though both Indian and Iranian library staff believes that, introduction of ICT in libraries has created need for training. Library staff from Iran has perceived the effect of ICT on their training needs more than their Indian counterparts. The article concludes that university libraries in both countries have to get their library staff trained in ICT.

Peyvand & Singh (2013). Study conducted with the aim of identifying competencies needed by special librarians in Iran at three different levels of library and information science education. A list of competencies was initially identified from the literature and 21 semi-structured interviews with managers of special libraries in Iran. Then, a panel of experts was employed to validate 122 competency statements by using a seven-point Likert type scale. The results demonstrated that, the panelists validated the importance of 55 competencies required by special librarians with Associate degree qualification, while 122 competencies were validated as necessary for special librarians with Bachelor and Master degree qualifications. The findings also indicated that, the main competencies that were expected from special librarians with any qualification are

information technology competencies. Communication and interpersonal skills were identified as the second most important competencies for special librarians with Associate and Bachelor degree qualification.

Buarki (2016). Author studied about the current information and communication technology skills of faculty members at the College of Basic Education, Kuwait, to find out their ICT skills level and obtain an understanding of their training needs. A survey of 187 faculty members revealed findings on Internet access, ICT teaching courses, level of ICT skills, English language proficiency, ICT use, availability of ICT resources and ICT skills. This study recommends that, faculty members update their ICT skills and assign students to use ICT, while their employer should provide suitable Internet infrastructure and professional development courses based on a training plan. Research has generated an ICT-skilled faculty member list that employers would use to check faculty members' skills before employing them.

Uma, & Zuchamo (2017). Author try to analyze content of Library and Information Science curriculum has drastically evolved in the recent decades. With the penetration of Information and Communication Technology, technological components have become the main focus of the discipline. The present paper analyses the ICT contents of postgraduate degree courses in select universities across India. It also analyses the expectation of the professionals with regard to course content and relevancy of the curriculum in the contemporary times. The present study system suggests that, maintaining homogeneity and standardized curriculum will help in keeping Indian syllabi at par with international standards.

2.7 Analysis of the Literature Survey

The review of literature clearly reveals that, most of the studies have been conducted on modern library systems. Of late, though there have been a number of studies related to the ICT skills of LIS Professionals, there are gaps in the studies especially when it comes to ICT skills or competency levels of the librarians. Most of the studies are on the use of ICTs in libraries. There

is no specific study conducted to measure the ICT core competency skills / levels of LIS professionals working in special libraries in Karnataka, India, in particular.

Information Communication Technology skills levels of the Library and Information Science professionals working in special libraries in Karnataka. No specific research has been conducted, by adopting an appropriate tool on the "INFORMATION COMMUNICATION TECHNOLOGY SKILLS AMONG THE LIS PROFESSIONALS WORKING IN SPECIAL LIBRARIES IN KARNATAKA".AN EVALUATIVE STUDY. Hence, the present investigation assumes profound academic significance. It is clear that the technological change clearly affects library staff and there is a need to develop guidelines and policies to train the professionals in providing frontline services in special libraries. Hence, the researcher has undertaken the present study.

2.8 Summary

Karnataka State is one of the developing states of Indian Republic which has got considerable number of special libraries. Karnataka is also well known in the country as the major software Centre. Bangalore city has been rightly identified as the 'software capital' of India. Library and information resources are expanded in the State of Karnataka with a fond hope of creating enlightened professionals and citizenry in this age of information revolution. The survey and the review of related sources of literature on the subjects of the research are always helpful, and they are the first step to the designing of research study and they are of great help in designing an appropriate methodology of study. For the purpose of collection of relevant sources of information on the topic, the researcher has referred and reviewed. Reviewing related literature which gave depth of knowledge about the developments, activities, action taken, new initiations in the field of ICT for the Development of Continuing Education programmers and training for library professionals all over the world.

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CHAPTER - 03

Information and Communication Technology

3.1 Introduction

Information is very much essential for the growth and success of education, research, industry and technology. Information plays a vital role in every field of human life. It helps us in taking decisions, even day to day life of our activities and is utilized for the socio- economic scientific and technological progress of mankind as a whole. Latin word “Communicate”; meaning to impart. The reference here is to the sharing of information, knowledge of thoughts. Consequently, effective communication involves effective exchange of information. As we all recognize, is an essential for cooperation, collaboration, coordination, monitoring, managing, messaging and fundamental to all working relationships.

Information and Communication technology is in many ways, unique technology which adopts a range of technologies used to support communication and information. Popularly known applications are the Internet, database management systems and multimedia tools, etc. Rapid growth of ICT since the last two decades made lot of changes in the concept, organization, management and functions of library and information systems across the world. Apart from these changes the definition and nature of information is also changing as per the IT environment. In the past information was considered to be mainly oral and textual. However, because of changing IT, information is now thought of as multimedia- as audio, visual, graphical, textual, graphics, animations etc.

3.2 Definitional Analysis of Information and Communication Technology

ICT is defined by The World Bank as “the set of activities which facilitate by electronic means the processing, transmission and display of information”. They are a complex and varied set of goods, applications and services used for producing, distributing, processing, transforming information (including) telecoms, TV and radio broadcasting, hardware and software, computer services and electronic media.

Information and Communication Technologies (ICTs) usage ranges from traditional technologies such as the printed word, to the most modern communications and data delivery systems such as terrestrial satellites that can download digital data to a laptop computer hooked up to a cellular network. A simple way of demonstrating the importance of such ICTs in the development process is to examine the willingness of the poor to pay for services.

ICT can also be defined as a diverse set of technological tools to create, disseminate, store and manage information. These technologies include computers, the Internet, broadcasting technologies and telephony.

The American Library Association defines as “the application of computers and other technologies to the acquisition, organization, storage, retrieval and dissemination of information”. In addition, the use of hardware and software for efficient management of information i.e. storage, retrieval, processing, communication, diffusion and sharing of information.

In short, ICT includes any communication device or application, encompassing: radio, television, cellular phones, computer, network, hardware, software, satellite systems and so on. It also includes various services and applications associated with them, such as videoconferencing and distance learning.

3.3 Need of Information and Communication Technology

There is outstanding growth in the volume of publications in the various formats leading to the emergence of information society. Today, it is very difficult to run a library for providing the pinpointed and exhaustive information manually. Because librarians facing many queries from the users regarding their area of study. There are the challenges, force the librarians to adopt the ICT. Therefore it is essential to adopt information, communication and technology in the libraries.

Can be summed up as:

- ❖ Rapid growth in information
- ❖ Improvements of changes in technology developments
- ❖ Insufficient amount allotted for libraries
- ❖ Multi use of machine -readable records
- ❖ Hike of costly documents
- ❖ Need to provide better services on wider scale by adopting online storage and retrieval techniques
- ❖ Moving towards print to Machine readable format / Web media
- ❖ Insufficient physical facilities like moveable and non-moveable resources
- ❖ IT offers a new dimension to share resources among the libraries by creating library network
- ❖ Inadequate library collection
- ❖ Inability to provide efficient and effectiveness services with manual method
- ❖ Facilitate the storage, retrieval, dissemination and access of information much faster.
- ❖ Rise of competitors

3.4 Facets of Information and Communication Technology

ICT facets normally considered with respect to its main areas, which are: hardware, software, and telecommunication. These facets are considered bottleneck for improvement of ICT in information centers. Full-fledged infrastructure is vital for application of ICT in LIS Centers.

Hardware

- ➢ Fundamental hardware facilities like servers, computer workstations/nodes, printers, etc.
- ➢ Scanner, barcode printer, barcode scanner, Net Server, CD-ROM Tower, etc.

Software

To implement the hardware equipment's into proper activation, software installation is mandate for libraries to provide pin pointed update information to their readers.

- ➢ Library automation software like Libsys, SLIM++, Libsoft, Winisis, E-Granthalaya, etc.

- Digital library software's like D-Space, Greenstone, Drupal, E-Prints, etc.
- CD-Net Management

Telecommunication and networking

The transmission of data, especially digital data from one point to a remote point, is vital. Telecommunication and networking technology for transmitting digitized data of all kinds are used by libraries.

Internet

Internet is the global system of interconnected computer networks, which use the Internet protocol suite (TCP/IP) to link devices worldwide. It is called as network of networks, consisting of private, public, academic, business, and government networks of local to global scope, linked by a broad array of electronic, wireless, and optical networking technologies. The Internet provides an extensive range of information resources and services, such as the inter-linked hypertext documents and applications of WWW, E-Mail, telephony and peer-to-peer networks for file sharing.

Intranet

Intranet is a local network accessible only to an organization's staff. A company-wide intranet can be an important focal point of internal communication and collaboration to provide a single starting point to access internal and external resources. In short, an intranet is established with the technologies for local area networks (LANs) and wide area networks (WANs).

3.5 Required ICT Skills for LIS Professionals

In the digital environment, today library professionals are called for various skills. Since the study here is skill for handling digital era equipment's, the required skills are listed below:

- Operating systems : basics of Dos, Windows, Network and UNIX
- Word processing, graphics, spread sheets and presentation

- Knowledge on bibliographic database management system
- Interface / interactive tools : HTML, XML, Visual Basic
- Information retrieval tools like online databases, CD-ROM and internet
- Knowledge of library automation with digital library environment

In the above mention points, a close look at the use and application of ICTs by libraries is vital in the digital environment. Library automation in developing countries has been slow due to lack of knowledge of operational skills in using the library software packages. The information professionals in this context have to be accommodated to the basic structure and content of a library automation software package and related operations. It is stated that this task has been handicapped by some operational needs such as "financial constraints, lack of trained manpower, ineffective infrastructure, hardware and software cost and so on considering all the above aspects on the need of knowledge and skill are very much warranted in digital era in the light of the identified gaps.

3.6 Historical Perspective of Information and Communication Technology

The ICT revolution is perhaps a revolution in learning, education and research. Individuals have seen the potential of the new technology tools and introduced them into their homes on a vast scale. Public and private organizations have applied them to an ever-widening range of communication in the field of biomedicine from public health and hygiene, nutrition vaccination programs to tracking criminals.

The first revolution started during II World War with the first large, automatic, general electro-mechanical calculator Harvard Mark. It was 50 feet long, 8 feet tall and weighed five tons. A couple of years later, ENIAC were presented in Philadelphia based on radio tubes and practically without any internal memory using 18,000 vacuum tubes and weighing 30 tons. In 1947, the first transistor, on its basis, faster and more powerful computers were constructed .Computers became a new catchword and input-output technology graduated from punch cards to magnetic tape,

faster printers and more languages for programming. Applications of technologies were also expanded, i.e. from use in academic research to weather forecasting, from airline ticketing to accounting.

The second ICT revolution has its roots in the 1970s, when the first “Processors on a Chip” and magnetic discs were constructed. In the year 1977, Steve Jobs and Steve Wosniak started to sell their Apple II and Bill Gates and Paul Allen had already founded a firm called Microsoft. From being an esoteric toy, the personal computer gradually became a valuable tool for word processing, accounting, and after a while pictures. IBM launched its first machine under that name in 1981. Now the PC has become as widespread as the radio. This second ICT revolution continues like the first, the capacities of the machines increased, their expanded applications and the number of people, who use them multiplied.

The third ICT revolution is that microprocessors have become embedded in an ever-widening range of products; the steering systems of airplanes, the control panels of hydroelectric power stations, domestic air conditioning systems, the traffic lights in streets. They have become part of everyday lives; in video players, credit cards, remote controllers, cameras, hotel room door locks and smart buildings. There is a microprocessor embedded in digital scale in the bathroom, which translates bar codes into prices at the cash register, monitor electronic injection of building. An ordinary household now contains some 100 microprocessors in everything from dishwashers to alarm systems. Microprocessors constantly expand their capacity, applications, and usage. Same thing happened with various biomedical applications and usages.

The fourth ICT revolution stretches back to late 1960s, when the US Department of Defense formed guidelines for a communication network among computers i.e. ARPANET. After some time, the universities in the United States and outside the United States were hooked up to it and some started to use it for sending messages. France developed its variant-its Mantel system-at the beginning of the 1980s. At the same time, the U.S. National Science Foundation set up its own network among academic institutions, which later became a part of the Internet. A modern PC needed to use its potential fully. This fourth ICT revolution continues like the others as more and

more computers are interlinked with an ever-growing number of “servers” and an expanding range of application. Yet, the most important part of the fourth ICT revolution was the computer networks, i.e. Internet, WWW and Email services, which have become the most popular technologies of today.

The fifth ICT revolution was “linking without lines” the new possibilities opened by mobile phones. Initially they were big and bulky. Reduction in size and weight was accompanied by expansion of reach and functions and miniaturization was accompanied by multifunctional. Mobile phones could be used not just for talking, but also to exchange messages, X-rays, photographs, to receive news or stock exchange quote, review restaurants or order movie ticket. Mobile phones are no longer only for transmitting phonemes and music but have multipurpose features and functions like video clipping, digital cameras, Internet, short messages (SMS),etc. Furthermore, now a days linking without lines takes place not just intercontinental via satellites, but also via specific area or cell and inside buildings by “Bluetooth” and infrared light.

3.7 Components of Communication Technology

Communication technology or telecommunications technology made of electromagnetic devices and systems for communicating over long distances. In simple terms, technology used in transferring information is called communication technology.

Communication Technologies for Special Library

The important applications of ICTs on Special Library are same as: access to Internet, e- mail facilities, online databases, cellular phones and digital information resources like e- journals readers in different locations, electronic file transfer, electronic messaging, electronic data interchange and sending online databases as well as network databases etc.

Audio-Visual Technologies:

Audio-visual technologies are very much used in special libraries for a variety of purposes, viz.imparting education and training, knowledge, research presentations, patient care and treatment, recreation etc. Slide Projectors and Over-Head projectors were very much used in

teaching, training, research etc. earlier, but now the same have been replaced by LCD projector, multimedia technology etc.

Motion Picture: Used in libraries as an instrument of mass media communication. It is dynamic source in nature for information, education and recreation.

Video Technology: Video technology has much more importance than broadcast television. People put them in the information technology trilogy: computers, video and communications, rather than computers, electronics and communications, many libraries are using this technology for disseminating educational programs, operations and lectures for students and library users.

Interactive Video: Interactive video (IV) is a technique which offers a great deal to training methods and also to other areas of interest to business. It is a unique mix of interactive computer programmed and high density visual information on optical disc video, or sometimes compact.

Reprographic Technology: Reprography has gained international recognition since 1963.It includes photocopying, micro-copying duplicating and in plant printing and is characterized by the small scale of its operatives. These technology used in many libraries across the globe till today and its influence on delivery of documents. Reprography technology has been playing vital role in the dissemination of recorded information in libraries.

Micrographic Technology: Micrographic technology is an outgrowth of photographic technology. In 1939, John Benjamin Dancer, the father of microphotography produced the micrographic technology. That time it is believed that, microforms will have a great impact on libraries and the world of books will be replaced by the world of microforms and it gives the solution to space problem, facing by librarians at that time. Microform is a method of storage, retrieval and display of images recorded on microfilm. These techniques support for sharing of resources among the libraries and save time of the user. But the Micrographic technology is also an outdated technology and currently not much used in library all over the world.

Printing Technology: It is a device that converts output of computer data into printed images. There are different types of printers used in special libraries, viz. Laser Printers, Inkjet, and Dot Matrix etc. Many users still prefer hard copies of the documents for their studies; hence they download the required information from Internet and other sources, get the print-outs from libraries and read it. Thus the printing technology also plays a key role in libraries.

Optical mass storage: Optical media and devices are among the oldest and most economical means of archival storage of data. Optical mass storage can be categorized as: a) Microfilm is a roll of photographic images of data represented in printed form; b) Microfiche is a sheet of film typically four inches by six inches and contains 270 frames, equivalent to 270 pages; c) the Aperture card is a microfiche image mounted in a pinched card frame; Ultra-fiche is a high reduction two-square-inch sheet of film. These micro images provide a high density storage medium; d) Ultra trip is an eight-inch strip of film divided into five segments. Each segment contains 2,000 images, providing a total capacity of 10,000 images on a single strip.

3.8 Impact of Various ICTs on Special Libraries

1. **Computer Technology:** Computer technology avoids the physical storage problem of the libraries. Also with Hi- Speed in transmission of data with huge quantities of data can be handled in less time. This has offered a possible solution to the problem of retrieving a small number of relevant documents from among the thousands available in the subject of interest to the users.

2. **Internet and E-mail:** The Internet has become standard equipment in most of the Special Libraries conducting their operation and service. Now a days E-Mail has replaces the traditional mail and fax systems with saving time and energy of the users. Today, the entire correspondence with books and journals publishers and suppliers; purchasing, billing, payments, claiming etc., correspondence with users, administrative office, higher authorities,

individuals has become easy though e-mail. With the help of the Internet today we can arrange electronic conferences or informal discussion group with limited or open access.

3. **World Wide Web (WWW):** The web is noted as vital reference toll with all types of libraries with dada available either as metadata or full text, sound graphics and images. Many Special Libraries and institutions on our country have created their own website or part of their organization, to update their users about ICT source and services periodically.

4. **Library Networks:** Library Networks and other services have also become an essentials part of special libraries in our country, In India, over the last decade various networks namely; INFLIBNET, NICNET, HELINET, DELNET, ADINET, etc. Have made deep roads into special library sector in Indian and have been working very closely with them in transformation to install and integrate computer networks into the learning and research environment. More and more Special Libraries in Karnataka installing campus-wide networks, state wise and region wise network.

5. **Multimedia on Library Services:** Multimedia services have great impact on Special Libraries. It not only helps the users providing information from different media on one platform, but also save on space, money, maintenance, operational inconveniences etc., The major advantages of multimedia in Special Libraries; i) satisfies the different information needs such as reference, enrichment, entertainment, leisure etc., ii) it helps meeting various types of information preference of the users such as scholarly, scientific, vocational, artistic, recreational etc., iii) being a digital format information can also be accessed by remote users on a network; iv) it is interesting, excellent, quick and easy to use over the exiting form such as print microforms, online etc. v) its control and interactivity helps the users and provides the benefits of book and human beings; vi) it offers innumerable possibilities for teaching and learning of any subject with any modification mode; vii) resource sharing and networking are some of the most important feature of multimedia; viii) it create 3D efforts of an object in a variety of ways,; ix) it gives the ability to the users to handles live as well as stored data simultaneously with new kinds of device; x) multimedia can have management

techniques by using managements information system (MIS), decision support system, electronic spread sheet, export / systems and DTP, etc.

6. **Online Databases:** Online databases accessible though internet or local network. Online databases are hosted on websites, made available and accessible though computers with internet or local area connection with the tool of web browser. Some of them or open access and most of them are paid with annual subscription. Some of the online databases have enhanced features such as collaborative editing and email notification by regularly. Most of the libraries are moving away from subscribing of machine readable forms and replacing with online databases via Internet.

7. **E-publications:** Publishers are providing access to the full-text journals in electronic formats; Libraries have been shifting their focus from print resources to e-resources. Access to a specific set of e-Journals is bundles with other e-Journals have increased the larger number to their end-users. Sometimes the other Journals are not much useful to the users, but the libraries are forced to subscribe since the same are in the same are in the same e-bundle. E-Journals have many advantages over prints media including saving of space, increased speed of communication, availability of powerful searching tools, avoids loss of Journals in transit, in-necessary communication with publishers is also avoided compare to print Journals. It also provides immediate access to user's desk and can provide facilities facilities such as intergraded text, hypertext links and multimedia, which the printed journal cannot offer. Consequently e-Journals are highly used by scientists in our country. Some of the libraries in India, they have started eliminating the print Journals and few are continuing with some print along- with e-Journals. Many libraries in India are turning to consortiums to help negotiate licenses to access online contents and reduce the budgets.

3.9 Conclusion

It is concluded that, first information revolution occurred with improvement of reading and writing as a communication medium, the second when Gutenberg invented the printing machine and the third when computer technology was applied to information handling in the 1950s.Later,the revolution has continued with technological developments in the field of computing, electronics and telecommunications resulting in the development of a whole new range of information services. For this reason the development of the electronic information industry has rightly been recognized as having great impact on all the fields of special libraries. The present ICT revolution has transformed a communication-conscious society into an information obsessed global village in the short span of just two decades.

In past few years the rapid developments in the technology for communication media like television, cell phone, Internet, printing and publishing has enabled the user to get prompt access to the required information from any corner of the world and have made it a powerful tool. Thus, the ICT has replaced the conventional methods to get the information by introducing fast and reliable tool based on its ability to access large and complete packages of data. It has become all pervasive due to its distinguishing features of decreasing cost, size and increasing speed, storage and communication capabilities irrespective of the geographical location. The nature of information delivery and consumption has tremendously changed. ICT is a driving force for changes in the libraries in general and specific in nature. The ability to retrieve, organize and store information with electronic sources has started narrowing the gaps between the users and information providers. The ICT tools like computers, internet, multimedia, data base technology, cellular phones, satellite communication, telemedicine, video-conferencing and teleconferencing have become major tools in handling readers queries and fulfill the needs of the information in special libraries.

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Chapter -04
Special Libraries

4.1 Background

Recognition for special libraries started in the later part of nineteenth century. Twentieth century can be called as an ‘era of special libraries .However, the concept of special library evolved during twentieth century, after World War II. Special libraries is in India is interrelated to the expansion of R & D Centers, leading to establishment of such libraries in India. Development of Scientific and industrial research after the First World War, library research activities received more impetus. Since 1947, there is a balanced research activities due to the emergence of scientific institutions, laboratories, academic and learned societies, etc. Further impetus is seen during the last forty years due to the application of information and communication technology (ICT).Use of information technology for libraries has changed the way of their operation and functioning. Today, special libraries are providing various kinds of services in such a way that one could have not imagined earlier.

4.2 Definitions

John Cotton Dana (1909, p.5), founder President of Special Libraries Association, has correctly put it by saying that “these special collections of books, reports and other printed materials are varied in their character and in the use made of them, that no definition of special libraries began to crystallize only after the turn of the twentieth century, but the emphasis varies from one definition to another which should be evident from the following definitions”.

Johnson (1915, p.158) considered ‘service’ as the most important criterion of a specifically ranked its service as more important than its subject matter.

White (1984, p.1) has emphasized upon “specialized clientele and materials.’ He said that “a special library deals with a specialized clientele or specialized materials or with a combination of both.”

Close to Ridley, Dr Ranganathan (1949, p.362) observed: “specialization in a subject to be the characteristic that makes a library a special library.”

According to Ferguson (1953)," Special libraries are set up to serve the specialized interest of an organizations- business, professional, governmental. And industrial – and they operate as units of these organizations.' The emphasis in this definition is on the 'service' and 'institutional affiliation'.

According to Dudgeon (1912.p.133), a special library is a "utilitarian establishment calculated to serve the workers too busy to take time for scholarly investigations. " Here another dimension of 'time' has been added.

Lapp (1918.p, 157) emphasized on "the idea of applying knowledge and information to actual work, "which supports the slogan of Special Libraries Association.i.e."Putting available knowledge to work." ´ the important aspect here is the role of libraries in the "applications of knowledge."

According to A stall (1966.p.9)."Special libraries serve the specialist clientele, located within a single establishment or group, and all are engaged in working towards one common purpose." The emphasis here is on 'specialist clientele' and 'common purpose 'of the organization.

4.3 Observed Generalizations

Decade-wise chronology of all the definitions given in Encyclopedia of Library & Information Science (V.28, 1980, pp.390-394) emphasis on the following significant characteristics:

1910-1919: Special subject (s) and special collection (s). Service is more important than the subject.

1920-1929: Importance of the influence of the special librarian.

1940-1949: Subject training as qualification for a special librarian, Non-print materials as a part of the collection

1950-1959: Timeliness of the information available, Objectives and aims of the parent organization of the special library, existence for the defined group of users.

1960-1969: Unpublished materials as a part of the collection, availability of information creates a demand for more information.

1970: A synthesis of earlier segments:

1. A parent organization
2. Furtherance of the goals of the parent
3. Special subject (s) or format (s)
4. Administered by a librarian or specialist in the subject (s) or format (s)

Definitions are presented which leads to representing of the five fundamental levels of development of specialized libraries. Each successive description is more comprehensive, and the statements are presented in the order of increasing sophistication. Special libraries can exist at any of the lower levels, and can satisfy the requisite needs of their parent entities.

1. **A special subject collections:** This phrase defines the subject (or subjects) of the collection. One of the major misunderstandings about specialized libraries is that each one is a special subject collection, but a special subject alone is not sufficient to define a specialized library. This subject approach was adequate 50 to 60 years ago, but in 1970s; it is a relatively native approach.

2. **A special subject collection or a collection in a special format:** This adds the concept of nonbook material like maps, pictures, clippings, government documents, patents, research notebooks, musical scores, sound recordings, audiovisual materials, microforms, computer programs, etc. The informational content is rarely dependent on the form of storage.

3. **A specialized collection organized for use by a specialized clientele:** In this level, the user is recognized as an integral factor in a specialized library. More importantly, there is recognition that the collection must be organized to meet the needs for its specialized users.

4. **A special collection organized so as to anticipate the specialized services required by a specialized clientele:** An important operative factor enters with the anticipation of the clients' needs by the library staff.

5. **A special service organized around a specialized collection so as to anticipate or to be quickly responsive to the needs of its specialized clientele:** By replacing "collection" with "service," this definition does not imply that telephones and electronic communications have replaced the basic collection. It recognizes that no collection (regardless of size) can have all the necessary informational materials at hand.

A library specializing in law, medicine, science, arts, and technology falls under the category of libraries; blind persons, prisoners, children, doctors, lawyers, accountants, engineers or any specialized clientele. A library dealing with specialized format of collection, such as microforms, musical records, maps, Braille books, digital documents, electronic sources can also be termed as a special library.

4.4 Characteristics

At present there is no generally-acceptable clear and distinct definition available to satisfy everyone explicitly and adequately. One of the ways of defining a special library is to describe the various characteristics in an increasing order, which can be found helpful in identifying the character of a more fulfilling special library.

A characteristic distinguishes a unique feature evolved for some clear identification. Various distinguishing characteristics have been taken into account as briefly described below;

1. Location

Location or place for a special library is not as significant, the location is planned in traditional and non-conspicuous places where library was not planned or expected, e.g. business **or** industrial libraries. It may be found in unusual places in the corner of the factory.AS such libraries function is objective-oriented and location has no effect. In addition, they need publicity about their existence and use.

2. Limited Clientele

Usually, Special library users are limited in numbers; librarian of such a library knows them personally and knows the subject interest of each one of them. He is in a far better position to ascertain their needs and pattern of information gathering.

3. Smallness

Smallness is another characteristic, peculiar to a special library. A library is smaller in size has limited (narrow) subject scope and the collection is usually small and staff is also small. At many times, it will be a one-man show.

4. Subject Orientation

Special libraries normally focus on specific subjects, relevant to the parent organization's activities. The collection would, therefore, be quite comprehensive on the specific subjects, with selective material on related or peripheral subject areas.

5. Relationship to Organizational Mission

Special libraries are expected to fulfill mission of the parent organization. As they get financial support from their organization, but they have to prove their usefulness to the parent organization, or else they may even to exist. Organizations like banks, manufacturing corporations, professional associations and government agencies have objectives in which libraries have no directly discernible part.

6. Impact of Organizational Policies

Special library forms a part of the bigger organizations to which it belongs. Hence, it is subjected to the existing organizational policies, and accounting procedures, etc.

7. Librarian is Proactive and Innovative

In special libraries, librarian is expected involved in all the ongoing projects of the organization and support as a member of research team. He knows his users' demands individually, maintains their profiles, provides SDI services, etc. He is fully aware of ongoing requirements of the users

as well as well future demands of the organization.

8. Specialized In –house Material

Special libraries often generate different types of in –house material like various types of reports, technical notes, laboratory notes, memoranda, specifications, etc.

9. Restricted Access

Some libraries feel sensitive about borrowing the journals on inter-library loan for similar reasons. For the organizations engaged in sensitive research projects, it is essential that such restrictions are maintained for security reasons.Hence, libraries attached to organizations like defense organizations, intelligence organizations police headquarters, government departments, scientific or other such research institutions have limited access.

10. Digitized Environment

Special libraries are now moving towards digital environment, involves in a combination of management techniques and information technology. Such libraries required a highly digitized environment.

11. **Information formatting 'Just for you** '

In special libraries, there is an emerging marketing kind of trend of personal touch in providing information service. The needed information is formatted in a way to serve the purpose of each individual as if it is just created for him.

4.5 Functions

The objective of special libraries is to perform specialized functions to achieve the goals of the parent organization. Many of them have already been cited earlier while discussing their characteristics. Some other important functions are given below:

1. To develop a specialized collection to support the requirements of the organization. Non – book material forms the bulk of collection in such libraries, as specific and current information is mostly available in such material.
2. Librarians of such libraries are expected to keep themselves informed about the emerging information needs of the organization and select material in anticipation of the actual requirement, filling and retrieval of the information.
3. Indexing and abstracting of articles, reports and other micro-documents in depth, using new technologies.
4. Conducting comprehensive literature searches (manual, computerized, and online).
5. Creation and dissemination of different types of currently published information, including preparation and distribution of library bulletins.
6. Compilation of bibliographies and personalized services of various types.
7. Editorial assistance for internal publication and translation of foreign language publications.

4.6 Historical Perspective of Special Libraries in India

In India, libraries have existed since the dawn of human civilization. The ancient seats of learning like Nalanda, Vikramashila, had well developed libraries. In British rule, there was negligence towards scientific and industrial research. However, during the twentieth century, with the emergence of learned/scientific and research institutions, the impact of science was really felt. As a result, research activities received an impetus, particularly in the development of material, medicine, communication and other related technological fields. Since independence in 1947, there has been a steady growth of research activities due to the rapid industrialization, formation of scientific institutions, and creation of R & D laboratories.

The Beginning

Sir William Jones was established Royal Asiatic Society Bengal, in 1784. The objective was to enquire about science, arts and literature related to Asia. It is known for its collection of ancient coins and medals as well as archaeological, technological and geological records. In 1832, for

the advancement of science and dissemination of the results of the scientific research in the country, the Society started its first periodical, “The Journal of the Royal Asiatic Society of Bengal”. This society proved to be the inspiration for all literary and scientific activities in India. Subsequently, it became the model for all other Asiatic societies of the world.

General Science

In 1883 The Bombay Natural History Society was founded and started to publish journals in 1886.J.N.Tata was founded “The Indian Institute of Science (IISC)”, Bangalore, in 1909.Which has played a pioneering role in advancing sciences in India. The leading association of Indian scientists, namely, the Indian Science Congress Association established in 1911 contributed significantly to the advancement of scientific research. The Institute of Paleo botany was established in Lucknow in 1946.Another institute of national importance, the National Institute of Sciences, was formed on January 3, 1935 which, in 1970.This is renamed as Indian National Science Academy (INSA) at Delhi. INSA is a coordinating body similar to the Royal Society of London. It is one of the premier scientific organizations of India which is actively engaged in R & D activities.

National Chemical Laboratory (NCL), Pune, (1949); Physical Research Laboratory, Ahmedabad, (1948) were other important institutions established during late 1940s. The year 1950 had been a landmark year in the history of India as many significant organizations, like, National Physical Laboratory (NPL), New Delhi (1950); National Metallurgical Laboratory, Jamshedpur; Central Fuel Research Institute, Jabalpur; and Central Food & Technological Research Institute (CFTRI), Mysore, were set up in the same year. Indian Research Fund Association, formed in 1922, renamed as Indian Council of Medical Research (ICMR) in 1950, was established during that period. Other leading organizations established in 1950s included Central Drug Research Institute (CDRI), Lucknow (1951); Central Electro- Chemical Research Institute, Karaikudi (1953); Central Leather Research Institute (CLRI), Madras (1953); Central Building Research Institute (CBRI), Rourke (1953); and Central Salt Research Institute, Jaipur (1954).

Surveys of India

In 1851, The Geological Survey of India was emerged, followed by in 1862 and 1889, Archeological Survey of India and Botanical Survey of India. Zoological and anthropometrical research started in the Museum of Asiatic Society in 1841 and was gradually strengthened with the establishment of Indian Museum in 1856.Subsequently, these two sections were converted into the Zoological Survey of India (1916) and the Anthropological Survey of India (1946).All of them started publication activities in their own fields. A school for surveying was established at Madras in 1793, Meteorological Department of the Government of India came into being in 1875. Prior to this, meteorological observations and stations were set up in Madras (1796). Calcutta (1824) and Bombay (1841).

Physical Sciences

In 1876, The Indian Association for the Cultivation of Sciences was founded. For physical sciences. In 1917, J.C.Bose was established Bose Institute in Calcutta and Sir C.V. Raman established the Indian Academy of Sciences at Bangalore in 1934. Over a period of time, both of them became very strong centers for physical research. The Tata Institute of Fundamental Research (TIFR) established at Bombay in 1945, is closely associated with the Atomic Energy Commission (1948). The Physical Research Laboratory, Ahmedabad, was established in 1948 and the National Physical Laboratory (NPL), New Delhi, in 1950. During this period, many leading R & D organizations were also established in the field of atomic research, such as Bhabha Atomic Research Centre (BARC). Trombay (1954); Reactor Research Centre, Kalpakkam: Variable Energy Cyclotron Centre (VECC), Calcutta; the Physical Research Laboratory, Ahmedabad (1948); the Institute of Radio Physics and Electronics, Calcutta (1949), and the Institute of Nuclear Physics, Calcutta (1951).The National Aeronautical Laboratory, Bangalore, was established in 1960 and the Indian Space Research Organization (ISRO), Ahmedabad, was established much later in 1973.

Medicine

In 1824, the first medical school was established in Calcutta and in 1835, it was converted into a medical college for providing training in physics, chemistry, botany, anatomy and clinical subjects. In 1845, second medical college was established in Bombay (now, Mumbai) with similar training facilities. By the end of nineteenth century, there were ten medical colleges and schools in India. The Government concentrated on developing specialized medical institutions. In 1899, the Haffkin Institute was established in Bombay as a plague research laboratory was gradually developed into an important center of research for preventive medicines. The Central Research Institute (CRI) for medical research was started at Kasauli in 1906, and in 1927 one of its sections was developed into Malaria Survey of India. The Nutrition Research Institute was established in Coonoor in 1928 and the All India Institute of Public Health and Hygiene was set up in 1934. Some other important medical institution established by the State Governments included King Institute of Preventive Medicines, Calcutta in 1921. The Indian Research Fund Association started in 1911 for the promotion of medical research. It was renamed as Indian Council of Medical Research (ICMR) in 1950. The National Medical Library (New Delhi) was established as a departmental library in 1926 under Directorate General of Indian Medical Services. In 1961, it was named as Central Medical Library. On April 7, 1966 it was named as Central Medical Library by the Government of India. National Medical Library is the South-East Asia region's largest medical research library in a single scientific/ professional field, housed in the campus of All India Institute of Medical Sciences, New Delhi.

By the end of 1990s, there were more than 744 medical libraries in the country, covering diverse areas, such as allopathy, homoeopathy, naturopathy, unani, ayurveda and yoga. These were established for the use of members of medical and dental colleges, associations, societies, research institutes, government departments, pharmaceutical companies and large hospitals.

Engineering

In 1847, Rourke College of Engineering started at Rourke in India. It was the first engineering college established under British Empire and in 1854, it was renamed as Thomason College of Civil Engineering. In 2003, all the Regional Engineering Colleges (REC), have been converted into National Institutes of Technology (NIT's). These colleges are located in different states of India and at present 30 institutions are operating. All these are having their well-developed libraries to fulfill their user's information requirements.

Agriculture and Veterinary Sciences

In 1885 and 1896, Agricultural departments were set up in Bombay and Bengal respectively. In 1889, The India Veterinary Research Institute started in Mukteswar.Agricultural Research Institute was founded at Pusa (Bihar) in 1903 and in 1934, it was transferred to New Delhi. It is now known as Indian Agricultural Research Institute (IARI). Another important institute, the Forest Research Institute (FRI) was established at Dehradun in 1906. In 1929, ICAR was set up for research in agricultural commodities like cotton, jute, sugar cane, oil seeds, tobacco and coconut, etc.

Council of Scientific and Industrial Research (CSIR)

In 1942, CSIR formed and it was a turning point in the history of scientific and industrial research in India. In 1952, CSIR set up Indian National Scientific Documentation Centre (INSDOC) to provide documentation services in science and technology. On September 30, 2002, INSDOC has been merged with National Institute of Science Communication (NISCOM), and National Institute of Science Communication and Information Resources (NISCAIR) has been formed.

NISSAT

NISSAT was launched with the assistance of UNESCO in September 1977.At present, there are 13 sectoral information centers to meet the information needs in specialized areas, such as leather technology (NICLAI, Chennai), food technology (NICFOS, Mysore), machine tools and production (NICMAP, Bangalore), drugs and pharmaceuticals (NICDAP, Lucknow), textile and allied subjects (NICTAS, Ahmedabad), chemicals and allied industries (NICHEM, Pune), advanced ceramics (NICAC, Kolkata), bibliometric (NCB,New Delhi), crystallography (NICRYS, Chennai), CD ROM (NICDROM, Bangalore), management studies (NICMAN, Ahmedabad) and marine science (NICMAS, Goa) (NISSAT Brochure).

The Humanities

In India, we can see a couple of libraries in humanities, for providing best resources for its research scholars. Some of the leading libraries are listed below:

Asiatic Society Library, Kolkata

Bhandarkar Oriental Research Institute Library, Pune

Central Institute of English and Foreign Languages Library, Hyderabad

Dar-ul-Uloom Deoband Library, Deoband

Indira Gandhi National Centre for Arts, New Delhi

National Archives of India, New Delhi

National Archives of India, New Delhi

National Library, Kolkata

Rampur Raza Library, Rampur

Sahitya Akademi Library, New Delhi

Thanjavur Maharaja Serfoji Saraswathi Mahal Library, Thanjavur

The Asiatic Society, Calcutta, formed in 1784, is one of the oldest institution for learning and made tremendous contribution to the growth and development of antiquarian, scientific and literary institution in India.

In 1875, The Khuda Bakhsh Oriental Public Library was started in Patha, by Md.Khuda Bakhsh and in 1891, it was opened to the public.

Social Sciences

In 1958, The A.N. Sinha Institute of Social Sciences was started at Patna.

The Indian Council of World Affairs (ICWA) Library, New Delhi, was founded in 1943.

In 1965, The Indian Institute of Mass Communication (IIMC), Library set up in New Delhi.

In 1954, The Indian Institute of Public Administration (IIPA), was started at New Delhi.

In 1956, The National Council of Applied Economic Research (NCAER), set up at New Delhi.

The National Institute of Public Finance and Policy (NIPEP) Library, New Delhi, an excellent collection on public finance and policy in the form of books, periodicals and reports.

The Parliament Library, New Delhi, founded in 1921, has a strong collection of books and reports of central, state and foreign governments, publication of U.N. and its agencies, gazetteers, debates, acts, rules bills etc. (both center and state).

In 1936, The Tata Institute of Social Sciences (TISS) Library was set up at Mumbai.

NASSDOC

In 1969, Indian Council of Social Science Research (ICSSR) was formed and it was a landmark in the field of social sciences. Social Science Documentation Centre (SSDC) set up under the aegis of Indian Council of Social Science Research (ICSSR) in 1970 and it was renamed in 1986 as National Social Science Documentation Centre (NASSDOC).

Indian Association of Special Libraries and Information Centers (IASLIC)

Indian Association of Special Libraries and Information Centers (IASLIC), a national professional body, was established on September 3, 1955 with enthusiasm and initiation of handful dedicated libraries to promote and encourage the systematic functioning of libraries attached to learned societies, business and industrial organizations in India. These libraries were later called as special libraries.

IASLIC was started with the membership of 125 librarians who were facing of technical problems. Since then, it is playing an important role for the development of special libraries and information centers in India. It is actively involved in education, research, training and publication activities. It organizes regular seminars and conferences, etc., on specialized themes. According to an estimate, there are more than three thousand special libraries in India attached to various government and private institutions.

Special libraries have been referred to with different nomeauclatures. At times, they are individually designated according to the name of the organization and their location. Sometimes they reflect placement of the unit in the organizational plan while in some other cases a specific domain of activity is indicated. Some of the designations known to be in use are the following:-

Scientific Library

Technical Library

Technical information Division

Information Centre

Research Library

Research Laboratory Library

Research Centre Library

Technical Literature Research Department

Research and Development Library

Science Information Service

Central Information Service

Engineering Library

Biological Sciences Library

Physical Sciences Library

Now, with the introduction of information technology, some more names like digital library, electronic library, virtual library, e-library, cyber library, cybrary, etc. have also been added to the list of designations.

4.7 Designations used for Librarians

Some of the designation used for librarians is given below:

Director (library)

Documentation Officer

Information Officer

Information Scientist

Knowledge Manager

Library Manager

Library Officer

Librarian

Manager (information)

Scientific Officer (information

Scientist (Library)

4.8 Types of Special Libraries

4.8.1 Introduction

Modern society is characterized with the establishment of an increasing number of specialized institutions in various fields of user activities. All these organizations need specific information in their own field of specialization to carrying out their day-to-day functions, research and developmental programmes, consultancy work etc. Special libraries are established to meet their information needs. Such information is available in the special library, enables the researchers, scientists, and professionals to update themselves with the latest information, relevant to the organizations interest.

4.8.2 General Categories of Libraries

Basically, there are four categories of libraries. They are national libraries, public libraries, academic libraries and special libraries. Among these, the nomenclature of the first three is self-explanatory and there is no confusion. The public libraries, commonly referred as for the people, of the people and by the people and they are open to all. Such libraries develop the collection which is general in nature to fulfill the information needs of all types of readers. The academic libraries attached to academic institutions, like schools, colleges and universities. Users of these libraries are students and teachers. In addition, there can be research scholars, if the institution has a provision for research. Hence, collection in all such libraries is developed according to the teaching and research (if applicable) programmes of these institutions. National libraries have an obligation to preserve the literary heritage of the nation to which it belongs. It is responsible to build up the collection received under the Copyright Act. In addition, it also acquires documents received through purchase, gift and exchange. They serve the information needs of the nation.

4.8.3 CATEGORIES OF SPECIAL LIBRARIES

Special libraries are of various types, like newspapers, gramophone records, maps and atlases, standards and patents, digital, electronic, etc. But, if we go by users, grouping can be made like. Braille, children, prisoners, hospitals (patients), etc. Hence it is difficult to define exact categories. However, for the purpose of categorization, these libraries have been broadly grouped under following categories:

1. Research & development Centers,
2. Government,
3. Business, Trade and Industry,
4. Socio-economic Development Research Institutions,
5. Newspaper,
6. Autonomous Libraries,
7. Prison Libraries,
8. Hospital Libraries,
9. Children Libraries,
10. Mobile Libraries,
11. Libraries for Blinds/Handicapped,

4.8.3.1 Research and Development Centre Libraries

The R & D organizations in any country have been regarded extremely important as they are basically concerned with mission-oriented activities, aiming and contributing towards the development of a nation. Such organizations develop new products and processes; create new knowledge and understanding, contributing to the social and economic development of a country.

Users

Users of such libraries are scientists, researchers, and employees working in the organization on various projects.

Document Collection

The type of documents include working papers, discussion papers, research notes, conferences / seminars papers, technical and research reports, patents, standards, etc. This type of resource of information are created by the R & D organizations for their internal use, and for internal circulation only.

Services

CAS, SDI, Reference, Literature search (online or offline) and Translation are a common feature of all special libraries. Such services are of greater importance in R & D organizations because of their basic requirements and availability of vast amount of scientific and technical literature generated on the account of information and document explosion. Therefore, these libraries provide the following types of service:

1. Retrospective literature searches for which computerized bibliographic databases have been found to be extremely helpful,
2. Networks are proving to be boon for accessing the current literature(geographically scattered) which is not available in a library due to their cost or may be, because it does not fall under the scope of a particular library, and
3. Translation service for the literature available in other languages.

Examples

1. Regional Research Laboratory, Hyderabad.
2. Bhaba Atomic Research Centre, Mumbai.
3. Tata Institute of fundamental Research, Mumbai.
4. Raman Research Institute, Bangalore.

4.8.3.2 GOVERNMENT LIBRARIES

Government libraries primary function is to serve the government at a different level. The number of such libraries is very large and they differ widely in size and scope. These are attached with various ministries, departments, divisions, branches or sections to serve the legislative, administrative, judicial and constitutional functions of the government. The government at the center has four organs, namely,

1. Executives
2. Judiciary
3. Legislative
4. Constitutional, i.e. Authorities set up under the provisions of Constitution.

These libraries are responsible for supporting the basic functions of their ministries, such as (i) formulation of programmes and policies, (ii) administrative and regulatory actions, (iii) advisory functions, and (iv) research programmes. They provide all the needed information which is helpful to take appropriate decisions and to support different types of development activities.

Users

Users in such libraries include administrative and executive officers, members of Rajya Sabha and Lok Sabha, government servants, and employees of the concerned organization, etc.

Document Collection

Collection of such libraries is dominated by government documents, which are issued under the imprint and authority of the government agencies or at the expense of government whenever required by law. These are major resources of information and the product of activities like policy making and planning administration and regulation of various government departments. Basic collection comprises of official gazetteers , statistical reports, census reports, parliamentary debates, committee and commission reports, budget papers, bills/acts/laws, policy/ plan documents, in-house publications and other government documents .Reference sources like

newspapers indexes and digests, statistical sources, directories, biographical, geographical, geographical sources are categories of documents very often available in these libraries. Such documents may be directly available from the concerned government departments and not through non-governmental agencies.

Services

The scope of such services depends on the nature and function of the ministry to which a particular library is attached. However, the most important services relevant to such libraries are;

1. Current awareness service, involving preparation and circulation of list of new acquisitions(accession list),
2. Preparations and circulation of newspaper clipping to senior administrators,
3. Reference service is actively rendered to the admintrations to fulfill their daily needs of information. Its demand increases many folds during the parliament or assembly session period (winter, monsoon, etc). It involves searching of government documents, bills, Acts, proceedings, statistical sources, budget documents, etc.

Examples

1. Parliament Library, New Delhi.
2. Central Secretariat Library. New Delhi.

4.8.3.3 BUSINESS, TRDE AND INDUSTRIAL LIBRARIES

This category is significantly different under special libraries. Such libraries are not schools of commerce where people are expected to learn commerce but a place where skilled commerce people go to obtain their information. They include libraries attached to business house, trade organizations, industrial organizations and commercial organizations, forming a very large group of libraries.

Definitions

Industry

The term ‘industry’ denotes collection of producers or manufacturers of similar goods or products. They are concerned with large-scale production and manufacturing of goods (also called products), e.g. drugs, TV, radio, automobiles, garments, cosmetics, food items, etc. In addition to production, they may also be involved in the marketing and sale of items thus produced.

Trade/Commerce

The term ‘trade’ on the other hand is concerned with selling (including servicing) aspects of manufactured goods or products. Quite often the term ‘commerce’ (large scale exchange) is used along with ‘trade’ (trade and commerce) to signify the same function.

Firms

According to language of economics, the organizations involved in business or trade industry are collectively called established to manufacture goods products; or to sell goods /products and services; or to do both. Many manufacturing companies have libraries attached to their R & D departments. Such libraries have also been called ‘technical libraries’ or ‘technical information centers’.

Users

Users in such libraries are well defined clientele, limited to their parent organizations. Within these limitations, the clientele may range from the employees of a single department to all the employees of the organization. This includes all the employees of the organization, including its branches and sub-branches, located in other geographical locations as well, involved in business and trade.

Document Collection

The collection in business libraries is different from the other special libraries. In addition to the acquisition of conventional material, like books and journals, such libraries dominate in the category of non-book materials, like trade catalogues, standards, patents, specifications, company reports, technical reports, market survey reports, banking company reports, drawings and designs, newspapers, maps and atlases, etc.

Services

The librarian of such a library is concerned with the provision of accurate, up-to-date and timely information for which he is not only concerned with what is available in his own library but also what is available in the other libraries dealing within the same area. Hence, a business librarian has to keep in regular touch with other business libraries and external agencies dealing in the same or allied areas.

Current awareness service, newspaper clipping service, indexing and abstracting services, retrospective literature searches (including online), and reference service include the most important services of these libraries. Updating and speedily provision of the current information in business libraries is the key to the effectiveness of the current awareness service.

Examples

1. Engineers India Limited Library, New Delhi.
2. Bombay Chamber of Commerce and Industry Library, Mumbai.
3. Trade Authority of India Library, New Delhi.
4. Federation of Indian Chamber of Commerce Library, New Delhi.

4.8.3.4 SOCIO- ECONIMIC DEVELOPMENT RESEARCH INSTITUTIONS LIBRARIES

Establishment of socio-economic development research institutions is a phenomenon of late sixties. Such institutions have come into existence in developing countries like India, Bangladesh, Sri Lanka, as well as in developed countries like Germany. The names of such organizations generally include the terms like 'development studies'and'social Science Research'. As a result, many development research institutions (DRI) have been established within and outside the university systems.

Users

Users in such libraries include social scientists, researchers, administrators, planners, statisticians and the employees of the parent organization.

Document Collection

For this purpose, books, journals, and newspapers constitute a major component of the collection of these libraries. Being conventional documents, they readily available but the non-conventional (unpublished) documents (often called grey, fugitive and invisible literature) playing an important role in such libraries are neither easily accessible nor available through normal trade channels. These non-conventional documents include unpublished working paper, feasibility and pre-investment studies, research reports survey reports, government document, etc. Such documents, also known as non-formal documents, are produced for specific purpose and are difficult to access because they lack proper bibliographical control.

Services

Services include current awareness service (in- house as well as commercial), reference, literature (current and retrospective) search (online or offline), translation, etc.

Examples

1. Centre for Policy Research Library, New Delhi.
2. Tata Institute of Social Sciences Library, Mumbai.

4.8.3.5 NEWSPAPER LIBRARIES

Newspapers have been regarded as the watch dogs of democracy, as they inform, educate, change and form the public opinion on matters of national or international importance. Newspapers owe a great responsibility of providing the latest information about the current events and developments taking place in any field of knowledge, ranging from social, economic, political, and cultural to latest technology. Hence,the newspaper libraries have generally been referred to as 'knowledge industry'.

Users

Users of such libraries are the journalists from media (including radio & TV), editors and their editorial staff, article writers, special correspondents and employees of the organization, etc.

Document Collection

As the title indicates, the basic collection in the libraries is newspapers, published locally and nationally in different languages. Such libraries have been categorized as special libraries on the basis of format of documents. In addition libraries develop collection in a variety of subjects, such as politics, economics, foreign affairs, social legislation, current affairs (sports, crime, personalities, etc.), finance, defense, journalism, mass media, etc. Further, reference sources like newspaper indexes and digests, encyclopedias, biographies, yearbooks and annuals, statistical and geographical sources and directories, etc., are also very frequently required sources in newspaper libraries.

Services

Most of the information required is urgent, as editors/ sub- editors have to meet the prescribed deadlines. Therefore, current awareness service, indexing and abstracting service, newspaper clipping service, news digest service and reference, etc., are the most important services available in these libraries.

Examples

1. Times of India Library, Mumbai.
2. Economic Times Research Bureau, Mumbai.
3. Business India Library, Mumbai.

4.8.3.6 BLIND SCHOOL LIBRARIES

There are few Blind School Libraries in India and one such library is at Dehradun. This functions under the Ministry of Social Welfare. The Library for blinds has a literature written specially for blinds in Brail language, letters of which are in the form of brail and these can be studied with the touch of fingers feeling. It is a very special kind of library. At present the blinds are doing their Post-Graduation and recently a blind man was allowed to appear in Medical competition conducted by AIIMS, Supreme Court of India directed the AIIMS, Delhi to allow the blind student to take up the competition. England has pioneered in the specialization for preparing the text books and other documents in Brail Script. Blind School Libraries have a very limited scope in India, as very few libraries for Blinds are available in India.

4.9 General Vs Special Libraries

Special Libraries are very much different from general libraries (public or academic or national). Sometimes even general libraries play the role of special libraries, especially when they develop a collection in a particular area (e.g. center of advanced studies or departmental libraries in

university libraries) or when they cater for the needs of specialized clientele (e.g. children in a public library) or when national or public libraries build up specialized collection .Ex:-Science and Technology Division, Geography Division and Map Division in the Library of Congress.etc. In such cases, they act as special libraries in a limited sense, whereas a special library has to have certain characteristics used as criteria.

Table 4.9.1

General vs Special Libraries

Characteristics	**General Libraries**	**Special Libraries**
Unit of Service	Documents	Information, irrespective of form
Emphasis	Books and journals (macro-documents) available within the library. Emphasis is on possession of documents	Information service, based on micro-documents. Emphasis is on urgent information delivery. Information needed may be available anywhere in any form.
Access	Provide access to documents	Provide immediate access to the required information
Environment	These are traditional libraries working in traditional environment.However situation is changing now	They are moving towards digitized environment.
Users	General public in public and national libraries ,students and teachers in academic libraries	Researchers, scientists,experts,etc. working in the organization
Users Demands	Received in a very general way; users are guided to find information themselves	Attended personally and their searches are tenaciously pursued by the librarian.
User Education	Important and usually provided to train the users to do their searches	There is less emphasis on its provision because their information requirements

		are usually pursued by the librarian.
Scope	Many subjects	Specific and limited subjects.
Collection	Usually large and general consisting of books and journals for collection development, users demand is well known.	Usually small and specialized, emphasis is on non-book materials. For collection development , uses specific demand is anticipated
Finance	Constraints exist	Usually 'finance is not a problem. Required information has to be provided in time irrespective of the cost involved
Technical Processing	Usually broader	Classification and indexing is done in depth with greater details
Provision of Services	Usually demand- based	Anticipatory, prompt and proactive to nature, anticipating its individual user's requirements
Types of Services	General like reference, circulation ,reservation –inter –library loan, periodical consultation, photocopy, etc	Specialized services like indexing, abstracting bibliographical, translation, CAS, SDI etc. Services are value-added
Usage of Information and Communication Technology(ICT)	Use of technology at a slow or moderate pace. Many libraries are automated (routines) or in the process	Making greater use of technology at a much faster pace. Most of them are fully automated, equipped adequately with hi-tech state-of the-art-technology. Involved in networks and consortia.

4.10 Conclusion

Special libraries have been defined differently, but no clear cut definition is still self-sufficient to describe them adequately. However, there is a consensus about special characteristics, possessed by them. Hence, matching those characteristics as criteria is one way to define them. Greater is the matching, more closely a library can be called a special library. Provision of specialized services involves special techniques for the preparation and upkeep of detailed subject indexes of micro-documents like reports, specifications, pamphlets and other materials available in any form. Many a times, due to the smallness of its collection and specialized needs of the clientele, it has to depend upon other libraries too. Hence, adequate records of holdings (union catalogue) of other libraries dealing in similar areas have also to be maintained. The socio- economics development of a nation greatly depends upon such libraries as they keep the researchers abreast with the latest developments taking place in that particular field of specialization.

4.11 References

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CHAPTER -05

ANALYSIS & INTREPRETATION OF DATA

5.0 Introduction

The aim of this survey is to find the Information communication technology skills among library and information science professionals working in special libraries in Karnataka. The study also intends to compare the infrastructure available in Special Libraries and evaluate the awareness of library professionals about the knowledge on ICT Skills. Analysis of data and findings are presented under two sections:

5.1 Infrastructure of Special Libraries in Karnataka and ICT Skills of Librarians

5.2 Survey of ICT Skills among LIS Professionals

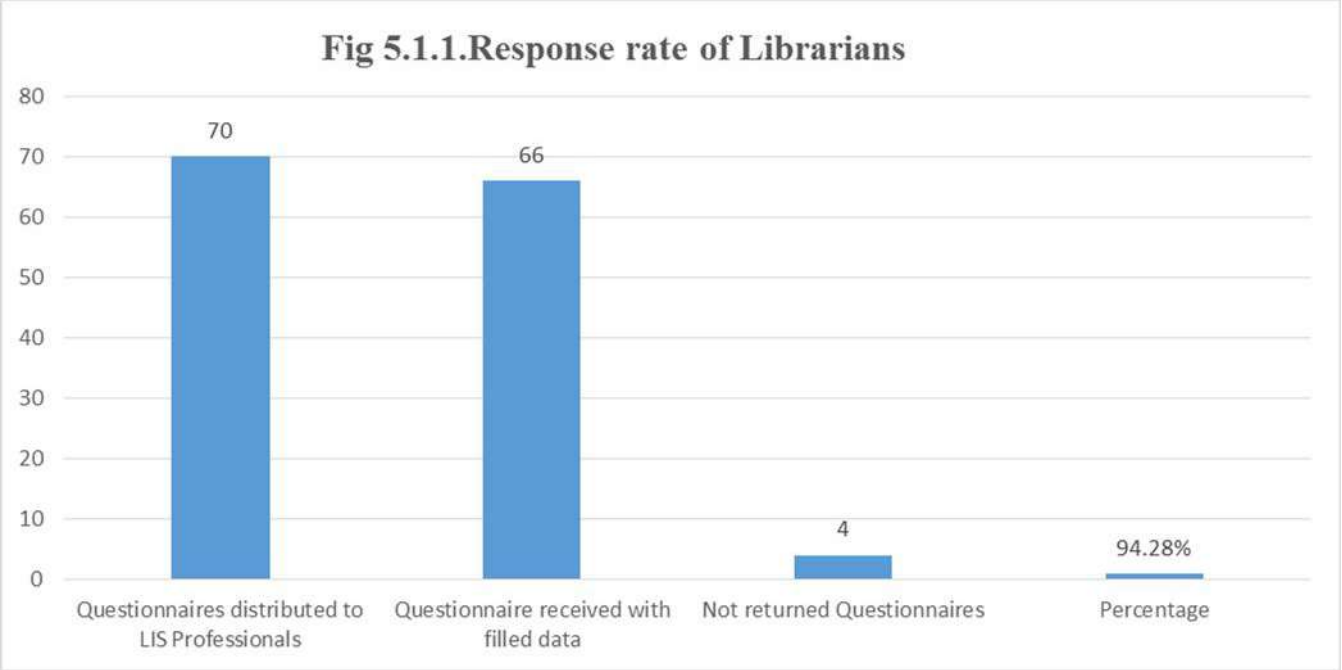
Part - 1 Infrastructure of Special Libraries in Karnataka

5.1.1 Response Rate of Librarians

Table 5.1.1 clearly shows the response rate of the librarians working in special libraries in Karnataka. Questionnaires were distributed to 70 Library Professionals. Sixty Six (94.28%) responded to the survey.

Table 5.1.1: Response Rate of Librarians

Questionnaire distributed to Librarians	Questionnaire received with filled data	Not returned Questionnaires	Percentage
70	66	04	94.28%

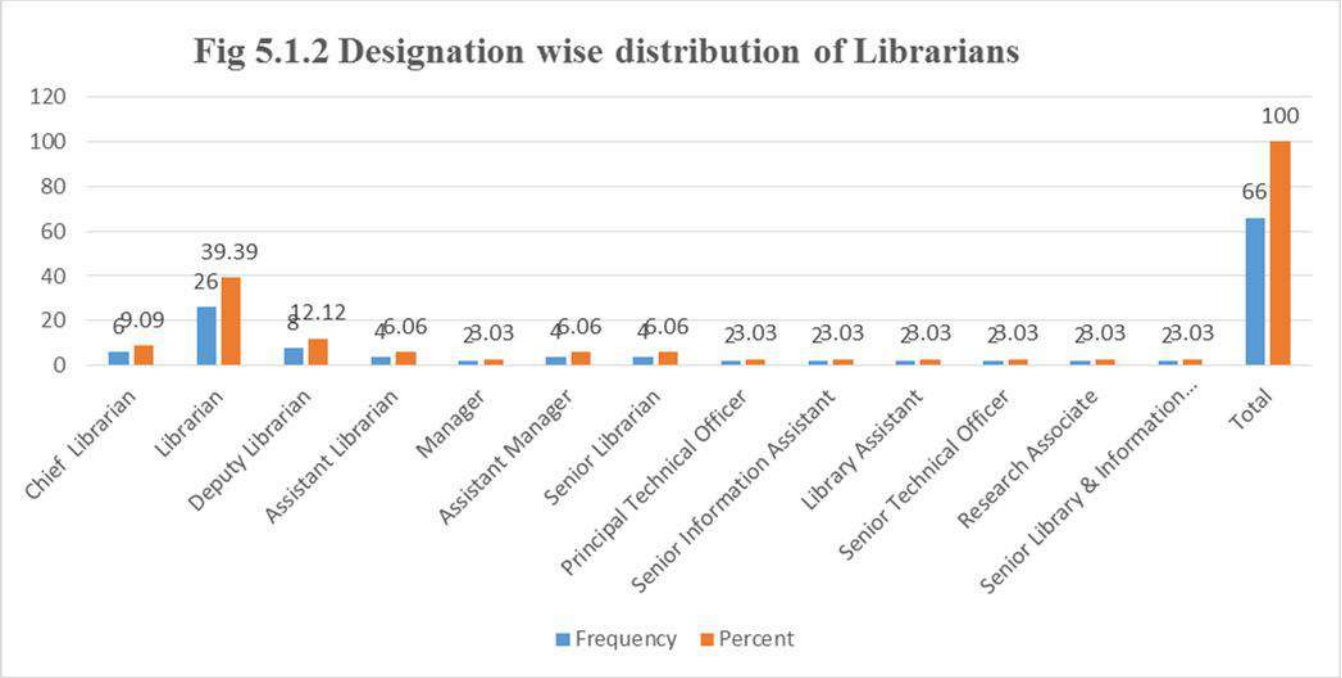


5.1.2 Designation Wise Distribution of Librarians

Table 5.1.2 shows the distribution of respondents for the survey with respect to their designation. It is found from the below table that a maximum of 39.39 percent (26) of the respondents are belong to the cadre of Librarian. Next to this 12.12 percent(08) of the respondents are belong to the cadre of Deputy Librarian.09.09 percent (06) are belong to the cadre of Chief Librarian, followed by 06.06 percent (04) of the respondents belong to the cadre of Assistant Librarian, Assistant Manager and Senior Librarian. Very minimum of 03.03 percent(02) of the respondents are belong to the cadre of Manager, Principal Technical Officer, Library Assistant, and Senior Technical officer, Research Associate and Senior Library and Information Assistant. This clearly shows that, there were different nomenclature existed in Special Libraries.

Table 5.1.2: Designation Wise Distribution of Librarians

Designation	**Frequency**	**Percent**
Chief Librarian	6	9.09
Librarian	26	39.39
Deputy Librarian	8	12.12
Assistant Librarian	4	6.06
Manager	2	3.03
Assistant Manager	4	6.06
Senior Librarian	4	6.06
Principal Technical Officer	2	3.03
Senior Information Assistant	2	3.03
Library Assistant	2	3.03
Senior Technical Officer	2	3.03
Research Associate	2	3.03
Senior Library & Information Assistant	2	3.03
Total	**66**	**100.00**

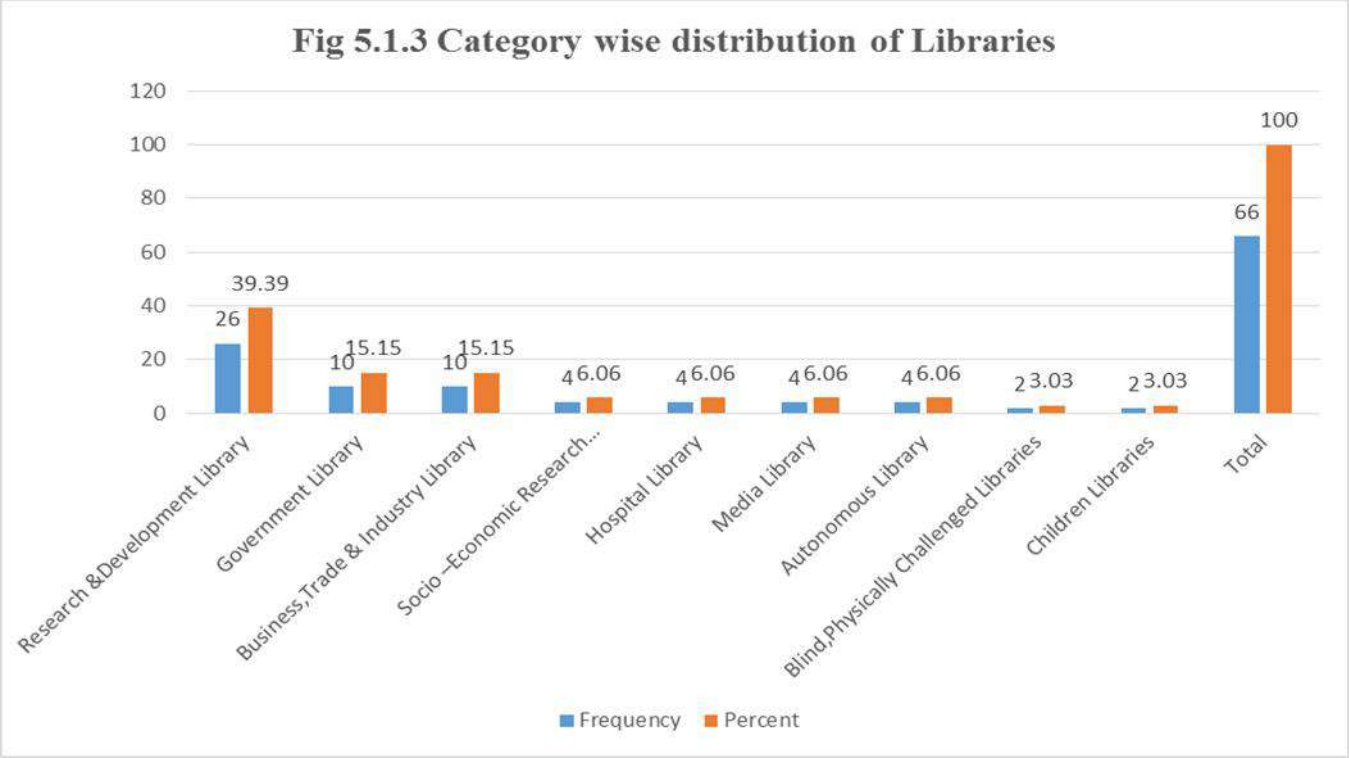


5.1.3 Category Wise Distribution of Libraries

It is found from the table 5.1.3 that, a maximum of 39.39 percent (26) of the respondents are belong to Research and Development Libraries. Next to this 15.15 percent (10) of the respondents are belong to Government and Business, Trade and Industry Libraries.6.06 percent (04) of the LIS Professionals are belong to Socio-Economic Research Development, Hospital, Autonomous and Media Libraries. Whereas 3.03 percent (02) of the respondents are belong to Children and Blind, Physically Challenged Libraries. This shows that, Research & Development Libraries are more in number then compared to other types of Special Libraries in Karnataka State.

Table5.1.3: Category Wise Distribution of Libraries

Category Wise Libraries	**Frequency**	**Percent**
Research &Development Library	26	39.39
Government Library	10	15.15
Business, Trade & Industry Library	10	15.15
Socio –Economic Research Development Library	4	6.06
Hospital Library	4	6.06
Media Library	4	6.06
Autonomous Library	4	6.06
Blind, Physically Challenged Libraries	2	3.03
Children Libraries	2	3.03
Total	**66**	**100.00**

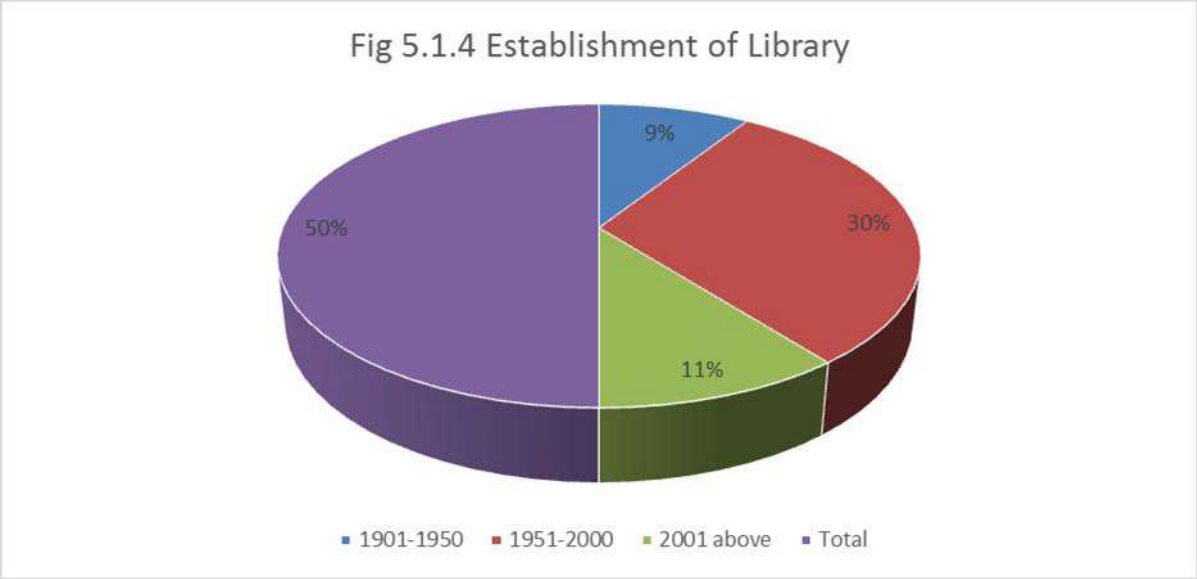


5.1.4 Establishment of the Library

Table 5.1.4 clearly shows the establishment of the library as data collected in a survey. 60.61 percent (40) of the libraries established in between the year of 1951-2000, followed by 21.21 percent (14) of the libraries established after the year of 2001 onwards. Interestingly Very less 18.18 percent (12) of the libraries established in between the year of 1901-1950.

Table 5.1.4: Establishment of the Library

Establishment	**Frequency**	**Percent**
1901-1950	12	18.18
1951-2000	40	60.61
2001 above	14	21.21
Total	**66**	**100.00**

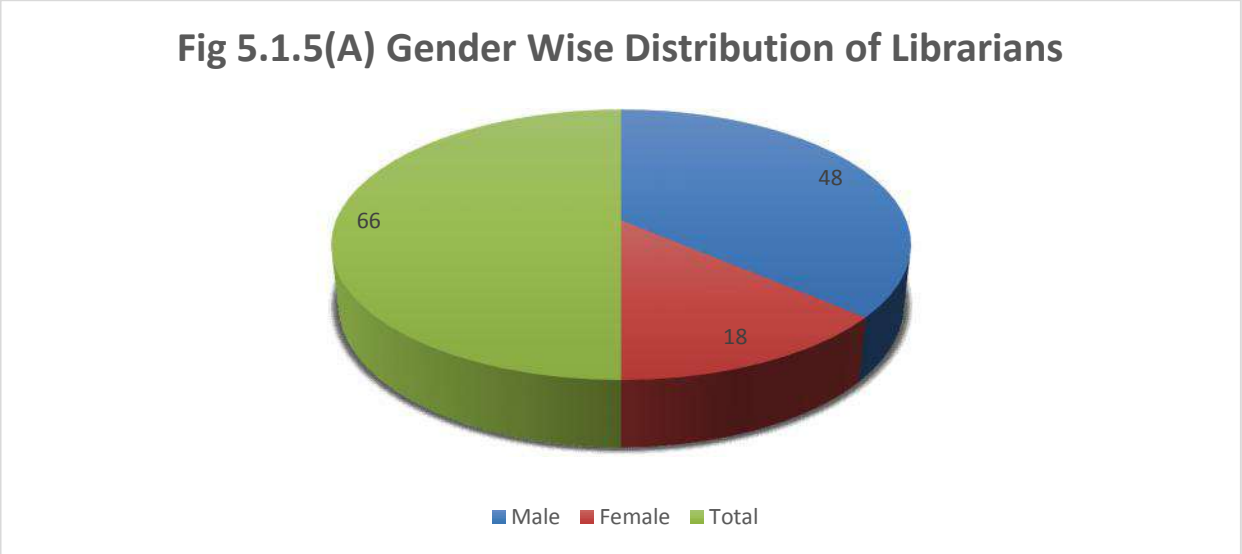


5.1.5(A) Gender Wise Distribution of Librarians

The below table gives the detail, about the gender wise distribution of the respondents. Among the questionnaire received back with the complete information, male respondents covered 72.73 percent (48) of the total population, followed by female respondents covered 27.27 percent (18) of the total population. It shows that, males are dominant over females in Special Libraries.

Table 5.1.5(A): Gender Wise Distribution of Librarians

Gender	**Frequency**	**Percent**
Male	48	72.73
Female	18	27.27
Total	**66**	**100.00**

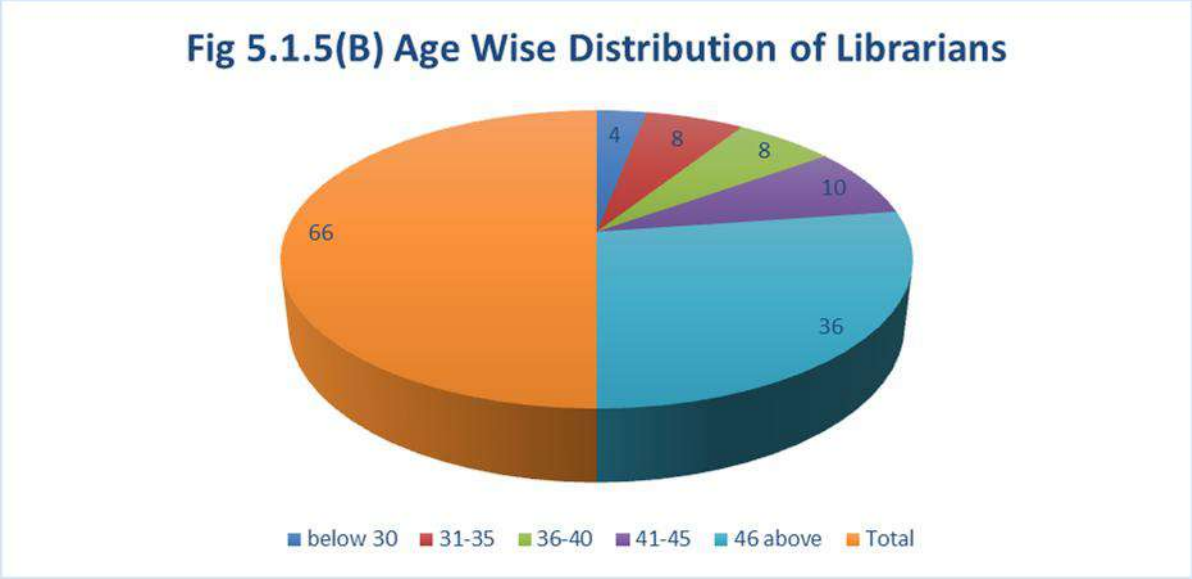


5.1.5(B) Age wise Distribution of Librarians

The below table gives the detail about the age group of the respondents. Among the surveyed respondents, major number of respondents are upper age, that forms 54.55 percent(36) are belong to above 46 years age group, followed by 15.15percent(10) of the respondents are belong to 41-45 years age group. Next to this 12.12 percent (08) of the respondents belong to 31-35 and 36-40 years age group.Below 30 years age group respondents are only 06.06 percent (04) of the total population.

Table 5.1.5(B) :Age wise Distribution of Librarians

Age	**Frequency**	**Percent**
below 30	4	6.06
31-35	8	12.12
36-40	8	12.12
41-45	10	15.15
46 above	36	54.55
Total	**66**	**100.00**



5.1.6(A) Qualification wise Distribution of Librarians

It is found from the below table that a maximum of 57.58 percent (38) of the respondents have PG Degree Qualifications. Next to this 18.18 percent (12) of the LIS Professionals have the qualification of M.Phil.15.15 percent (10) of the respondents have the PG Diploma. 09.09 percent (06) have the highest degree of Ph.D. in Library and Information Science. It is inferred from the table that, most of the respondents have the qualification of PG Degree in Library and Information Science.

Table 5.1.6(A): Qualification wise Distribution of Librarians

Qualification	**Frequency**	**Percent**
PG	38	57.58
Diploma	10	15.15
M Phil	12	18.18
PhD	6	9.09
Total	**66**	**100.00**

5.1.6(B) Experience wise Distribution of Librarians

It is found from the below table that a majority of 60.61 percent (40) of the respondents have the experience of above 20 years. Next to this, 21.21 percent (14) of the respondents are also have experience of 11-15 years. Whereas 09.09 percent (06) of the respondents have experience of below 10 years and 16-20 years of service respectively. The acquisition of work experience is one of the skills to solve the problems.

Table 5.1.6(B): Experience wise Distribution of Librarians

Years	**Frequency**	**Percent**
Below 10 Years	6	9.09
11-15	14	21.21
16-20	6	9.09
Above 20	40	60.61
Total	**66**	**100.00**

5.1.7 Details of Professional staff

Shows the distribution of the respondents with respect to availability of no.of library staff in their respective libraries. The classification is done based on less than 2 and more than 2 professionals. And also classification is done for Library Trainees based on less than 5 and more than 5 professionals in the library. More than 46 Libraries have more than two Librarians in their libraries; followed 36 Libraries have more than two Library and Information Assistants in their libraries. Next to this 28 libraries have more than two Asst.Library and Information Officer and Library Attendants in their libraries, followed by 08 Libraries have more than two Sr.Library and Information Assistant in their libraries. Very few, only 02 libraries have more than five LIM Trainee in their libraries.

It is also inferred from the below table that,12 libraries have more than two Sr.Library and Information Assistant and Library Assistant in their libraries, followed by 06 libraries have more

than two Asst Library and Information Officer in their libraries. Next to this, 04 libraries have more than two Library and Information Officer and Library Attendant in their libraries. Surprisingly 06 libraries have more than five LIM Trainee in their libraries. And a very few, 02 libraries have more than two Library Clerk in their libraries.

Table 5.1.7: Details of Professional staff

	No of LIS Staff & Libraries	**No of LIS Staff & Libraries**	**Total**
Designation	**<2**	**>2**	
Library and Information Officer	46	4	**50**
Asst Library and Information Officer	28	6	**34**
Sr Library and Information Assistant	8	12	**20**
Library and Information Assistant	36	12	**48**
Library Attendant	28	4	**32**
Library Clerk		2	**2**
	<5	**>5**	
Library and Information Management Trainee	2	6	**8**

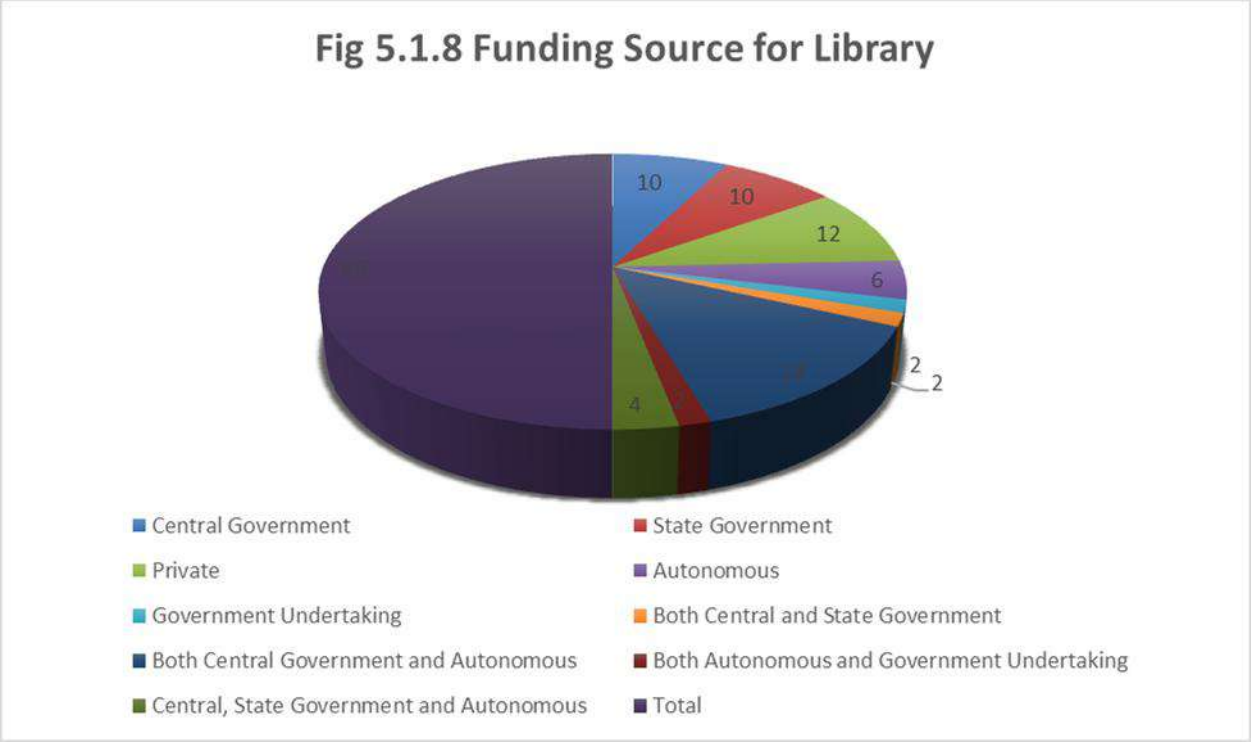
5.1.8 Funding Source for Library

Table 5.1.8 clearly shows that, funding agencies for special libraries as depicted below. The table shows that, the major funding agencies are their respective parent organizations. Further the table depicts that, 15.2 percent (10) of the libraries are getting finance from Central and State Government respectively. Whereas 18.2 percent (12) of the libraries under the investigation is getting finance from private organizations.

27.3 percent (18) of the libraries under the study are getting financial assistance from both Central Government and Autonomous. This clearly shows that, the concern parent organization is providing the financial assistance for the development of Special Libraries in Karnataka.

Table 5.1.8: Funding Source for Library

Funding Source for Library	**No of Lib**	**Percentage**
Central Government	10	15.2
State Government	10	15.2
Private	12	18.2
Autonomous	6	9.1
Government Undertaking	2	3.0
Both Central and State Government	2	3.0
Both Central Government and Autonomous	18	27.3
Both Autonomous and Government Undertaking	2	3.0
Central, State Government and Autonomous	4	6.1
Total	**66**	**100.00**



5.1.9 Library Advisory Committee for Library

The below mention table shows the function of library committee based on the opinion of the respondents. It is being observed that, 54 librarians agreed that, Library committee will formulate a development plan for the Library, followed by 52 librarians agreed that, library committee will examine and monitor proper implementation of library policy in their respective libraries which organization framed time to time for smooth functioning for the library.Next to this,48 librarians opined that, library committee will frame the rules and regulation for the use of the library as and when requirement arises. And 44 librarians opined that, library committee will take care of allotment and releasing of funds and checking of library expenditure properly by time to time.02 librarians opined that apart from the above functions, they included that, it monitors librarian's daily routine activities.

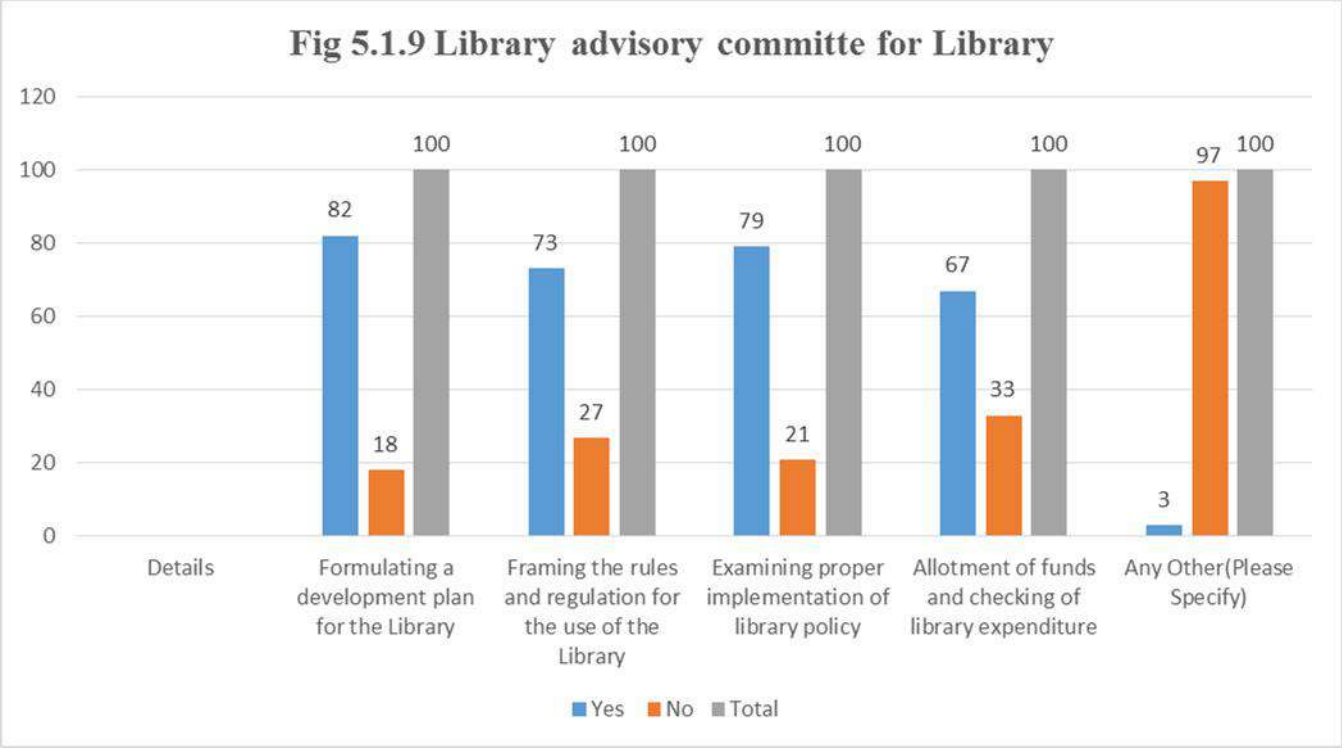
It is also inferred from the below mention table towards the non-agree of the librarians opinion regarding the functions of the library committee is listed here.22 librarians out of 66 librarians opined that, library committee will not take care of allotment and releasing of funds and checking of library expenditure properly, followed by 18 librarians opined that, library

committee will not frame the rules and regulation for the use of the Library.Next to this,14 librarians opined that, library committee will not examine proper implementation of library policy. And 12 librarians opined that, library committee will not formulate a development plan for the Library.

Table 5.1.9: Library Advisory Committee for Library

	Opinion		
	Yes	**No**	**Total**
Details			
Formulating a development plan for the Library	54(82)	12(18)	**66(100)**
Framing the rules and regulation for the use of the Library	48(73)	18(27)	**66(100)**
Examining proper implementation of library policy	52(79)	14(21)	**66(100)**
Allotment of funds and checking of library expenditure	44(67)	22(33)	**66(100)**
Any Other(Please Specify)	2(3)	64(97)	**66(100)**

Figures in the parentheses show the percentage



5.1.10(A) Library Working Days in a Week

The number of working days of libraries by the respondents in a week is shown below. More than 44 Librarians opined that libraries will functions for six days in week. Next to this, 16 Librarians opined that, libraries will functions for five days in week.It is also being observed that, only 06 libraries will work for Seven days in a week.

Table 5.1.10(A): Library Working Days in a Week

Working Days	**No.of Libraries**	**Percentage**
5 Days	16	24.24
6 Days	44	66.66
7 Days	06	9.09
Total	**66**	**100**

Fig 5.1.10(A) Library working days in week

Table 5.1.10(B) Library Working Hours

The number of working hours of libraries of the respondents is as shown in Table 5.1.10(B). More than 44 Librarians said that, their libraries will functions for 08 hours per day. Next to this, 16 Librarians opined that, libraries will functions for 12 hours per day. It is also being observed that, only 06 libraries will work for more than 16 hours per day.

Table 5.1.10(B) : Library Working Hours

Timings	**No.of Libraries**	**Percentage**
8 Hours	44	66.66
12 Hours	16	24.24
16 Hours	06	9.09
Total	**66**	**100**

5.1.11 Status of Library Building

Table 5.1.11 clearly shows that, out of 66 libraries under the study,40 libraries are having their independent library buildings. Remaining 26 libraries are functioning in the existing institute buildings.Further the study depicts that,10 libraries out of 40 libraries are having 401-600 Sq.mts area, followed by 15 libraries are having 201-400 Sq.mts,05 libraries each are having 601-800 and above 1000 Sq.mts area respectively. 03 libraries under the investigation are having 801-1000 Sq.mts area and 02 libraries are having below 200 Sq.mts area for their libraries.

Table 5.1.11: Status of Library Building

Dimension of Independent Library Building	**No.of Libraries (Out of 66 Libraries)**
<200 Sq.mts	02
201 -400 Sq.mts	15
401 -600 Sq.mts	10
601 -800 Sq.mts	05
801 -1000 Sq.mts	03
Above 1000 Sq.mts	05
Total	**40**

5.1.12 Library Collection

The below mention table shows the classification of the collection of books, journals, thesis, reports, CD's, E-journals, on line journals etc. with respect to their numbers. Table shows that, out of 66 libraries, 38 libraries are having collection of more than 10,000 Books, followed by 22 libraries are having collection of below 5,000 Books.Next to this 04 libraries are having collection of above 5,000 and below 10,000 Books in their respective libraries. And surprisingly 02 libraries are having only digitized collection in their libraries instead of hard copy of the books.

It is also inferred from the below table that,32 libraries are having 50 print journals /Magazines in their libraries, followed by 16 libraries having above 20-50 print journals / Magazines in their libraries. Next to this 12 libraries are having below 20 print journals/magazines in their libraries. And very less number of librarians (06) expressed that, periodical collection is not at all available in their libraries.

As far as online journals and databases are concerned, 34 libraries under the study are having more than 1000 no.of online journals / databases in their respective libraries. It is surprising to record here that, 14 libraries under the study are not having any kind of online journals / databases.

It can be seen from the below table that, out of 66 libraries,44 libraries are having collection of above 1,000 no.of bound volume of journals in their libraries, followed by 10 libraries are having collection of below 500 no.of bound volume of journals in their libraries. Next to this 06 libraries having collection of more than 500 and below 1,000 no.of bound volume of journals in their libraries. Very few librarians (06) agreed that, these resources are not at all available in their libraries.

The below mention table describes that,32 libraries are having more than 100 Thesis, Dissertations and Project Reports in their libraries, followed by 06 libraries having below 100 Thesis, Dissertations and Project Reports in their library collection. And 28 librarians accepted that, these resources are not at all available in their libraries.

It can be seen from the below table that, 26 libraries are having more than 500 Reports, Patents and Standards in their libraries, followed by 08 libraries are having below 500 Reports, Patents and Standards in their libraries. Surprisingly 32 librarians agreed that, these resources are not at all available in their libraries.

Below table describes that, out of 66 libraries,42 libraries are having more than 100 CD / DVD in their libraries, followed by 10 libraries are having below 100 CD / DVD in their libraries. Surprisingly 14 librarians agreed that, these resources are not at all available in their libraries.

It is being observed from the below table that, 12 libraries out of 66 libraries under the study are having Microfilm, Microfiche and Micro tape collection in their libraries. Surprisingly majority of the 54 librarians out of 66 libraries agreed that, these resources are not at all available in their libraries.

It is observed from the table that,14 libraries out of 66 libraries are having Institutional Repositories and Digital Repositories in their libraries. Remaining libraries under the study are not having the Institutional Repositories.

It is also inferred from the below table that,02 Judicial Libraries in Karnataka have some special type of collection 467 Reprints and some Government publication collection in their libraries for the use of legal practioners.

Table 5.1.12: Library Collection

	Nos	**Nos**	**Nos**	**Not Available**	**Total**
Documentation	**<5000**	**5000-10000**	**>10,000**		
Books	22	4	38	2	66
	Nos	**Nos**	**Nos**	**Not Available**	**Total**
	<20	**20-50**	**>50**		
Print Journal / Magazines	12	16	32	6	66
	Nos	**Nos**	**Nos**	**Not Available**	**Total**
	<1000	**>1000**			
Online Journals and Databases	18	34		14	66
	Nos	**Nos**	**Nos**	**Not Available**	**Total**
	<500	**500-1000**	**>1000**		
Bound Volumes of Journals	10	6	44	6	66
	Nos	**Nos**	**Nos**	**Not Available**	**Total**
	<100	**>100**			
Thesis, Dissertations and Project Reports	6	32		28	66
	Nos	**Nos**	**Nos**	**Not Available**	**Total**
	<500	**>500**			
Reports, Patents and Standards	8	26		32	66
	Nos	**Nos**	**Nos**	**Not Available**	**Total**
	<100	**>100**			
CDs,DVDs	10	42		14	66
	Nos	**Nos**	**Nos**	**Not Available**	**Total**
	<50	**>50**			
Microfilm,Microfische and Micro tape		12		54	66
	Nos	**Nos**	**Nos**	**Not Available**	**Total**
	<100	**>100**			
Institutional and Digital Repositories	4	14		48	66
Others (Please specify)		**(2)Govt Pub**	**(2)Reprints 467**		**Total(66)**

5.1.13 Infrastructure (Status of Availability of Hardware)

The below mention table shows the tabulation of the availability of hardware components as a part of infrastructure in special libraries. It shows that, majority of the Libraries (60) having less than two computers in their libraries to perform daily routine work. And next to this 54 Libraries having less than two Server machine, Printer and Scanner in the libraries.48 libraries have less than two Photocopy Machine in their libraries. 46 and 42 libraries have less than two Barcode Scanner and UPS in their libraries.

Further the table shows that, 06 libraries are having more than two computers / laptops, followed by 08 libraries are having more than two printers and UPS in their libraries. 04 libraries are having more than two photocopy machine and 02 libraries are having more than two server and scanner in their respective libraries. Further it shows that, 18 libraries are also having digital camera in their libraries.

Table 5.1.13: Infrastructure (Status of Availability of Hardware)

	No.of Libraries	**No.of Libraries**	**No.of Libraries (Not Aware)**	**Total**
Details of Hardware	**< 2 Nos**	**>2 Nos**		
Computer and Laptops	60	6	0	**66**
Server Machines	54	2	12	**66**
Printers	54	8	4	**66**
Scanner	54	2	10	**66**
Barcode Scanner	46		20	**66**
LCD Projector	24		42	**66**
UPS	42	8	16	**66**
Fax Machine	26		40	**66**
Photocopy Machine	48	4	14	**66**
Digital Camera	18		48	**66**

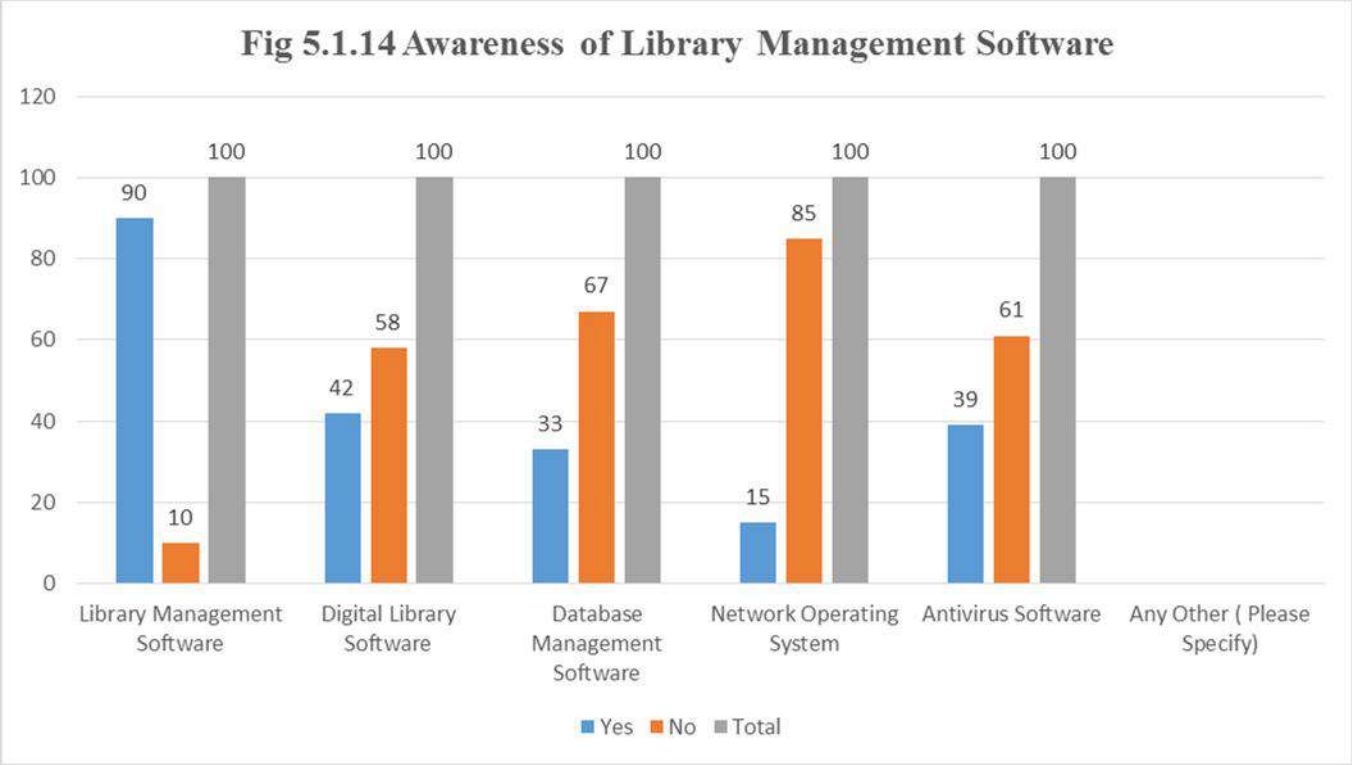
5.1.14 Use of Library Management Software

Table 5.1.14 clearly shows that, 60 libraries out of 66 libraries are using library management software in their respective libraries. Whereas 28 libraries were also using digital library software, followed by database management software by 22 libraries, network operating system by 10 libraries, and antivirus software by 26 libraries under the study.

Table 5.1.14: Use of Library Management Software

Software	**Yes**	**No**	**Total**
Library Management Software	60(90)	06(10)	**66(100)**
Digital Library Software	28(42)	38(58)	**66(100)**
Database Management Software	22(33)	44(67)	**66(100)**
Network Operating System	10(15)	56(85)	**66(100)**
Antivirus Software	26(39)	40(61)	**66(100)**
Any Other (Please Specify)			

Figures in the parentheses show the percentage



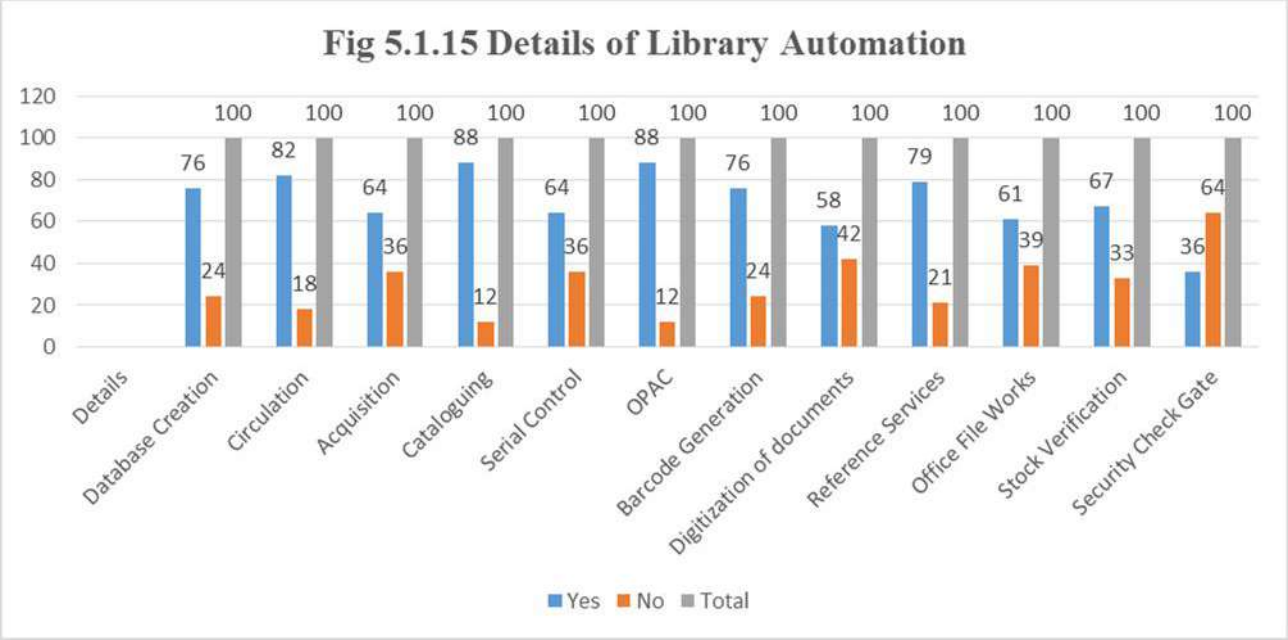
5.1.15 Details of Library Automation

It is found from the Table 5.1.15 that, the library automation software is used with various modules to maintain different types of library services. Among the various services, 88.00 percent (58) of the libraries are using Cataloguing and OPAC module respectively in their libraries, followed by 82.00 percent (54) of the respondents are using Circulation module, 76.00 percent (50) of the respondents are using database creation and barcode generation respectively. 67.00 percent (44) of the libraries are using software for stock verification. 64.00 percent (42) of the libraries using software for acquisition and serial control activities, and some other libraries are also using it for office work and security check.

Table 5.1.15: Details of Library Automation

	Opinion		
	Yes	**No**	**Total**
Details of Library Automation			
Database Creation	50(76)	16(24)	**66(100)**
Circulation	54(82)	12(18)	**66(100)**
Acquisition	42(64)	24(36)	**66(100)**
Cataloguing	58(88)	8(12)	**66(100)**
Serial Control	42(64)	24(36)	**66(100)**
OPAC	58(88)	8(12)	**66(100)**
Barcode Generation	50(76)	16(24)	**66(100)**
Digitization of documents	38(58)	28(42)	**66(100)**
Office File Works	40(61)	26(39)	**66(100)**
Stock Verification	44(67)	22(33)	**66(100)**
Security Check Gate	24(36)	42(64)	**66(100)**

Figures in the parentheses show the percentage

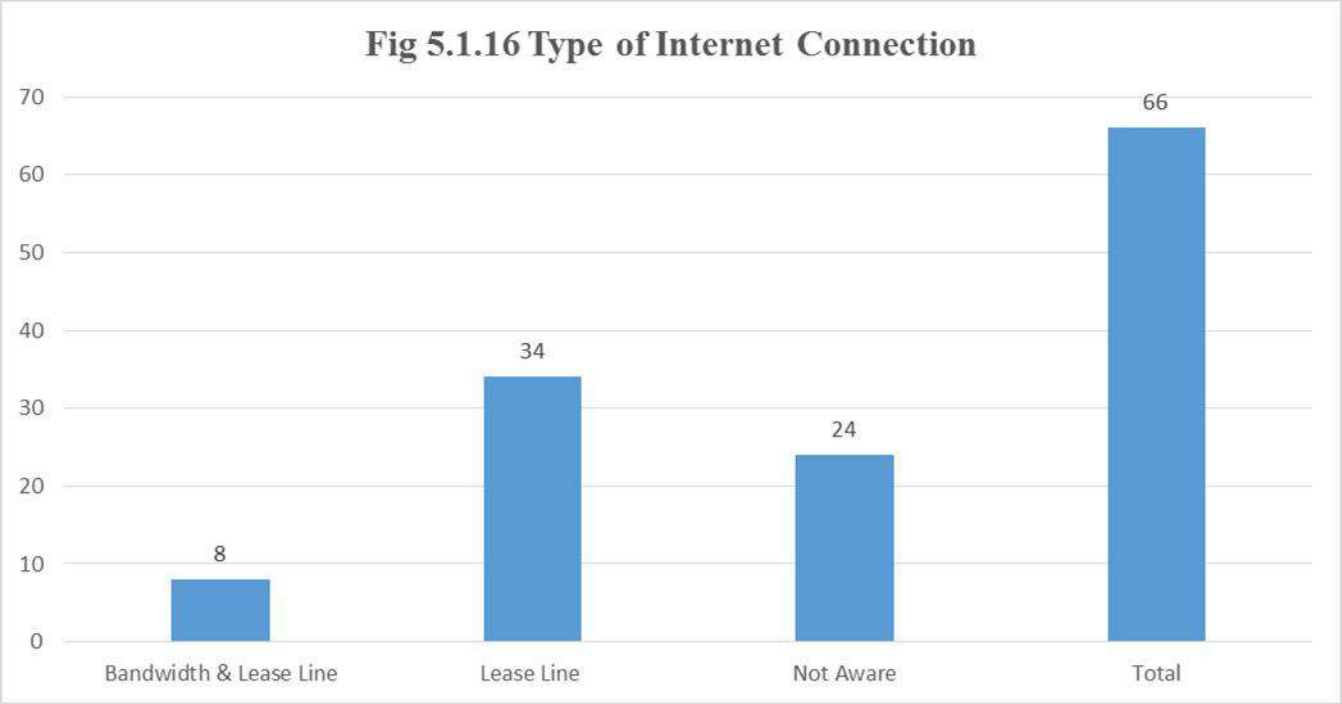


5.1.16 Type of Internet Connection

Type of internet connectivity available in the special library is further compared and the results are presented in the Table 5.1.16. It shows that, the majority of the Librarians (34) opined that, leased line is available for internet connection in the libraries. And it is also found from the study that, (24) Librarians agreed that they are not aware of internet connection for their libraries. Only few libraries (04) have lease line with bandwidth connection for their libraries.

Table 5.1.16: Type of Internet Connection

Internet Connection	**No.of Libraries**
Lease Line	34
Ordinary Dial up	-
ISDN Dial up	-
VSAT	-
Lease Line with Bandwidth	08
Not Aware	24
Total	**66**



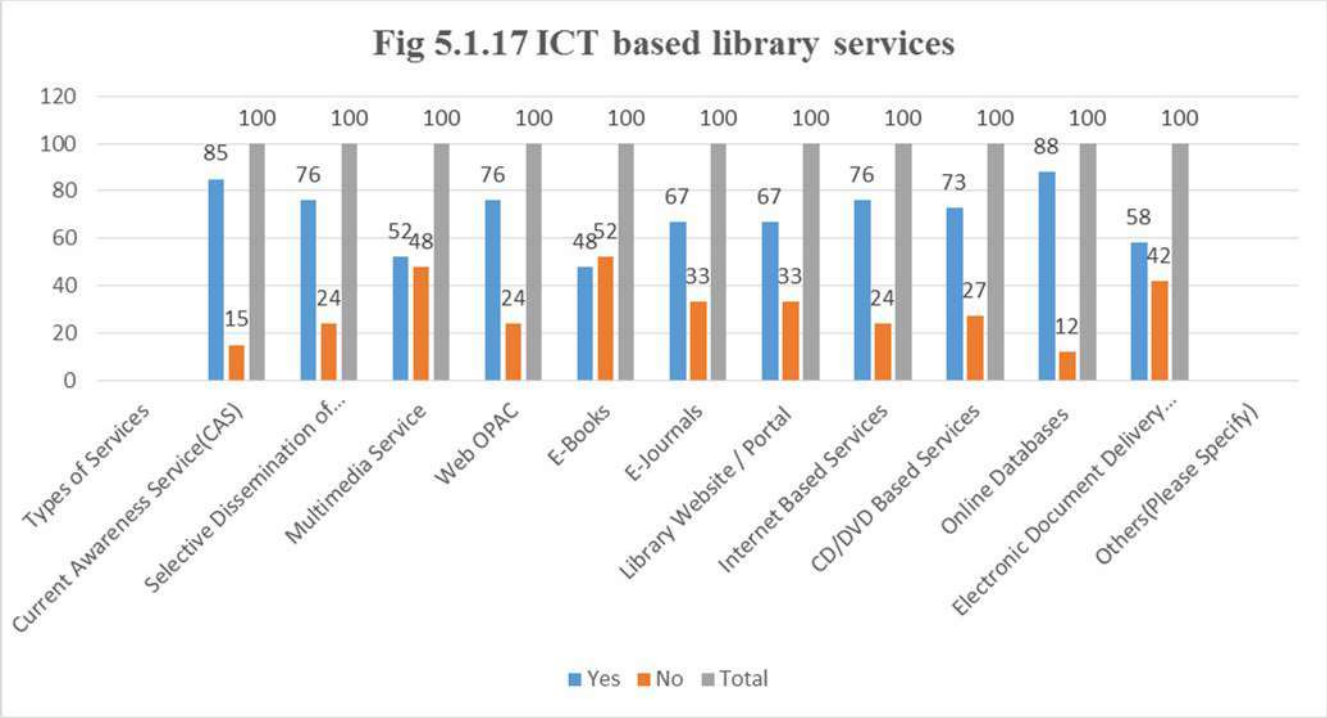
5.1.17 ICT Based Library services

There are 11 types of ICT based services offered in the Special Libraries and a study was conducted among the librarians to identify the leading services and the same is shown in the Table. 88.00 percent (58) of the librarians are providing ICT based online database service to their user in their workplace, followed by 85.00 percent (56) of the respondents opined that, they are providing Current Awareness Service to their users. Next to this, 76.00 percent (50) of the librarians agreed that, they are providing Selective Dissemination of Information (SDI), Web OPAC and Internet Based Services in their libraries respectively. 73.00 percent (48) and 67.00 percent (44) of the librarians opined that, they are providing CD/DVD Based Services, E-Journals, Library Website/Portal respectively in their libraries. 58.00 percent (38) and 52.00 percent (34) of the librarians agreed that, they are providing ICT based services like Electronic Document Delivery Services and Multimedia Services. And also 48.00 percent (32) of the librarians agreed that, they are providing E-Books facilities to their readers.

Table 5.1.17: ICT Based Library services

	Opinion		
	Yes	**No**	**Total**
Types of Services			
Current Awareness Service(CAS)	56(85)	10(15)	**66(100)**
Selective Dissemination of Service(SDI)	50(76)	16(24)	**66(100)**
Multimedia Service	34(52)	32(48)	**66(100)**
Web OPAC	50(76)	16(24)	**66(100)**
E-Books	32(48)	34(52)	**66(100)**
E-Journals	44(67)	22(33)	**66(100)**
Library Website / Portal	44(67)	22(33)	**66(100)**
Internet Based Services	50(76)	16(24)	**66(100)**
CD/DVD Based Services	48(73)	18(27)	**66(100)**
Online Databases	58(88)	8(12)	**66(100)**
Electronic Document Delivery Services	38(58)	28(42)	**66(100)**
Others(Please Specify)	2(3)	64(97)	**66(100)**

Figures in the parentheses show the percentage



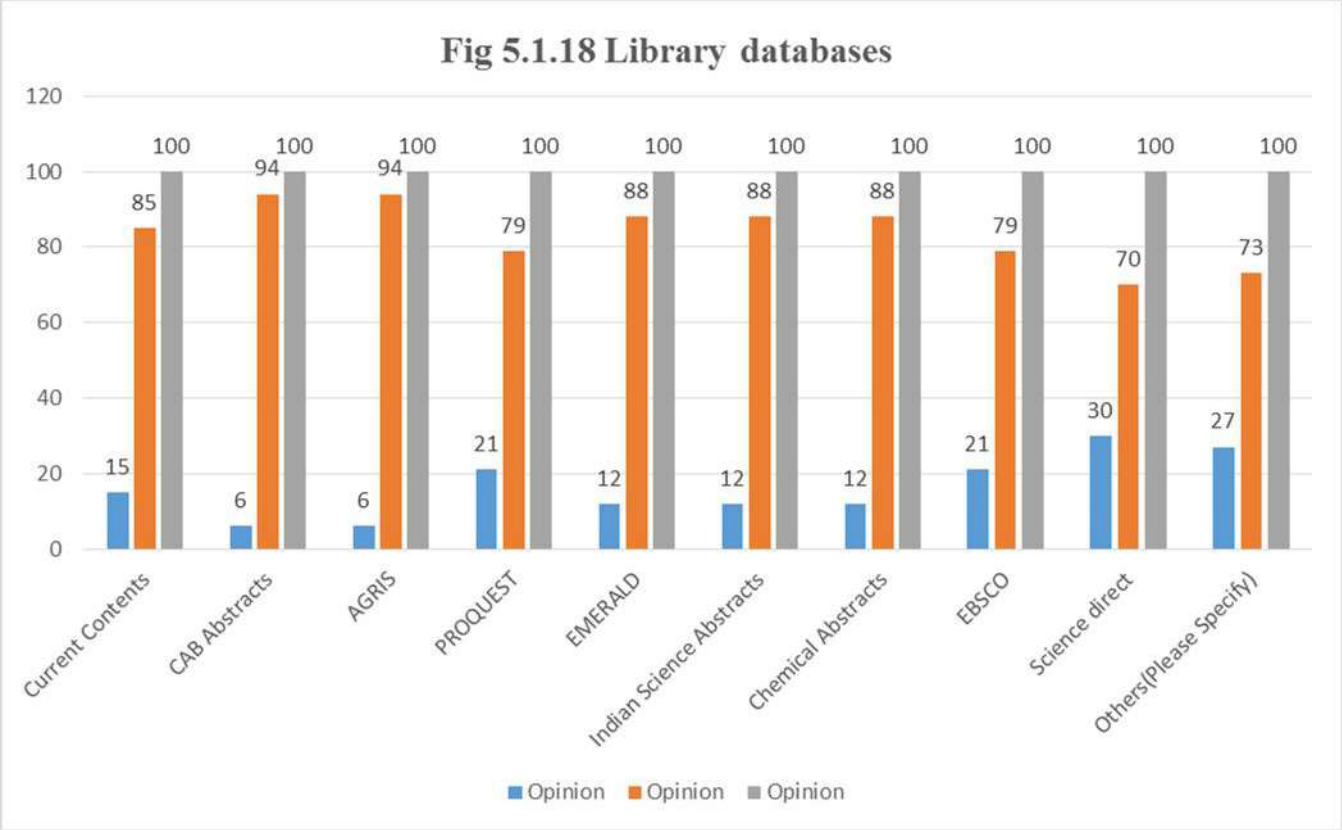
5.1.18 Library databases

The subscription of online databases is a key aspect in the development of Special Libraries. We have identified 09 online databases and the respondents were asked to mark the availability of databases in their respective libraries. It can be seen from the table that, 30.00 percent (20) of the libraries subscribed Science direct, followed by 21.00 percent (14) of the libraries subscribed EBSCO and Proquest databases for their libraries. Next to this 15.00 percent (10) of the libraries subscribed Current Contents, 12.00 percent (08) of the libraries subscribed EMERALD, Indian Science Abstracts and Chemical Abstracts respectively for their libraries. And very less 06.00 percent (04) of the libraries subscribed for CAB Abstracts and AGRIS for their libraries. Surprisingly 27.00 percent (18) of the libraries subscribed for J-STOR, SCOUPS, CMIE, Wiley, Springer, Taylor & Francis and J-Gate online databases for their libraries.

Table 5.1.18: Library databases

Description	**Opinion**		
Database	**Yes**	**No**	**Total**
Current Contents	10(15)	56(85)	**66(100)**
CAB Abstracts	4(6)	62(94)	**66(100)**
AGRIS	4(6)	62(94)	**66(100)**
PROQUEST	14(21)	52(79)	**66(100)**
EMERALD	8(12)	58(88)	**66(100)**
Indian Science Abstracts	8(12)	58(88)	**66(100)**
Chemical Abstracts	8(12)	58(88)	**66(100)**
EBSCO	14(21)	52(79)	**66(100)**
Science direct	20(30)	46(70)	**66(100)**
Others(Please Specify)	18(27)	48(73)	**66(100)**

Figures in the parentheses show the percentage



5.1.19 Library Usage Statistics

Table 5.1.19 shows that, the 03 libraries under the study, the visit of the users is less than 500. Therefore 501-700 users visited their respective libraries in 09 libraries under the study. About 701- 1000 users visited their respective libraries in 33 libraries and in 22 libraries there were more than 1000 users visited their libraries.

Further it is noted in the table that, in 28 libraries under the investigation the transaction of books is more than 1000 per year followed by, 26 libraries were transacted about 701-1000 books per year, 501-700 books were transacted in 10 libraries and only 02 libraries were transacted less than 500 books.

Table 5.1.19: Library Usage Statistics

Library Statistics	**<500**	**501-700**	**701-1000**	**Above 1000**	**Total No.of Libraries**
No.of users visited the Library	03	09	32	22	**66**
Transaction of Books	02	10	26	28	**66**

5.1.20 Attitude towards application of ICT in Library

Librarians were asked to assess their attitude towards ICT application with the help of ten variables. The result was analyzed and summarized below. It shows that, most of the Librarians agree with the positive aspects of ICT listed in the study. Out of 66 Librarians 64 of them agreed that ICT application facilitates quick access to current data, ICT Application improves quality of library services, ICT Application help to enhance knowledge and skills of library professionals, ICT Application increased job satisfaction of Library professional. Next to this 62 and 60 of the respondents agreed that ICT Application improve the status of the library and ICT makes an integration within the library, followed by 58 and 54 librarians agreed that ICT Application helps to improve communication and ICT Application reduce workload of library professional .

Of the two negative aspects listed, to the variable whether ICT disturbs routine work of the library only 28 Librarians agreed and majority of the 38 Librarians was against the concept. However, to the variable ICT affects regular budgeting provision, 28 Librarians agreed the concept and majority of the 38 Librarians opposed.Out of 66 respondents 12 of them not agree related the concept of ICT Application reduce workload of library professional. It is evident that librarians have a highly positive attitude towards the application of ICT in Library.

Table 5.1.20: Attitude towards application of ICT in Library

	Opinion		
Description	**Yes**	**No**	**Total**
ICT Application facilitates quick access to current data	64(97)	2(3)	**66(100)**
ICT Application improves quality of library services	64(97)	2(3)	**66(100)**
ICT Application help to enhance knowledge and skills of library professionals	64(97)	2(3)	**66(100)**
ICT Application increased job satisfaction of Library professional	64(97)	2(3)	**66(100)**
ICT Application help to improve communication	58(88)	8(12)	**66(100)**
ICT Application improve the status of the library	62(94)	4(6)	**66(100)**
ICT makes an integration within the library	60(91)	6(9)	**66(100)**
ICT Application reduce workload of library professional	54(82)	12(18)	**66(100)**
ICT disturbs routine work of the library	28(42)	38(58)	**66(100)**
ICT affects regular budgeting provision	28(42)	38(58)	**66(100)**

Figures in the parentheses show the percentage

ICT Skills among Librarians Working in Special Libraries in Karnataka

<u>Six point's scale:</u> Very Good (1), Good (2), Satisfaction (3), Poor (4), Very Poor (5), Not Aware (6), Total Frequency & Percentage (7)

5.1.21 Proficiency rate on Information Technology Components

It is found from the tables that, maximum of 72.73 percent (48) of the Librarians are very good in use of computers, followed by 63.64 percent (42) of the Librarians are also very good in Use of Photocopy Machine in their libraries. Next to this, 57.58 percent (38) of the Librarians are very good in Use of Laptop in their workplace.51.52 percent (34) of Librarians are very good in Use of Scanners.39.39 percent (26) of the Librarians are very good in Use of Multipurpose Computers in their work spot as depicted in the table.36.36 percent (24) of Librarians are very good in Use of Fax Machine in their respective libraries.30.3 percent (20) of the Librarians are very good in Use of Digital Camera in their designated libraries. Very few 6.06 percent (04) of the Librarians are very good in Use of IPod in their work spot.

It is also inferred from the below table that, 33.33 percent (22) of Librarians are good in use of IPods in their respective workplace, followed by 30.3 percent (20) of the respondents are also good in use of scanners in their respective libraries. Next to this, 24.24 percent (16) of the Librarians are good in use of Computers, Laptops, Photocopy Machine and Multipurpose Computers in their work spot. 21.21 percent (14) of the Librarians are also good in use of Fax Machine.12.12 percent (08) of Librarians are good in use of digital camera in their workplace. Very few, 3.03 percent (02) of the Librarians are also good in use of Mobile Communication with Computers in their libraries.

It can be seen from the below table that, 39.39 percent (26) of the Librarians are at satisfactory level in the use of mobile communications in their work spot, followed by 15.15 percent (10) of Librarians are at satisfactory level in use of IPod and Digital Camera in their workplace. Next to this, 12.12 percent (08) of Librarians are at satisfactory level in use of Fax Machine and Multipurpose Computers respectively in their libraries.9.09 percent (06) of the Librarians are at

satisfactory level in use of Laptop and Scanners in their libraries. Very few, 3.03 percent (02) of Librarians are at satisfactory level in use of Photocopy Machine in their workplace.

It is depicted from the below table that, very few 3.03 percent(02) of Librarians are poor in use of IPod, Photocopy Machine, Digital Camera and Mobile Communication with Computers in their work spot.

It is also being observed from the below table that, 15.15 percent (10) of the Librarians are very poor in use of IPod in their respective libraries, followed by 9.09 percent (06) of Librarians are also very poor in use of Digital Camera. Very few 3.03 percent (02) of the Librarians are very poor in use of Fax Machine, Mobile Communication with Computers and Multipurpose Computers in their designated libraries.

It is also found from the below table that, 30.3 percent (20) of the Librarians are not aware about use of digital camera in their work spot, followed by 27.27 percent(18) of the Librarians were also not aware about use of IPod and Fax in their workplace. Next to this, 24.24 percent (16) and 21.21 percent (14) of Librarians were not aware about use of Mobile Communication with Computers and Multipurpose Computers.9.09 percent (06) and 6.06 percent (04) of the Librarians were also not aware about use of Laptop, Scanners and Photocopy Machine in their workplace. Very few of them, 3.03 percent (02) of Librarians were not aware about use of Computers in their work spot.

Table 5.1.21: Proficiency rate on Information Technology Components

Description	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Use of Computers	48(72.73)	16(24.24)	-	-	-	2(3.03)	**66(100)**
Use of Laptop	38(57.58)	16(24.24)	6(9.09)	-	-	6(9.09)	**66(100)**
Use of IPod	4(6.06)	22(33.33)	10(15.15)	2(3.03)	10(15.15)	18(27.27)	**66(100)**
Use of Photocopy Machine	42(63.64)	16(24.24)	2(3.03)	2(3.03)	-	4(6.06)	**66(100)**
Use of Digital Camera	20(30.3)	8(12.12)	10(15.15)	2(3.03)	6(9.09)	20(30.3)	**66(100)**
Use of Fax Machine	24(36.36)	14(21.21)	8(12.12)		2(3.03)	18(27.27)	**66(100)**
Use of Mobile Communication with Computers	18(27.27)	2(3.03)	26(39.39)	2(3.03)	2(3.03)	16(24.24)	**66(100)**
Use of Multipurpose Computers	26(39.39)	16(24.24)	8(12.12)	-	2(3.03)	14(21.21)	**66(100)**
Use of Scanners	34(51.52)	20(30.3)	6(9.09)	-	-	6(9.09)	**66(100)**
If any other Please Specify:	-	-	-	-	-		

Figures in the parentheses show the percentage

5.1.22 Proficiency rate on Software

The information and communication technology skills among Librarians and the level of competency in all the software skills are tabulated here. Among the software management skills, 66.67 percent (44) of the Librarians are very good in use of MS–Word in their libraries, followed by 60.61 percent (40) of the Librarians are also very good in use of MS-Excel and E-Mail. Next to this,51.52 percent(34) and 45.45 percent(30) of the Librarians are very good in use of Document Reader (Adobe Acrobat),Web Browser and MS-PowerPoint in their respective libraries.33.33 percent(22) and 27.27 percent(18) of the respondents are very good in use of Installation of Operating System, Installation of Library Automation Software, Statistical Packages and Installation of Digital Library Software in their work spot.21.21 percent(14) and 18.18 percent(12) of the Librarians are very good in use of Word Processing, HTML\ XML editors and Windows 2013 in their workplace. 15.15 percent (10) and 12.12 percent (08) of the respondents are very good in use of Mac OS, Graphical Presentation, DBMS, Use of File Bibliographic Conversion, Use of File Conversion, Windows XP and Windows NT in their respective work spot. 9.09 percent (06) and 6.06 percent (04) of the Librarians are very good in Use of Tabulation and Linux in their respective workplace. Very few, 3.03 percent (02) of the Librarians are very good in use of Animation, SQL, Oracle and Novel Netware in their work spot.

It is depicted from the below table that,30.30 percent(20) of the Librarians are good in installation of Library Automation Software in their libraries, followed by 24.24 percent(16) of the Librarians have good knowledge on Windows 2013 and Windows XP. Next to this,21.21 percent(14) and 18.18 percent(12) of the respondents are good in Installation of Digital Library Software,MS-Excel,Installation of Operating System, MS-Word, MS-PowerPoint and Web Browser respectively in their workplace.15.15 percent(10) and 12.12 percent(08) of the Librarians are good in use of HTML\ XML editors,Linux,Mac OS, Document Reader(Ex:Adobe Acrobat),accessing of E-Mail, Graphical Presentation,SQL,Use of Word Processing, Use of File Bibliographic Conversion and Use of Tabulation in their work spot.9.09 percent(06) and 6.06 percent(04) of the respondents are good in Use of Animation, Statistical Packages, Use of File

Conversion,Oracle,DBMS,Unix and Windows NT in their workplace. Very few, 3.03 percent (02) of the Librarians are good in use of Novel Netware in their respective workplace.

It is inferred from the below table that, 9.09 percent(06) of the Librarians have satisfaction knowledge about in use of File Conversion,Oracle,DBMS,Windows NT and Installation of Operating System in their respective libraries, followed by 6.06 percent(04) of the respondents also have satisfaction knowledge about in use of Installation of Digital Library Software,Unix,MS-PowerPoint,GraphicalPresentation,SQL,Windows2013,Linux,Netware,File Bibliographic Conversion and Animation in their workplace. Next to this,3.03 percent(02) of the Librarians have good in use of Tabulation, Word Processing, HTML\ XML editors, Statistical Packages, Document Reader(Ex:Adobe Acrobat),Mac OS,Windows XP and Installation of Library Automation Software in their respective work spot.

It is found from the below table that, 9.09 percent(06) of the Librarians are poor in use of Novel Netware, Unix and Oracle in their respective designated libraries, followed by,6.06 percent(04) of the respondents are also poor in use of Mac OS, Statistical Packages,SQL and File Bibliographic Conversion in their work spot. Next to this,3.03 percent(02) of the Librarians are poor in use of Installation of Library Automation Software, Installation of Digital Library Software, Windows 2013, Windows NT, Windows XP, Linux, Document Reader(Ex:Adobe Acrobat),accessing of E-Mails, Web Browser, Graphical Presentation, HTML\ XML editors, DBMS,Word Processing, File Conversion, Tabulation and Animation in their respective designated workplace.

It can be seen from the below table that, 12.12 percent (08) of the Librarians are very poor in use of Animation, Windows XP and Linux in their work spot, followed by 9.09 percent (06) of the respondents are also very poor in use of Installation of Digital Library Software, Windows NT, Novel Netware, Unix, Mac OS, Oracle and SQL in their respective libraries. Next to this,6.06 percent(04) of the respondents are very poor in use of Installation of Operating System, Installation of Library Automation Software, Windows 2013, Word Processing, File Conversion,

File Bibliographic Conversion and Tabulation in their designated libraries. Very few,3.03 percent(02) of the Librarians are very poor in use of MS-Word, MS-Excel, MS-PowerPoint, Document Reader(Ex:Adobe Acrobat),accessing of E-Mails, Statistical Packages, Graphical Presentation, HTML\ XML editors and DBMS in their respective work spot.

It is also being observed from the below table that,69.70 percent(46) of the Librarians are not aware about in use of Novel Netware and Unix in their libraries, followed by 66.67 percent(44) of the Librarians are also not aware about in use of Animation and Tabulation in their respective libraries. Next to this, 63.64 percent (42) and 60.61 percent (40) of the respondents are not aware about in use of File Conversion, SQL, Oracle, DBMS, Graphical Presentation, Linux and Windows NT in their work spot.57.58 percent (38) and 54.55percent (36) of the respondents are not aware about in use of HTML\ XML editors, File Bibliographic Conversion, Word Processing and Mac OS in their libraries. 51.52 percent (34) and 45.45 percent (30) of the Librarians are not aware about in use of Statistical Packages and Windows XP in their libraries. 42.42 percent(28) and 33.33 percent(22) of the Librarians are not aware about in use of Windows 2013 ,Web Browser, Installation of Digital Library Software and Installation of Operating System in their workplace.27.27 percent(18) and 24.24 percent(16) of the respondents are not aware about in use of MS-PowerPoint, Document Reader(Ex:Adobe Acrobat) and Installation of Library Automation Software in their respective libraries.21.21 percent(14) and 15.15 percent(10) of the Librarians are not aware about in use of accessing of E-mails and MS-Excel in their designated workplace. Very few, 12.12 percent (08) of the respondents are not aware about in use of MS-Word in their respective designated workplace.

Table 5.1.22: Proficiency rate on Software

Description	1	2	3	4	5	6	7
Installation of Operating System	22(33.33)	12(18.18)	6(9.09)		4(6.06)	22(33.33)	**66(100)**
Installation of Library Automation Software	22(33.33)	20(30.30)	2(3.03)	2(3.03)	4(6.06)	16(24.24)	**66(100)**
Installation of Digital Library Software	18(27.27)	14(21.21)	4(6.06)	2(3.03)	6(9.09)	22(33.33)	**66(100)**
Windows 2013	12(18.18)	16(24.24)	4(6.06)	2(3.03)	4(6.06)	28(42.42)	**66(100)**
Windows NT	8(12.12)	4(6.06)	6(9.09)	2(3.03)	6(9.09)	40(60.61)	**66(100)**
Windows XP	8(12.12)	16(24.24)	2(3.03)	2(3.03)	8(12.12)	30(45.45)	**66(100)**
Linux	4(6.06)	8(12.12)	4(6.06)	2(3.03)	8(12.12)	40(60.61)	**66(100)**
Novel Netware	2(3.03)	2(3.03)	4(6.06)	6(9.09)	6(9.09)	46(69.70)	**66(100)**
Unix(Specify)		4(6.06)	4(6.06)	6(9.09)	6(9.09)	46(69.70)	**66(100)**
Mac OS	10(15.15)	8(12.12)	2(3.03)	4(6.06)	6(9.09)	36(54.55)	**66(100)**
MS-Word	44(66.67)	12(18.18)			2(3.03)	8(12.12)	**66(100)**
MS-Excel	40(60.61)	14(21.21)			2(3.03)	10(15.15)	**66(100)**
MS-PowerPoint	30(45.45)	12(18.18)	4(6.06)		2(3.03)	18(27.27)	**66(100)**
Document Reader	34(51.52)	8(12.12)	2(3.03)	2(3.03)	2(3.03)	18(27.27)	**66(100)**
E-Mail	40(60.61)	8(12.12)	-	2(3.03)	2(3.03)	14(21.21)	**66(100)**
Web Browser	30(45.45)	12(18.18)		2(3.03)		22(33.33)	**66(100)**
Statistical Packages	18(27.27)	6(9.09)	2(3.03)	4(6.06)	2(3.03)	34(51.52)	**66(100)**
Graphical Presentation	10(15.15)	8(12.12)	4(6.06)	2(3.03)	2(3.03)	40(60.61)	**66(100)**
HTML\ XML editors	12(18.18)	10(15.15)	2(3.03)	2(3.03)	2(3.03)	38(57.58)	**66(100)**
DBMS	10(15.15)	4(6.06)	6(9.09)	2(3.03)	2(3.03)	42(63.64)	**66(100)**
Oracle	2(3.03)	4(6.06)	6(9.09)	6(9.09)	6(9.09)	42(63.64)	**66(100)**
SQL	2(3.03)	8(12.12)	4(6.06)	4(6.06)	6(9.09)	42(63.64)	**66(100)**
Use of Word Processing	14(21.21)	8(12.12)	2(3.03)	2(3.03)	4(6.06)	36(54.55)	**66(100)**
Use of File Conversion	8(12.12)	4(6.06)	6(9.09)	2(3.03)	4(6.06)	42(63.64)	**66(100)**
Use of File Bibliographic Conversion	10(15.15)	8(12.12)	4(6.06)	4(6.06)	4(6.06)	36(54.55)	**66(100)**
Use of Tabulation	6(9.09)	8(12.12)	2(3.03)	2(3.03)	4(6.06)	44(66.67)	**66(100)**
Use of Animation	2(3.03)	6(9.09)	4(6.06)	2(3.03)	8(12.12)	44(66.67)	**66(100)**

Figures in the parentheses show the percentage

5.1.23 Proficiency rate on Library Automation Software

It is inferred from the below table that, more than 33.33 percent(22) of the Librarians have the very good working knowledge of LIBSYS, followed by 12.12 percent(08) of the Librarians have very good working knowledge on KOHA respectively on their work spot. Next to this, 9.09 percent (06) of the Librarians have very good knowledge about WINISIS, NEWGENLIB and In House Developed software.6.06 percent (04) and 3.03 percent (02) of the Librarians also have very good working knowledge on SLIM++, LIBSOFT and LIMSOFT in their workplace.

It is depicted from the below table that, 18.18 percent (12) of the Librarians have good work knowledge on KOHA Software in their libraries, followed by 9.09 percent (06) of the Librarians also have good knowledge about LIBSYS respectively. Next to this, 6.06 percent (04) of the Librarians have good work knowledge on NEWGENLIB in their work spot.Very few 3.03 percent (02) of the Librarians also have good knowledge about WINISIS, SLIM++, SANJAY and LIMSOFT in their work spot.

It is inferred from the below table that, 12.12 percent (08) of the Librarians have satisfactory knowledge on WINISIS Software in their workplace, followed by 9.09 percent (06) of the Librarians also have satisfactory work knowledge about VTLS and LIBSOFT respectively in their work spot. Next to this 6.06 percent(04) of the Librarians have satisfactory knowledge on SLIM++, NEWGENLIB and In House Developed software. Very few 3.03 percent (02) of the Librarians have satisfactory knowledge about KOHA and LIMSOFT respectively in their workplace.

It can be seen from the below table that,9.09 percent(06) of the Librarians have poor work knowledge on LIBSOFT respectively in their workspot,followed by 6.06 percent(04) of the Librarians also have poor work knowledge about NEWGENLIB, SANJAY and VTLS in their working place. Next to this, 3.03 percent (02) of the Librarians also have poor work knowledge

about to use of LIMSOFT and In House Developed library Software respectively in their work spot.

It is being observed from the below table that, 12.12 percent (08) of the Librarians have very poor knowledge on SLIM++, SANJAY and LIMSOFT respectively in their workplace respectively, followed by 9.09 percent (06) of the Librarians also have very poor work knowledge about VTLS and In House Developed Software respectively in their work spot.Next to this, 6.06 percent (04) of the Librarians also have very poor work knowledge on LIBSYS, WINISIS and KOHA respectively in their libraries.

It is also inferred from the below table that, 78.79 percent (52) and 75.76 percent (50) of the Librarians not aware about the library automation software's of Sanjay, VTLS, Libsoft and Limsoft respectively, followed by 72.73 percent (48) and 69.7 percent (46) of the respondents also not aware about In House Developed Software, Newgenlib, SLIM++ and Winisis respectively in their workplace. Next to this, 60.61 percent (40) of the Librarians are not aware about work knowledge of KOHA respectively in their work spot. And 48.48 percent(32) of the Librarians are not aware of the library automation software LIBSYS in their workplace.

These are all the aspects shows that, library professionals not have the sufficient work knowledge about Library Automation Software and training is needed to improve their knowledge.

Table 5.1.23: Proficiency rate on Library Automation Software

Description	1	2	3	4	5	6	7
LIBSYS	22(33.33)	6(9.09)	2(3.03)	-	4(6.06)	32(48.48)	**66(100)**
WINISIS	6(9.09)	2(3.03)	8(12.12)	-	4(6.06)	46(69.7)	**66(100)**
SLIM++	4(6.06)	2(3.03)	4(6.06)	-	8(12.12)	48(72.73)	**66(100)**
KOHA	8(12.12)	12(18.18)	2(3.03)	-	4(6.06)	40(60.61)	**66(100)**
NEWGENLIB	6(9.09)	4(6.06)	4(6.06)	4(6.06)		48(72.73)	**66(100)**
SANJAY		2(3.03)		4(6.06)	8(12.12)	52(78.79)	**66(100)**
VTLS			6(9.09)	4(6.06)	6(9.09)	50(75.76)	**66(100)**
LIBSOFT	4(6.06)		6(9.09)	6(9.09)		50(75.76)	**66(100)**
LIMSOFT	2(3.03)	2(3.03)	2(3.03)	2(3.03)	8(12.12)	50(75.76)	**66(100)**
In House Developed	6(9.09)		4(6.06)	2(3.03)	6(9.09)	48(72.73)	**66(100)**
Any Other (Please Specify)							

Figures in the parentheses show the percentage

5.1.24 Proficiency rate on Network Connection and Access

It is found from the below table that, the proficiency rate on Network connection and access among the Librarians are remarkable. 78.79 percent (52) of the Librarians are very good in browsing of E-Mail in their work spot, followed by 57.58 percent (38) of the Librarians have the very good knowledge of Internet and World Wide Web accessing facilities in their work spot. Next to this, 27.27 percent (18) and 24.24(16) of the respondents have very good knowledge about connection of Intranet and Configuration of LAN within the Library respectively. 21.21percent(14) and 18.18 percent(12) of the Librarians have very good knowledge about Configuration of Intranet and Connection of Local Area Network (LAN) / Wide Area Network (WAN) on their work spot. Very less 12.12 percent (08) and 6.06 percent (04) of the Librarians have very good knowledge about Connection of Virtual Private Network (VPN) and VSAT on their libraries.

It is also being observed from the below table that,18.18 percent(12) and 15.15 percent(10) of the Librarians have good knowledge about Configuration of LAN within the Library and Configuration of Intranet, Connection of Local Area Network (LAN) on their work spot, followed by 9.09 percent(06) and 6.06 percent(04) of the Librarians have good knowledge about Connection of Wide Area Network (WAN), Virtual Private Network (VPN),Browsing of E-Mail and accessing of Internet and World Wide Web respectively in their workplace.

It can be seen from the below table that, 9.09 percent (06) of the Librarians have satisfactory knowledge about to Configuration of LAN within the Library and Connection of Extranet facilities to their users on their work spot, followed by 6.06 percent (04) of the Librarians have satisfactory knowledge about Configuration of Intranet, Connection of Local Area Network (LAN), VSAT and Intranet in their work spot.

It is inferred from the below mention table that, Very less 6.06 percent (04) of the Librarians have poor knowledge about Connection of VSAT on their workplace, followed by 3.03 percent (02) of the respondents also have poor knowledge about Configuration of Intranet, Connection of Local Area Network (LAN), Wide Area Network (WAN), Extranet, Intranet and accessing of Internet and World Wide Web respectively in their work spot.

It is being observed from the below table that, 12.12 percent (08) and 9.09 percent (06) of the Librarians have very poor knowledge about Connection of Virtual Private Network (VPN) and Wide Area Network (WAN) respectively in their workplace, followed by 6.06 percent (04) of the Librarians have poor knowledge on Configuration of Intranet, Configuration of LAN within the Library, Connection of Local Area Network (LAN), VSAT, Extranet and Intranet in their work spot. Next to this, very less 3.03 percent (02) of the Librarians have poor knowledge about Connection of Internet and World Wide Web respectively in their workplace.

It is depicted from the table that, 72.73 percent of the Librarians (48) are not aware about to connection of VSAT and Extranet facilities, followed by 63.64 percent of the Librarians (42) are not aware about Virtual Private Network (VPN) in their respective libraries.57.58 percent of the Librarians (38) are not aware about knowledge on Wide Area Network (WAN) and connection of Intranet. Next to this, 51.42 percent (34) and 48.48 percent (32) of the Librarians are not aware about knowledge on connection of Local Area Network (LAN) and Configuration of Intranet in their libraries.42.42 percent (28) and 27.27 percent (18) of the Librarians are not aware about Configuration of LAN within the Library and Use of Internet and World Wide Web in their libraries. Surprisingly 9.09 percent of the Librarians (06) opined that Librarians are not aware of E-Mail.

Table 5.1.24: Proficiency rate on Network Connection and Access

Description	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Configuration of Intranet	14(21.21)	10(15.15)	4(6.06)	2(3.03)	4(6.06)	32(48.48)	**66(100)**
Configuration of LAN within the Library	16(24.24)	12(18.18)	6(9.09)		4(6.06)	28(42.42)	**66(100)**
Local Area Network (LAN)	12(18.18)	10(15.15)	4(6.06)	2(3.03)	4(6.06)	34(51.52)	**66(100)**
Wide Area Network	12(18.18)	6(9.09)	2(3.03)	2(3.03)	6(9.09)	38(57.58)	**66(100)**
Virtual Private Network (VPN)	8(12.12)	6(9.09)	2(3.03)		8(12.12)	42(63.64)	**66(100)**
VSAT	4(6.06)	2(3.03)	4(6.06)	4(6.06)	4(6.06)	48(72.73)	**66(100)**
Extranet	6(9.09)		6(9.09)	2(3.03)	4(6.06)	48(72.73)	**66(100)**
Intranet	18(27.27)		4(6.06)	2(3.03)	4(6.06)	38(57.58)	**66(100)**
Internet and WWW	38(57.58)	4(6.06)	2(3.03)	2(3.03)	2(3.03)	18(27.27)	**66(100)**
E-Mail	52(78.79)	6(9.09)	2(3.03)			6(9.09)	**66(100)**

Figures in the parentheses show the percentage

5.1.25 Proficiency rate on Use of Website

A maximum of 63.64 percent (42) of the Librarians are very good in design of websites, followed by 54.55 percent (36) of the respondents are very good in accessing and searching of online databases. Next to this 24.24 percent(16) and 21.21 percent(14) of the Librarians have very good knowledge on Use of Website and Searching and Accessing Bibliographic Databases in their libraries effectively.15.15 percent(10) and 9.09 percent(06) of the Librarians have very good knowledge on Use of Web Camera and Webcasting in their workspot.And also it is also being observed that,6.06 percent(04) of the Librarians have very good knowledge about Mobile Casting and Podcasting efficiently in their work spot.

It is depicted from the below table that,21.21 percent(14) of the Librarians have good knowledge on Use of Website in their libraries, followed by 15.15 percent(10) of the respondents also have good knowledge about Searching and Accessing Bibliographic Databases and Use of Web Camera in their workplace. Next to this, 12.12 percent (08) of the Librarians have good knowledge on Design of Website, Searching and Accessing Online Databases, Webcasting, Mobile Casting and Podcasting in their workplace.

It is inferred from the below table that, 12.12 percent (08) and 9.09 percent (06) of the Librarians have satisfactory knowledge on Use of Website and Searching and Accessing Online Databases in their work spot, followed by 6.06 percent (04) and 3.03 percent (02) of the Librarians have satisfaction work knowledge about searching and accessing Bibliographic Databases, Webcasting and Design of Website, Mobile Casting and Podcasting in their work spot.

It can be seen from the below table that, 6.06 percent (04) of the Librarians have poor knowledge about Mobile Casting and Podcasting in their libraries.

It is being observed from the below mention table that,15.15 percent (10) of the Librarians have very poor knowledge on Use of Website in their libraries, followed by 12.12 percent (08) of the Librarians have very poor work knowledge about searching and accessing Bibliographic Databases, Use of Web Camera, Webcasting, Mobile Casting and Podcasting effectively in their workplace. Next to this, 9.09 percent (06) of the Librarians have very poor work knowledge about design of website and searching and accessing online databases effectively in their work spot.

It is also inferred from the below table that,60.61 percent(40) of the Librarians are not aware of using webcasting, mobile casting and podcasting respectively in their libraries, followed by 57.58 percent(38) and 45.45 percent(30) of the Librarians are not aware about use of web camera, searching and accessing bibliographic databases. Next to this, 27.27 percent (18) and 15.15 percent (10) of the Librarians are not aware of use of websites and searching and accessing of online databases in their libraries.12.12 percent (08) of the Librarians are not aware of design of website in their workplace.

Table 5.1.25: Proficiency rate on Use of Website

Description	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Use of Website	16(24.24)	14(21.21)	8(12.12)		10(15.15)	18(27.27)	**66(100)**
Design of Website	42(63.64)	8(12.12)	2(3.03)		6(9.09)	8(12.12)	**66(100)**
Searching and Accessing Online Databases	36(54.55)	8(12.12)	6(9.09)		6(9.09)	10(15.15)	**66(100)**
Searching and Accessing Bibliographic Databases	14(21.21)	10(15.15)	4(6.06)		8(12.12)	30(45.45)	**66(100)**
Use of Web Camera	10(15.15)	10(15.15)			8(12.12)	38(57.58)	**66(100)**
Webcasting	6(9.09)	8(12.12)	4(6.06)		8(12.12)	40(60.61)	**66(100)**
Mobile Casting	4(6.06)	8(12.12)	2(3.03)	4(6.06)	8(12.12)	40(60.61)	**66(100)**
Podcasting	4(6.06)	8(12.12)	2(3.03)	4(6.06)	8(12.12)	40(60.61)	**66(100)**

Figures in the parentheses show the percentage

5.1.26 Proficiency rate on Use of Web Tools

It is depicted from the below mention table that, 66.67 percent (44) of the Librarians are very good in use of Wikipedia, YouTube and Whats App, followed by 60.61 percent(40) of the respondents are very good in use of Social network site Facebook respectively. Next to this, 57.58 percent (38) and 54.55 percent (36) of the Librarians are very good in use of Web OPAC and LIS – Forum respectively. 39.39 percent (26) and 36.36 percent (24) of the Librarians are very good in use of Blogs, Education Tubes, Orkut, Skype and Twitter.

It can be seen from the below table that, 15.15 percent (12) and 12.12 percent (08) of the Librarians are good in use of Blogs, Wikipedia, You tube, Education Tubes and Face Book

respectively in their work spot, followed by 9.09 percent (06) and 6.06 percent (04) of the respondents are good in use of LIS-Forum, Web OPAC, Orkut and what Sapp. Next to this, very less 3.03 percent (02) of the Librarians are good in use of Twitter in their work spot.

It is being observed from the below table that,15.15 percent(12) and 12.12 percent(08) of the Librarians are at satisfactory level in use of Skype and Blogs, followed by 9.09 percent(06) and 6.06 percent(04) of the respondents are also at satisfactory level in use of LIS-Forum, Web OPAC and Orkut in their work spot. Next to this, 3.03 percent (02) of the Librarians are at satisfactory level in use of Wikipedia, Education Tubes and Whats App in their workplace.

It is depicted from the below table that,6.06 percent(04) of the Librarians are poor in use of Twitter, followed by 3.03 percent(02) of the Librarians are also poor in use of Orkut,Skype,LIS-Forum,Web OPAC and What Sapp in their work spot.

It is inferred from the below table that, 9.09 percent(06) of the Librarians are very poor in use of Skype in their working place, followed by 6.06 percent(04) of the respondents are also very poor in use of Twitter,LIS-Forum and Web OPAC in their work spot. Next to this, 3.03 percent (02) of the Librarians are very poor in use of Education Tubes, Face Book, Orkut and Whats App in their workplace.

The below mention table describes that,45.45 percent (30) and 42.42 percent (28) of the Librarians are not aware about in use of Education Tubes, Orkut and twitter respectively, followed by 36.36 percent (24) and 33.33 percent (22) of the respondents are also not aware about in use of Skype and Blogs. Next to this,24.24 percent(16) and 21.21 percent(14) of the Librarians are not aware about in use of Face Book and You tube respectively.18.18 percent(12) and 15.15 percent(10) of the Librarians are not aware in use of Wikipedia, LIS-Forum, Whats App and Web OPAC in their work spot.

Table 5.1.26: Proficiency rate on Use of Web Tools

Description	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Blogs	26(39.39)	10(15.15)	8(12.12)			22(33.33)	**66(100)**
Wikipedia	44(66.67)	8(12.12)	2(3.03)			12(18.18)	**66(100)**
You tube	44(66.67)	8(12.12)				14(21.21)	**66(100)**
Education Tubes	24(36.36)	8(12.12)	2(3.03)		2(3.03)	30(45.45)	**66(100)**
Face Book	40(60.61)	8(12.12)			2(3.03)	16(24.24)	**66(100)**
Orkut	24(39.39)	4(6.06)	4(6.06)	2(3.03)	2(3.03)	30(45.45)	**66(100)**
Skype	24(36.36)		10(15.15)	2(3.03)	6(9.09)	24(36.36)	**66(100)**
Twitter	24(36.36)	2(3.03)	4(6.06)	4(6.06)	4(6.06)	28(42.42)	**66(100)**
LIS-Forum	36(54.55)	6(9.09)	6(9.09)	2(3.03)	4(6.06)	12(18.18)	**66(100)**
Web OPAC	38(57.58)	6(9.09)	6(9.09)	2(3.03)	4(6.06)	10(15.15)	**66(100)**
Whats App	44(66.67)	4(6.06)	2(3.03)	2(3.03)	2(3.03)	12(18.18)	**66(100)**
Any Other							

Figures in the parentheses show the percentage

5.1.27 Proficiency rate of knowledge on Digital Library

It is found from the below mention table that, 51.52 percent (34) of the Librarians are very good in design of Dspace - Digital Library Software Creation of Metadata for E-Books, E-Journals in their libraries. 48.48 percent (32) of the Librarians are very good usage knowledge about the handing Open Access Databases in their libraries. 33.33 percent (22) of the Librarians are very good usage knowledge about Greenstone - Digital Library Software archived of E-Resources. Next to this, 30.03 percent (20) and 24.24 percent (16) of the Librarians are very good usage knowledge about E –Learning Systems, Digital Institutional Repository System (IRS) Services and Content Management in their libraries. 18.18 percent (12) of the Librarians have very good usage knowledge about RFID Technology, followed by 15.15 percent (10) of the Librarians also have very good usage knowledge about Federated Search in their libraries.

It is depicted from the below mention table that,21.21 percent(14) and 18.18 percent(12) of the Librarians have good usage knowledge about E –Learning Systems and Content Management in their libraries, followed by 15.15 percent(10) of the Librarians have good usage knowledge about Digital Institutional Repository System (IRS) and Services in their libraries. Next to this 12.12 percent (08) of the Librarians have good usage knowledge on Federated Search in their workplace. 9.09 percent (06) and 6.06 percent (04) of the respondents have good knowledge about use of Dspace - Digital Library Software for Creation of Metadata for E-Books, E-Journals, Greenstone -Digital Library Software archived of E-Resources, Open Access Databases and RFID Technology in their work spot.

It can be seen from the below table that, 15.15 percent (10) of the Librarians have satisfactory knowledge on use of Federated Search, followed by 9.09 percent (06) of the Librarians also have satisfactory knowledge about use of Digital Institutional Repository System (IRS) Services. Next to this, 6.06 percent (04) of the Librarians have satisfactory knowledge about Greenstone - Digital Library Software archived of E-Resources, Content Management, and RFID Technology. Very few 3.03 percent (02) of the respondents also have satisfaction knowledge about in use of E –Learning Systems and Dspace-Digital Library Software for Creation of Metadata for E-Books, E-Journals in their workplace.

It is inferred from the below mention table that, 21.21 percent(14) of the Librarians have poor usage knowledge about RFID Technology in their libraries, followed by 12.12 percent(08) of the Librarians also have poor knowledge about use of Greenstone -Digital Library Software archived of E-Resources in their work spot. Next to this, 6.06 percent (04) and 3.03 percent (02) of the Librarians have also poor work knowledge on Dspace - Digital Library Software for Creation of Metadata for E-Books, E-Journals, Use of Federated Search and Content Management in their work spot.

It is being observed from the below table that, 12.12 percent(08) of the Librarians have very poor knowledge on Use of Federated Search in their libraries, followed by 9.09 percent(06) of the

Librarians have very poor knowledge about Content Management, E –Learning Systems, Digital Institutional Repository System (IRS) Services, Open Access Databases and RFID Technology in their libraries. Next to this, 6.06 percent (04) of the Librarians also have very poor knowledge on Dspace-Digital Library Software for Creation of Metadata for E-Books, E-Journals and Greenstone -Digital Library Software archived of E-Resources in their workplace.

It is also inferred from the below mention table that, 39.39 percent (26) and 36.36 percent (24) of the Librarians are not aware about use of knowledge on Federated Search, Content Management, RFID Technology, E –Learning Systems and Digital Institutional Repository System (IRS) Services in their libraries, followed by 33.33 percent (22) of the respondents are not aware of Greenstone-Digital Library Software archived of E-Resources and Open Access Databases in their libraries. Next to this, 24.24 percent (16) of the Librarians are not aware of D space-Digital Library Software for Creation of Metadata for E-Books, E-Journals in their libraries.

Table 5.1.27: Proficiency rate of knowledge on Digital Library

Sl No	Description	1	2	3	4	5	6	7
1	D space -Digital Library Software Creation of Metadata for E-Books, E-Journals	34(51.52)	6(9.09)	2(3.03)	4(6.06)	4(6.06)	16(24.24)	**66(100)**
2	Greenstone -Digital Library Software archived of E-Resources	22(33.33)	6(9.09)	4(6.06)	8(12.12)	4(6.06)	22(33.33)	**66(100)**
3	Use of Federated Search	10(15.15)	8(12.12)	10(15.15)	4(6.06)	8(12.12)	26(39.39)	**66(100)**
4	Content	16(24.24)	12(18.18)	4(6.06)	2(3.03)	6(9.09)	26(39.39)	**66(100)**

	Management							
5	E –Learning Systems	20(30.3)	14(21.21)	2(3.03)	-	6(9.09)	24(36.36)	**66(100)**
6	Digital Institutional Repository System (IRS) Services	20(30.3)	10(15.15)	6(9.09)	-	6(9.09)	24(36.36)	**66(100)**
7	Open Access Databases	32(48.48)	6(9.09)		-	6(9.09)	22(33.33)	**66(100)**
8	RFID Technology	12(18.18)	4(6.06)	4(6.06)	14(21.21)	6(9.09)	26(39.39)	**66(100)**

Figures in the parentheses show the percentage

Testing of Hypothesis

H1: Majority of the LIS Professionals working in Special Libraries in Karnataka have good work knowledge of ICT Skills and Competencies.

Table Number	**5.1.21**	**5.1.22**	**5.1.23**	**5.1.24**	**5.1.25**	**5.1.26**	**5.1.27**
Mean	1.813828	2.6643	3.10858	2.35416	2.393375	1.66492	2.149868
SD	0.493595	0.679644	0.849914	0.504594	0.542406	0.40086	0.356633
Z-Statistic	19.5231	4.01275	1.037881	10.3981	9.08589	27.0575	19.3659
Significant	**Sig**	**Sig**	**Not significant**	**Sig**	**Sig**	**Sig**	**Sig**

Conclusion: Research hypothesis is statistically significant for all questions, which means ICT Skills and Competencies of LIS Professionals working in Special Libraries in Karnataka are at satisfactory levels with respect to hardware, software, network connection and access, website, website tools and digital library. Whereas Table 5.1.23 shows research hypothesis is not statistically significant. It indicates majority of the LIS Professionals working in Special Libraries in Karnataka need ICT training to update and improve in handling library automation software. Hence it is suggested the LIS Professionals working in Special Libraries in Karnataka

motivated to attend Workshops, Conferences, In-house Training Programmes, Seminars and Lectures to improve their work knowledge on library automation software's. Hence the above stated H1 hypothesis is accepted and proved.

Training and Development for LIS Professionals as recommended by Librarians

5.1.28 Nature of training need for LIS Professionals

It is found from the below mention table that, maximum of 81.08 percent (54) of the librarians opined that, there is a need of training for Development and administration of databases, Digital Content management, including digital and virtual libraries respectively, followed by 72.07 percent(48) of the librarians said that, there is a need of training for Hardware maintenance, Knowledge management and Metadata management including MARC for updating their skills. Next to this, 69.07 percent (46) of the librarians suggest that, there is a need of training for Development and management of bibliographic databases and Computer programming respectively. And 66.7 percent (44) of the librarians suggest that, there is a need of training in the area of Network administration and Website / portal development and maintenance.

It is depicted from the below table that, 33.3 percent (22) of the librarians opined that, there is no need of training in the area of Network administration and Website / portal development and maintenance, followed by 30.3 percent (20) of the librarians opined that, there is no need of training in the area of development and management of bibliographic databases and Computer programming respectively. Next to this, 27.3 percent (18) of the librarians opined that, there is no need of training in the area of Hardware maintenance, Knowledge management and Metadata management including MARC. 18.2 percent (12) of the librarians opined that, there is no need of training in the area of development and administration of databases in their libraries.

Table 5.1.28: Nature of training need for LIS Professionals

	Opinion		
Nature of Training	**Yes**	**No**	**Total**
Development and administration of databases	54(81.8)	12(18.2)	66(100)
Hardware maintenance	48(72.7)	18(27.3)	66(100)
Digital Content management, including digital and virtual libraries	54(81.8)	12(18.2)	66(100)
Knowledge management	48(72.7)	18(27.3)	66(100)
Development and management of bibliographic databases	46(69.7)	20(30.3)	66(100)
Network administration	44(66.7)	22(33.3)	66(100)
Metadata management including MARC	48(72.7)	18(27.3)	66(100)
Computer programming	46(69.7)	20(30.3)	66(100)
Website / portal development and maintenance	44(66.7)	22(33.3)	66(100)

Figures in the parentheses show the percentage

5.1.29 Barriers to ICT application in Libraries

It is depicted from the below table that, the following barriers to ICT application in the libraries as opined by the librarians. A maximum of the 84.85 percent(56) of the librarians opined that, lack of skilled staff are barriers to ICT for application in their respective libraries, followed by 78.79 percent(52) and 75.76 percent(50) of the respondents opined that, difficulty in recruiting and retaining qualified ICT Staff, Non-availability of required ICT Hardware and Software,Inadequate Budget for ICT,Lack of commitment by top management and Lack of training facility for ICT Skills are the barriers to ICT application in their respective libraries. Next to this, 72.73 percent (48) of the respondents opined that, library lacks updated ICT strategy are the barriers to ICT application in their respective libraries. 69.7 percent (46) of the respondents agreed that unwillingness among staff to use ICT are the barriers to application in their respective libraries.

It is inferred from the below table that,30.3 percent(20) of the librarians opposed that, Unwillingness among staff to use ICT is not a barriers to application in their respective libraries, followed by 27.27 percent(18) of the librarians opposed that, library lacks updated ICT strategy is not a barriers to application in their respective libraries. Next to this,24.24 percent(16) of the librarians opposed about Non-availability of required ICT Hardware and Software, Inadequate Budget for ICT,Lack of commitment by top management and Lack of training facility for ICT Skills is not a barriers to application in their respective libraries. 21.21 percent (14) of the librarians also opposed about difficulty in recruiting and retaining qualified ICT Staff is not a barriers to ICT for application in their respective libraries. Very few, 15.15 percent (10) of the librarians opposed that; Lack of skilled staff is not a barrier to ICT application in their respective libraries.

Table 5.1.29: Barriers to ICT application in Libraries

Barriers to ICT in general	**Yes**	**No**	**Total**
Non-availability of required ICT Hardware and Software	50(75.76)	16(24.24)	**66(100)**
Inadequate Budget for ICT	50(75.76)	16(24.24)	**66(100)**
Lack of skilled staff	56(84.85)	10(15.15)	**66(100)**
Difficulty in recruiting and retaining qualified ICT Staff	52(78.79)	14(21.21)	**66(100)**
Unwillingness among staff to use ICT	46(69.7)	20(30.3)	**66(100)**
Library lacks updated ICT strategy	48(72.73)	18(27.27)	**66(100)**
Lack of commitment by top management	50(75.76)	16(24.24)	**66(100)**
Lack of training facility for ICT Skills	50(75.76)	16(24.24)	**66(100)**

Figures in the parentheses show the percentage

Testing of Hypothesis

H2: LIS Professionals working in Special Libraries in Karnataka face constraints in acquiring ICT Skills due to various reasons.

Barriers to ICT for application in Library (Table Number - 5.1.29)				
Mean	**SD**	**SS**	**Z-Statistic**	**Significance**
2.425327	0.134012	66	34.8376	Significant

Conclusion: Research hypothesis is statistically significant for the question considered for the research which shows problems or barriers to ICT application in special library with various reasons including Lack of skilled staff, Difficulty in recruiting and retaining qualified ICT Staff, Non-availability of required ICT Hardware and Software, Inadequate Budget for ICT, Lack of commitment by top management, Lack of training facility for ICT Skills, Library lacks updated ICT strategy , Unwillingness among staff to use ICT .These are the various reasons are barriers to application of ICT in their respective libraries. Hence the above stated H2 hypothesis is accepted and proved.

5.1.30 Training Methods for LIS Professionals

It is found from the below mention table that, regarding training methods for LIS Professionals to update their ICT Skills in their respective libraries to perform daily routine work effectively as suggested by the Librarians. A maximum of 78.08 percent (52) of the librarians opined that, there is a need of training through Workshops and In House Training programmes / Workshops for LIS Professionals to update their skills and knowledge, followed by 72.07 percent (48) of the librarians opined that, there is a need of training through create awareness of new databases and attending Conference / Seminars / Hands on experience for LIS Professionals to update their skills and knowledge. Next to this, 51.5 percent (34) of the librarians opined that, there is a need of training through Short Term Refresher Courses. 48.5 percent (32) of the librarians opined that, there is a need of training through addition to any new ICT for LIS Professionals to update their skills and knowledge to perform their daily routine job in their libraries.39.4 percent (26) and

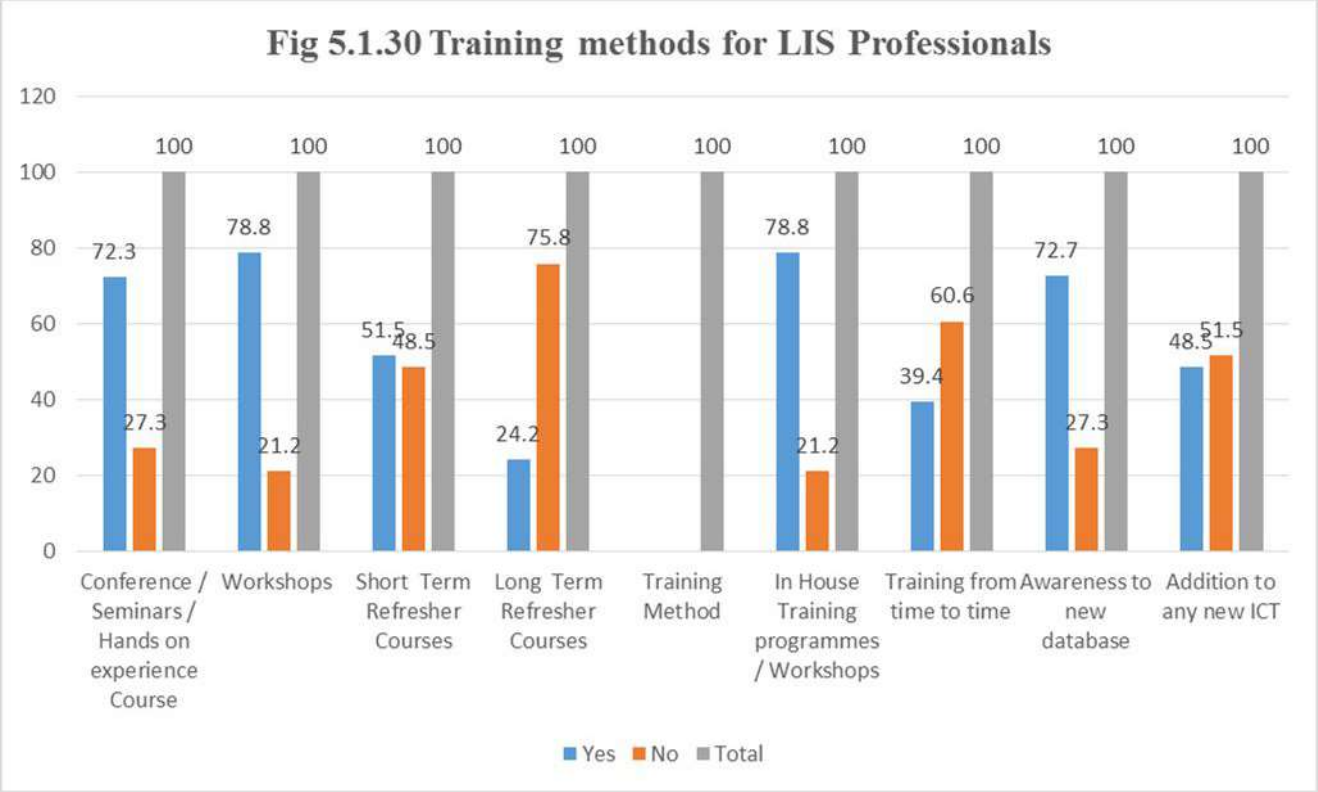
24.2 percent (16) of the librarians suggested that, there is a need of training for LIS Professionals through training from time to time and training through Long Term Refresher Courses will help to improve their skills and knowledge.

It is also depicted from the below table that,majority of the 75.08 percent(50) of the Librarians opined that, Long Term Refresher Courses will not help much for LIS Professionals to update their skills and knowledge, followed by 60.6 percent(40) of the librarians agreed that training from time to time will not help much for LIS Professionals to update their skills and knowledge. Next to this 51.5 percent (34) of the librarians opined that, addition to any new ICT will not help much for LIS Professionals to update their skills and knowledge. 48.5 percent (32) of the librarians opined that, Short Term Refresher Courses will not help much for LIS Professionals to update their skills and knowledge. 27.3 percent (18) of the librarians opined that, training through Conference / Seminars / Hands on experience and awareness to new database will not help much for LIS Professionals to improve their skills and knowledge. 21.2 percent (14) of the librarians also suggested that, training through Workshops and In House Training programmes / Workshops will also not help much in updating LIS Professionals skills and their knowledge to perform their daily routine work in their libraries.

Table 5.1.30: Training Methods for LIS Professionals

	Opinion		
Training Methods for LIS Professionals	**Yes**	**No**	**Total**
Conference / Seminars / Hands on experience Course	48(72.3)	18(27.3)	**66(100)**
Workshops	52(78.8)	14(21.2)	**66(100)**
Short Term Refresher Courses	34(51.5)	32(48.5)	**66(100)**
Long Term Refresher Courses	16(24.2)	50(75.8)	**66(100)**
In House Training programmes / Workshops	52(78.8)	14(21.2)	**66(100)**
Training from time to time	26(39.4)	40(60.6)	**66(100)**
Awareness to new database	48(72.7)	18(27.3)	**66(100)**
Addition to any new ICT	32(48.5)	34(51.5)	**66(100)**

Figures in the parentheses show the percentage



Testing of Hypothesis

H3: LIS Professionals working in Special Libraries in Karnataka need more exposure and training in ICT Skills to render ICT based information resources and services.

Table Number	**5.1.28**	**5.1.30**
Mean	1.272727	1.454545
SD	0.056692	0.28748
Z-statistic	32.5686	1.28452

Conclusion: The data analysis presented in the Table 5.1.28 and Table 5.1.30 clearly indicates that, the LIS Professionals working in Special Libraries in Karnataka need ICT based training to an greater extent to be competent enough to render ICT based library services in modern era. Hence the above stated H3 hypothesis is accepted and proved.

5.1.31 Attendance of LIS Professionals for the Special ICT training/Course/Workshop/Seminar/Conferences during last five years

The below mention table shows the tabulation of deputed LIS Professionals for ICT Training/Course/Workshop/Seminar/Conferences during last five years based on the samples collected in a survey. It is being observed that, year by year increasing of deputation of LIS Professionals to attend ICT Training/Course/Workshop/Seminar/Conferences by their respective organizations for updating their ICT Skills and knowledge. Majority of 158 LIS Professionals deputed for attending ICT Training/Course/Workshop/Seminar/Conferences in 2015 -16 by their respective organizations for updating their ICT Skills and knowledge, followed by 146 LIS Professionals deputed to attend ICT training/Course/Workshop/Seminar/Conferences in 2014 -15 by their respective organizations for updating their ICT Skills and knowledge. Next to this, 136 LIS Professionals deputed to attend ICT training/Course/Workshop/Seminar/Conferences in 2013 -14 by their respective organizations for updating their ICT Skills and knowledge. 102 LIS Professionals deputed to attend ICT training/Course/Workshop/Seminar/Conferences in 2012 -13 by their respective organizations to update their ICT Skills and knowledge. And 112 LIS Professionals deputed to attend ICT training/Course/Workshop/Seminar/Conferences in 2011 -12 by their respective organizations for updating their ICT Skills and knowledge.

Table 5.1.31: Library staff is attended the Special ICT training/Course/Workshop/Seminar/Conferences during last five years

Sl No	Years	No of ICT training/Course/Workshop/Seminar/Conferences
1	**2011-12**	**112**
2	**2012-13**	**102**
3	**2013-14**	**136**
4	**2014-15**	**146**
5	**2015-16**	**158**
6	**Total**	**654**

5.1.32 Training Methods contributed to update LIS Professionals Skills

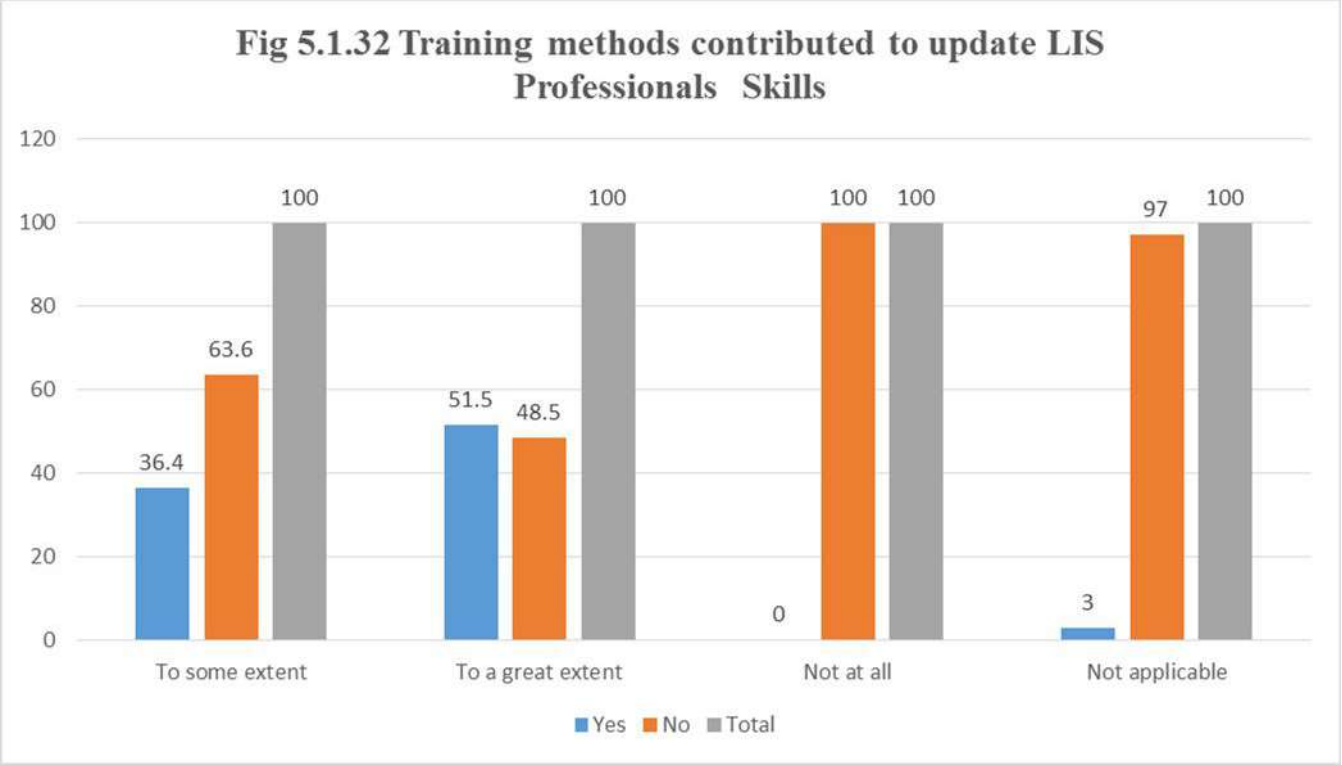
The analyses of librarian's opinion to know whether the training methods have contributed any effect on updating skills on LIS Professionals are shown in the table. Majority of the respondents suggest that, training method has helped to update skills to a great extent with 51.05 percent(34), followed by 36.04 percent(24) of the librarians opine that, training method has helped to update their skills to a some extent. And very few 3.00 percent (02) even noted that, training method has not at all applicable to update their skills.

It is also depicted from the below table that, Majority of the respondents opposed the statement regarding, training method has not at all helped to update their skills and knowledge with 100 percent(66),followed by 97.00 percent(64) were opine that, training method not applicable to update their knowledge. Next to this, 63.6 percent (42) were opposed that, training method has helped to update their skills to a some extent. And 48.5 percent (32) of the respondents opposed that, training method has helped to update their skills and knowledge to a great extent.

Table 5.1.32: Training Methods contributed to update LIS Professionals Skills

	Opinion		
Training methods contributed to update library staff skills	**Yes**	**No**	**Total**
To some extent	24(36.4)	42(63.6)	**66(100)**
To a great extent	34(51.5)	32(48.5)	**66(100)**
Not at all	0.0	66(100.0)	**66(100)**
Not applicable	2(3.0)	64(97.0)	**66(100)**

Figures in the parentheses show the percentage



5.1.33 Suggestions for updating the Knowledge / Skills of LIS professionals

Librarians suggestion for updating LIS Professionals knowledge and skills shows that, majority of the 84.08 percent (56) of the respondents have given utmost priority to In-House training programmes for staff development, followed by 78.08 percent (52) of the librarians opined that, regular attendance of relevant conference/ workshops and searching internet for relevant professional information will help much in updating the LIS Professionals knowledge. 72.7 percent (48) of the respondents opined that discussion of professional matters with colleagues will improve the knowledge / skills of the LIS Professionals. 69.5 percent (46) of the respondents opined that, regularly reading relevant professional literature and learning from web resources will also help to update their latest technical skills and knowledge related to library profession. 60.6 percent (40) of the respondents suggested that, attending professional association meetings and undertaking individual research work/publications will also help to improve the skills of LIS Professionals. 51.5 percent(34) of the respondents opined that, going for higher studies/formal courses and reading general books/literary works will be playing key role in update the

knowledge and skills of the LIS Professionals. 45.5 percent (30) of the librarians opined that, involvement in teaching will also give new ideas about latest technology to improve the knowledge of LIS Professionals. And very few 9.1 percent(06) of the librarians suggested that, involvement in all library section work, taking advice and suggestions from higher authorities related daily routine work and showing dedication towards library profession will also help to improve the skills / knowledge of the LIS Professionals.

It is also depicted from the below table that, 54.5 percent (36) of the librarians opined that, involvement in teaching will not help to improve the skills of LIS Professionals, followed by 48.5 percent (32) of the librarians stated negatively related to going for higher studies/formal courses and reading general books/literary works will not help in updating knowledge for LIS Professionals towards library profession. Next to this, 39.4 percent (26) of the librarians stated that, undertaking individual research work/publications and attending professional association meetings also will not help in upgrading the skills of LIS Professionals. 30.3 percent (20) of the librarians opined that, regularly reading relevant professional literature and learning from web resources also will not help in updating the skills of the LIS Professionals. 27.3 percent (18) of the librarians opined that, discussion of professional matters with colleagues will not help in updating knowledge of the LIS Professionals. 21.2 percent(14) of the librarians suggested that, regular attendance of relevant Conference/Workshops and searching internet for relevant professional information will not help in updating the skills / knowledge of the LIS Professionals. And very few 15.2 percent (10) of the librarians opined that, In-House training programmes for staff development will not help in updating the knowledge / skills of the LIS Professionals.

Table 5.1.33: Suggestions for updating the Knowledge /skills of LIS professionals

	Opinion		
Suggestions for updating the Knowledge /skills of LIS professionals	**Yes**	**No**	**Total**
Regular attendance of relevant Conference/Workshops	52(78.8)	14(21.2)	**66(100)**
In-House training programmes for staff development	56(84.8)	10(15.2)	**66(100)**
Going for higher studies/formal courses	34(51.5)	32(48.5)	**66(100)**
Undertaking individual research work/publications	40(60.6)	26(39.4)	**66(100)**
Discussion of professional matters with colleagues	48(72.7)	18(27.3)	**66(100)**
Attending professional association meetings	40(60.6)	26(39.4)	**66(100)**
Involvement in teaching	30(45.5)	36(54.5)	**66(100)**
Reading general books/literary works	34(51.5)	32(48.5)	**66(100)**
Regularly reading relevant professional literature	46((69.5)	20(30.3)	**66(100)**
Searching internet for relevant professional information	52(78.8)	14(21.2)	**66(100)**
Learning from web resources	46(69.7)	20(30.3)	**66(100)**
Any other (Please Specify0	6(9.1)	60(90.9)	**66(100)**

Figures in the parentheses show the percentage

Testing of Hypothesis

H4: ICT skills training updates/ improves the knowledge and skills of the LIS Professionals working in Special Libraries in Karnataka.

Table Number	**Mean**	**SD**	**SS**	**Z-Statistic**	**Significance**
5.1.32	1.7727	0.253	66	8.76	Significant
5.1.33	1.3603	0.134	66	8.46	Significant

Conclusion: Research hypothesis is statistically significant for the questions considered for the research which shows ICT skill training updates/improves the knowledge and skills of the LIS Professionals working in Special Libraries in Karnataka. Hence the above stated H4 hypothesis is accepted and proved.

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Part -02: Survey of ICT Skills among LIS Professionals

5.2.0 Introduction

Following are the details of analysis and interpretations of the data collected from the library professionals with the help of structured questionnaire. The study attempts to find out whether the developments in ICT has any influence on LIS Professionals with regards to their professional activities, educational and informational needs in the electronic era, the awareness of library professionals about developments in ICT and their skills in handling the new technologies. The study includes the permanent and as well as Apprentice Trainees working in different special libraries for specific period.The first part of the questionnaire is structured to get information of variables like age, gender, qualification, designation, experience, etc.

5.2.1 Response Rate of LIS Professionals

Table 5.2.1 gives the response rate of the LIS Professionals working in special libraries in Karnataka. Questionnaires were distributed to 210 LIS Professionals. Two hundred and Six (98.09%) responded to the survey.

Table 5.2.1: Response Rate of LIS Professionals

Questionnaires distributed to LIS Professionals	Questionnaire received with filled data	Not returned Questionnaires	Percentage
210	206	04	98.09%

5.2.2 Designation Wise Distribution of LIS professionals

It is depicted from the below mention table that, the distribution of LIS Professionals for the survey with respect to their designation. It is found from the below table that, 35.92 percent (74) of the respondents belong to the cadre of Library Assistant, followed by 33.98 percent (70) of the respondents belong to the cadre of Assistant Librarian. 16.80 percent (34) belong to the cadre of Library Trainee, followed by 04.85 percent (10) of the respondents belong to the cadre of Junior

Research Assistant. Very minimum of 0.77 percent (02) of the respondents belong to the cadre of Deputy Librarian, Senior Principal Officer and Librarian.

Table-5.2.2: Designation Wise Distribution of LIS professionals

Designation	**Frequency**	**Percentage**
Assistant Library Officer	70	33.98
Library Assistant	74	35.92
Library Trainee	34	16.50
Senior Technical Officer	6	2.91
Technical Officer	6	2.91
Junior Research Associate	10	4.85
Deputy Librarian	2	0.97
Senior Principal Scientist	2	0.97
Librarian	2	0.97
Total	**206**	**100.00**

5.2.3 Category Wise Distribution of Libraries

It is found from the below table that, 46.60 percent(96) of the LIS Professionals belong to Research and Development Libraries, followed by 21.36 percent(44) of the respondents belong to Government Libraries. 6.80 percent (14) belong to Business, Trade, Industry and Socio-Economic Change Libraries. 3.88 percent (08) and 1.94 percent (04) of the respondents belong to Blind, Physically Challenged and Media Libraries.

Table-5.2.3: **Category Wise Distribution of Libraries**

Category	Frequency	Percent
R&D	96	46.60
Government	44	21.36
Business, Trade & Industry	14	6.80
Socio Economic Research Development Libraries	14	6.80
Hospital Libraries	10	4.85
Media Library	4	1.94
Autonomous Lib	16	7.77
Blind psychologically challenge	8	3.88
Total	**206**	**100.00**

5.2.4(A) Gender wise distribution of LIS Professionals

The below table give the details about the gender. Among the questionnaire received back with the complete information, male respondents were 72.82 percent (150) of the total population, followed by 27.18 percent (56) belong to female category.

Table 5.2.4(A): Gender wise distribution of LIS Professionals

Gender	Frequency	Percent
Male	150	72.82
Female	56	27.18
Total	**206**	**100.00**

Table 5.2.4 (B) : Age wise distribution of LIS Professionals

The below table gives the detail about the age group of the LIS Professionals. Among the surveyed respondents, more respondents were young with 29.13 percent (60) under 30 years age groups, followed by 28.16 percent (58) belong to age group of 31-35 years. Next to this, 13.59 percent (28) belong to the age group of 41-45 years. 12.62 percent (26) of the LIS Professionals belong to the age group of 46-50 years. Very less 7.77 percent (16) of the total LIS Professionals belong to senior age group of above 50 years.

Age	**Frequency**	**Percent**
Below 30	60	29.13
31-35	58	28.16
36-40	18	8.74
41-45	28	13.59
46-50	26	12.62
Above 50	16	7.77
Total	**206**	**100**

5.2.5 Qualification wise distribution of LIS Professionals

It is found from the below table that, 73.79 percent (152) of the respondents have PG in Library Science Qualification, followed by 12.62 percent (26) of the respondents have the qualification of UG Degree. Next to this, 9.71 percent (20) of the LIS Professionals have the higher qualification of M.Phil. Degree. Only 3.88 percent (08) of the respondents have the highest degree of Ph.D. in Library and Information Science. It is inferred from the table that, most of the respondents have the qualification of PG in Library and Information Science.

Table 5.2.5(A) : Qualification wise distribution of LIS Professionals

Qualification	Frequency	Percentage
UG	26	12.62
PG in Library Science	152	73.79
M Phil	20	9.71
Ph.D.	8	3.88
Total	**206**	**100.00**

Table 5.2.5(B): Experience wise distribution of LIS Professionals

It is found from the below table that, 30.10 percent (62) of the LIS Professionals have the experience of less than 05 years, followed by 24.27 percent(50) of the respondents also have the experience of 6-10 years. Next to this, 14.56 percent (30) of the respondents have the experience of 21-25 years. 12.62 percent (26) of the respondents have the experience of 11-15 years.10.68 percent (22) of the respondents have the experience of 16-20 years. Very low 7.77 percent (16) of the respondents have the rich experience of more than 25 years of service. The acquisition of work experience is one of the skills to solve the problems.

Experience	Frequency	Percent
Below 5 years	62	30.10
6-10	50	24.27
11-15	26	12.62

16-20	22	10.68
21-25	30	14.56
Above 25	16	7.77
Total	**206**	**100.00**

ICT Skills among LIS Professionals

<u>Six point's scale:</u> Very Good (1), Good (2), Satisfaction (3), Poor (4), Very Poor (5)

Not Aware (6), Total frequency & Percentage (7)

5.2.6 Proficiency rate on Information Technology Components

It is found from the below table that, the hardware skills among the LIS Professionals are quite impressive. Table shows that, 59.02 percent (122) of the respondents are very good in use of computers in their work spot, followed by 53.4 percent (110) of the respondents are very good in use of Laptop in their workplaces. Next to this, 41.7 percent (86) of the respondents are also very good in use of Photocopy Machine in their libraries. 39.8 percent (82) of the LIS professionals are also very good in use of Scanners. 29.1 percent (60) of the respondents are also very good in use of Mobile Communication with Computers. 27.2 percent (56) and 25.2 percent (52) of the respondents are very good in use of Digital Camera and Multipurpose Computers in their designated libraries. 18.4 percent (38) and 15.5 percent (32) of the LIS Professionals are also very good in use of Fax Machine and IPods in their work spot.

It is inferred from the below table that, 36.9 percent(76) of the LIS Professionals are good in use of Multipurpose Computers in their workplace, followed by 34.00 percent(70) of the respondents are good in use of Mobile Communication with Computers in their work spot. Next to this, 33.00 percent (68) and 32.00 percent (66) of the LIS Professionals are good in use of computers and Scanners in their designated libraries. 30.1 percent (62) of the respondents are also good in handle of Digital Camera in their respective workplace. 28.2 percent (58) and 26.2 percent (54) of the LIS Professionals are also good in use of Photocopy Machine and Fax Machine in their

work spot. 25.2 percent (52) of the respondents are good in use of Laptop and IPods in their libraries.

It is depicted from the below table that,19.4 percent (40) of the respondents are at satisfactory level in use of IPods in their workplace, followed by 17.5 percent (36) of the LIS Professionals are at satisfactory level in use of Digital Camera, Fax Machine and Scanners in their libraries. Next to this, 16.5 percent (34) of the respondents are also at satisfactory level in use of Multipurpose Computers in their work spot. 15.5 percent (32) of the LIS Professionals are also at satisfactory level in use of Photocopy Machine in their designated libraries. 11.7 percent (24) of the respondents are also at satisfactory level in use of Mobile Communication with Computers. Very less 4.9 percent (10) and 3.9 percent (08) of the LIS Professionals are also at satisfactory level in use of Laptops and Computers.

It is also being observed from the below table that, 8.7 percent (18) of the respondents are poor in use of Multipurpose Computers in their work spot, followed by 7.8 percent(16) of the LIS Professionals are also poor in use of Digital Camera in their respective libraries. Next to this, 6.8 percent (14) and 5.8 percent (12) of the respondents are poor in use of Laptop, Fax Machine and Mobile Communication with Computers in their workplace. 4.9 percent (10) of the LIS Professionals are also poor in use of IPods in their libraries. Very few, 1.9 percent (04) and 1.00 percent (02) of the respondents are poor in use of Photocopy Machine and Computers in their workplace.

It can be seen from the below table that,16.5 percent(34) of the LIS Professionals are very poor in use of Fax Machine in their respective working libraries, followed by 14.6 percent(30) of the respondents are very poor in use of IPods in their work spot. Next to this, 10.7 percent (22) of the LIS Professionals are very poor in use of Photocopy Machine in their workplace. 8.7 percent (18) and 5.8 percent (12) of the respondents are very poor in handling of Digital Camera, Mobile

Communication with Computers and Multipurpose Computers in their designated libraries. Very less 3.9 percent (08) and 1.9 percent (04) of the LIS Professionals are very poor in use of Laptop and Computers in their work spot.

The below mention table also describes that, 20.4 percent (42) of the respondents are not aware about to use of IPods in their workplace, followed by 15.5 percent(32) of the LIS Professionals are not aware about in use of Fax Machine in their respective libraries. Next to this 13.6 percent (28) of the respondents are not aware about to use of Mobile Communication with Computers in their work spot. 8.7 percent (18) of LIS Professionals are not aware about in use of Digital Camera in their designated libraries. 6.8 percent (14) and 5.8 percent (12) of the respondents are not aware about to use of Multipurpose Computers and Laptops. Very less, 2.9 percent (06) and 1.9 percent (04) of the LIS Professionals are not aware about in use of Scanners and Photocopy Machine in their libraries. Surprisingly 1.00 percent (02) of the respondents are not aware about to use of Computers in their workplace.

Table 5.2.6: Proficiency rate on Information Technology Components

IT Components	**1**	**2**	**3**	**4**	**5**	**Not Aware**	**Total**
Use of Computers	122(59.2)	68(33.0)	8(3.9)	2(1.0)	4(1.9)	2(1.0)	**206(100)**
Use of Laptop	110(53.4)	52(25.2)	10(4.9)	14(6.8)	8(3.9)	12(5.8)	**206(100)**
Use of IPod	32(15.5)	52(25.2)	40(19.4)	10(4.9)	30(14.6)	42(20.4)	**206(100)**
Use of Photocopy Machine	86(41.7)	58(28.2)	32(15.5)	4(1.9)	22(10.7)	4(1.9)	**206(100)**
Use of Digital Camera	56(27.2)	62(30.1)	36(17.5)	16(7.8)	18(8.7)	18(8.7)	**206(100)**
Use of Fax Machine	38(18.4)	54(26.2)	36(17.5)	12(5.8)	34(16.5)	32(15.5)	**206(100)**
Use of Mobile Communication with Computers	60(29.1)	70(34.0)	24(11.7)	12(5.8)	12(5.8)	28(13.6)	**206(100)**

Use of Multipurpose Computers	52(25.2)	76(36.9)	34(16.5)	18(8.7)	12(5.8)	14(6.8)	**206(100)**
Use of Scanners	82(39.8)	66(32.0)	36(17.5)	10(4.9)	6(2.9)	6(2.9)	**206(100)**
If any other Please Specify:							

Figures in the parentheses show the percentage

5.2.7 Proficiency rate on Software

The information and communication technology skills among LIS Professionals and the level of competency in all the software skills of the respondents are tabulated and presented in Table 5.2.7. Among the software management skills, 64.1 percent (132) of the respondents are very good in use of Web Browser, followed by 63.1 percent (130) of the respondents are very good in use of E-Mail. Next to this, 62.1 percent (128) and 60.2 percent (124) of the respondents are very good in use of MS-Word and MS-Excel respectively. 57.3 percent (118) and 47.6 percent (98) of the LIS Professionals are very good in use of MS-Power Point and Document Reader (Ex: Adobe Acrobat) in their libraries. 28.2 percent (58) and 27.2 percent (56) are very good in use of Windows 2013 and Windows XP respectively in their workplace. 26.2 percent (54) and 25.2 percent (52) of the respondents are also very good in use of Statistical Packages and Use of Word Processing in their libraries. 24.3 percent (50) and 21.4 percent (44) of the LIS Professionals have very good knowledge on Use of File Conversion and Installation of Library Automation Software in their designated libraries. 20.4 percent (42) and 19.4 percent (40) of the respondents have very good knowledge on Installation of Operating System and Graphical Presentation in their workplace. 18.4 percent (38) and 16.5 percent (34) of the LIS Professionals have very good knowledge on Use of File Bibliographic Conversion, Linux and Mac Operating Systems respectively in their libraries.14.6 percent (30) and 13.6 percent (28) of the LIS Professionals are very good in Use of Tabulation and SQL in their libraries. 12.6 percent (26) and 11.7 percent (24) of the respondents are very good in Installation of Digital Library Software, Windows NT and DBMS. 10.7 percent(22) and 8.7 percent(18) of the LIS Professionals are very good knowledge on HTML\ XML editors and UNIX respectively in their work spot.7.8 percent(16) and 6.8 percent(14) of the respondents are very good knowledge about

in use of Oracle and Novel Netware in their designated libraries. Very few, 4.9 percent (10) of the LIS Professionals are also very good work knowledge on use of animation in their workplace.

It is depicted from the below table that,34.00 percent(70) of the LIS Professionals have good knowledge about Installation of Digital Library Software, followed by 33.00 percent(68) of the respondents have also good knowledge about Installation of Library Automation Software and Document Reader(Ex:Adobe Acrobat) in their designated libraries. Next to this, 31.1 percent (64) and 30.1 percent (62) of the LIS Professionals have good knowledge on Installation of Operating System and MS-Excel in their work spot. 28.2 percent (58) and 25.2 percent (52) of the respondents have good knowledge on MS-Word and accessing of E-Mails in their workplace. 23.3 percent(48) and 22.3 percent(46) of the LIS Professionals have good knowledge on MS-PowerPoint, DBMS and HTML\ XML editors. 19.4 percent (40) of the respondents have good knowledge on Windows XP, Use of Word Processing and Use of File Conversion respectively in their libraries. 18.4 percent (38) and 17.5 percent (36) of the LIS Professionals have good knowledge about in use of Web Browser and Linux in their work spot. 14.6 percent (30) and 13.6 percent (28) of the LIS Professionals have good knowledge on Windows NT, Windows 2013 and Graphical Presentation in their workplace. 12.6 percent (26) and 11.7 percent (24) of the respondents have good knowledge on Use of Tabulation, File Bibliographic Conversion and Animation in their designated libraries. 10.7 percent (22) and 9.7 percent (20) of the LIS Professionals have good knowledge on Oracle and UNIX in their workplace. 7.8 percent (16) and 6.8 percent (14) of the respondents have good work knowledge about use of SQL, Novel Netware, Mac Operating Systems and Statistical Packages in their designated work spot.

It is found from the below table that, 21.4 percent(44) of the LIS Professionals have satisfaction knowledge on Use of Tabulation in their respective designated workplace, followed by 20.4 percent(42) of the respondents also have satisfaction knowledge on SQL and Linux in their work spot. Next to this, 18.4 percent (38) and 17.5 percent (36) of the LIS Professionals have satisfaction knowledge on Use of File Bibliographic Conversion, Animation and DBMS in their

libraries. 16.5 percent(34) and 15.5 percent(32) of the respondents have satisfaction knowledge on Use of File Conversion ,HTML\ XML editors, Graphical Presentation and Mac Operating Systems in their workplace. 14.6 percent (30) of the LIS Professionals have satisfaction knowledge about Use of Word Processing, Novel Netware, Windows 2013 and Installation of Digital Library Software. 13.6 percent (28) and 12.6 percent (26) of the respondents have satisfaction knowledge on Installation of Library Automation Software, Windows NT, Installation of Operating System, Statistical Packages and Oracle in their work spot. 11.7 percent (24) and 9.7 percent (20) of the LIS Professionals have satisfaction knowledge on UNIX and Windows XP respectively in their libraries. 7.8 percent (16) and 4.9 percent (10) of the respondents have satisfaction knowledge on MS-Power Point and Document Reader (Ex: Adobe Acrobat) in their designated workplace. 3.9 percent (08) and 2.9 percent (06) of the respondents have satisfaction knowledge on Web Browser, MS-Word and MS-Excel in their work spot. Very few, 1.9 percent (04) of the LIS Professionals have satisfaction knowledge on Accessing of E-Mails in their workplace.

It is inferred from the below table that, 20.4 percent(42) of the LIS Professionals have poor knowledge about use of Statistical Packages in their respective designated libraries, followed by 15.5 percent(32) of the respondents also have poor work knowledge on Windows NT in their work spot. Next to this, 14.6 percent (30) and 13.6 percent (28) of the LIS Professionals have poor knowledge on UNIX, Use of Animation, Oracle, Windows XP and Installation of Digital Library Software in their libraries. 11.7 percent (24) and 10.7 percent (22) of the respondents have poor knowledge on Use of File Bibliographic Conversion and Graphical Presentation in their work spot. 9.7 percent (20) and 8.7 percent (18) of the LIS Professionals have poor work knowledge about use of Novel Netware, Mac OS, SQL, Installation of Library Automation Software, Windows 2013 and Use of Tabulation in their libraries. 6.8 percent (14) and 5.8 percent (12) of the respondents have poor work knowledge on Linux, HTML\ XML editors, DBMS and Installation of Operating System in their work spot. 4.9 percent (10) and 2.9 percent (06) of the LIS Professionals have poor work knowledge about Use of Word Processing and Use of File Conversion in their respective libraries.Very few, 1.9 percent (04) and 1.00 percent (02)

of the respondents have poor work knowledge on MS-Word, MS-Excel, MS-Power Point, Document Reader (Ex: Adobe Acrobat), E-Mail and Web Browser in their work spot.

It can be seen from the below table that,19.4 percent(40) of the LIS Professionals have very poor work knowledge about use of Novel Netware in their respective libraries, followed by 16.5 percent(34) of the respondents are also have very poor work knowledge on Mac OS in their libraries. Next to this, 14.6 percent (30) and 13.6 percent (28) of the LIS Professionals have very poor knowledge on Use of Animation, Oracle and SQL in their workplace. 12.6 percent (26) and 10.7 percent (22) of the respondents have very poor work knowledge about Linux and UNIX. 9.7 percent (20) and 8.7 percent (18) of the LIS Professionals have very poor work knowledge about Use of Tabulation, Graphical Presentation, Installation of Operating System, HTML\ XML editors and DBMS in their respective libraries. 7.8 percent (16) and 6.8 percent (14) of the respondents have very poor work knowledge about Windows 2013, Use of File Conversion, Installation of Library Automation Software, Windows NT, Windows XP, Use of Word Processing and Use of File Bibliographic Conversion in their work spot. 5.8 percent (12) and 3.8 percent (08) of the LIS Professionals have very poor work knowledge about Installation of Digital Library Software and Statistical Packages in their respective libraries. Very few, 2.9 percent (06) and 1.9 percent (02) of the respondents have very poor work knowledge about Web Browser, E-Mail, MS-Word, MS-Excel and MS-Power Point in their workplace.

It is also being observed from the below table that, 44.7 percent(92) of the LIS Professionals are not aware about to use of Unix in their respective libraries, followed by 41.7 percent(86) of the respondents are also not aware about to use of Novel Netware in their libraries. Next to this, 40.8 percent (84) and 37.9 percent (78) of the LIS Professionals are not aware about to use of Oracle and Use of Animation. 36.9 percent (76) and 35.9 percent (74) of the respondents are not aware about to use of Windows NT and HTML\ XML editors in their work spot. 35.00 percent (72) and 34.00 percent (70) of the LIS Professionals are not aware about to use of SQL and Mac OS in their workplace. 33.00 percent (68) and 31.1 percent (64) of the respondents are not aware about to use of Tabulation, File Bibliographic Conversion, DBMS and Graphical Presentation in

their respective libraries. 30.1 percent (62) and 29.1 percent (60) of the LIS Professionals are not aware about to use of Statistical Packages, Use of Word Processing and Use of File Conversion in their libraries. 27.2 percent (56) and 26.2 percent (54) of the respondents are not aware about to use of Windows 2013 and Linux in their respective workplace. 23.3 percent (48) and 20.4 percent (42) of the LIS Professionals are not aware about to use of Windows XP and Installation of Operating System in their work spot. 19.4 percent (40) and 16.5 percent (34) of the respondents are not aware about to use of Installation of Digital Library Software and Installation of Library Automation Software in their libraries. 9.7 percent(20) and 8.7 percent(18) of the LIS Professionals are not aware about to use of Web Browser and Document Reader(Ex:Adobe Acrobat) in their respective designated work spot. 7.8 percent (16) and 5.8 percent (12) of the respondents are not aware about to use of MS-PowerPoint and accessing of E-Mail in their workplace. Very few, 2.9 percent (06) of the LIS Professionals are not aware about to use of MS-Word and MS-Excel in their libraries.

Table 5.2.7: Proficiency rate on Software

Description	1	2	3	4	5	Not Aware	Total
Installation of Operating System	42(20.4)	64(31.1)	26(12.6)	12(5.8)	20(9.7)	42(20.4)	**206(100)**
Installation of Library Automation Software	44(21.4)	68(33.0)	28(13.6)	18(8.7)	14(6.8)	34(16.5)	**206(100)**
Installation of Digital Library Software	26(12.6)	70(34.0)	30(14.6)	28(13.6)	12(5.8)	40(19.4)	**206(100)**
Windows 2013	58(28.2)	28(13.6)	30(14.6)	18(8.7)	16(7.8)	56(27.2)	**206(100)**
Windows NT	26(12.6)	30(14.6)	28(13.6)	32(15.5)	14(6.8)	76(36.9)	**206(100)**
Windows XP	56(27.2)	40(19.4)	20(9.7)	28(13.6)	14(6.8)	48(23.3)	**206(100)**
Linux	34(16.5)	36(17.5)	42(20.4)	14(6.8)	26(12.6)	54(26.2)	**206(100)**
Novel Netware	14(6.8)	16(7.8)	30(14.6)	20(9.7)	40(19.4)	86(41.7)	**206(100)**
Unix(Specify)	18(8.7)	20(9.7)	24(11.7)	30(14.6)	22(10.7)	92(44.7)	**206(100)**
Mac OS	34(16.5)	16(7.8)	32(15.5)	20(9.7)	34(16.5)	70(34.0)	**206(100)**
MS-Word	128(62.1)	58(28.2)	6(2.9)	4(1.9)	4(1.9)	6(2.9)	**206(100)**
MS-Excel	124(60.2)	62(30.1)	6(2.9)	4(1.9)	4(1.9)	6(2.9)	**206(100)**
MS-PowerPoint	118(57.3)	48(23.3)	16(7.8)	4(1.9)	4(1.9)	16(7.8)	**206(100)**
Document Reader(Ex:Adobe Acrobat)	98(47.6)	68(33.0)	10(4.9)	4(1.9)	8(3.9)	18(8.7)	**206(100)**
E-Mail	130(63.1)	52(25.2)	4(1.9)	2(1.0)	6(2.9)	12(5.8)	**206(100)**
Web Browser	132(64.1)	38(18.4)	8(3.9)	2(1.0)	6(2.9)	20(9.7)	**206(100)**
Statistical Packages	54(26.2)	14(6.8)	26(12.6)	42(20.4)	8(3.9)	62(30.1)	**206(100)**
Graphical Presentation	40(19.4)	28(13.6)	32(15.5)	22(10.7)	20(9.7)	64(31.1)	**206(100)**
HTML\ XML editors	22(10.7)	46(22.3)	32(15.5)	14(6.8)	18(8.7)	74(35.9)	**206(100)**
DBMS	24(11.7)	48(23.3)	36(17.5)	12(5.8)	18(8.7)	68(33.0)	**206(100)**
Oracle	16(7.8)	22(10.7)	26(12.6)	28(13.6)	30(14.6)	84(40.8)	**206(100)**
SQL	28(13.6)	16(7.8)	42(20.4)	20(9.7)	28(13.6)	72(35.0)	**206(100)**
Use of Word Processing	52(25.2)	40(19.4)	30(14.6)	10(4.9)	14(6.8)	60(29.1)	**206(100)**
Use of File Conversion	50(24.3)	40(19.4)	34(16.5)	6(2.9)	16(7.8)	60(29.1)	**206(100)**
Use of File Bibliographic Conversion	38(18.4)	24(11.7)	38(18.4)	24(11.7)	14(6.8)	68(33.0)	**206(100)**
Use of Tabulation	30(14.6)	26(12.6)	44(21.4)	18(8.7)	20(9.7)	68(33.0)	**206(100)**
Use of Animation	10(4.9)	24(11.7)	36(17.5)	28(13.6)	30(14.6)	78(37.9)	**206(100)**

Figures in the parentheses show the percentage

5.2.8 Proficiency rate on Library Automation Software

It is inferred from the table that, 41.7 percent(86) of the respondents have the very good work knowledge on Libsys in their workplace, followed by 21.4 percent(44) of the LIS Professionals have the very good work knowledge on Koha in their libraries. Next to this, 12.6 percent (26) and 11.7 percent (24) of the respondents have the very good work knowledge on Newgenlib and Libsoft respectively. 9.7 percent (20) of the LIS Professionals have the very good work knowledge on Winisis in their work spot. 5.8 percent (12) of the respondents have the very good work knowledge with In House Developed library automation softwares. 2.9 percent (06) and 1.9 percent (04) of the LIS Professionals have the very good work knowledge on SLIM++, Sanjay and Limsoft in their libraries. Vey less, 1.00 percent (02) of the respondents has the very good work knowledge on VTLS in their work spot.

It can be seen from the below table that, 22.3 percent(46) of the LIS Professionals have good work knowledge on Koha in their libraries, followed by 21.4 percent(44) of the respondents have good work knowledge on Winisis in their work spot. Next to this, 18.4 percent (38) of the LIS Professionals have good work knowledge on Newgenlib in their workplace. 12.6 percent (26) and 9.7 percent (20) of the respondents have good work knowledge on Libsys and SLIM++. Out of total population,5.8 percent(12) and 4.9 percent(10) of the LIS Professionals have good work knowledge on Libsoft and Limsoft respectively in their libraries. 3.9 percent (08) and 2.9 percent (06) of the respondents have good work knowledge on Sanjay and In House Developed library automation softwares. Very less, 1.9 percent (04) of the LIS Professionals has good work knowledge on VTLS in their workplace.

It is depicted from the below table that,16.5 percent(34) of the respondents have satisfaction work knowledge on Koha in their libraries, followed by 9.7 percent(20) of LIS Professionals have satisfaction work knowledge on Newgenlib and Libsoft respectively. Next to this, 8.7 percent (18) of the respondents have satisfaction work knowledge on Winisis,SLIM++ and Limsoft in their work spot. 7.8 percent (16) and 6.8 percent (14) of the respondents have

satisfaction work knowledge on Libsys, Sanjay and VTLS respectively. Very less, 3.9 percent (08) of LIS Professionals have satisfaction work knowledge on In House Developed library automation softwares in their work spot.

The below mention table describes that,14.6 percent(30) of the LIS Professionals have poor work knowledge on VTLS in their workplace, followed by 8.7 percent(18) of the respondents have poor work knowledge on Sanjay in their libraries. Next to this, 7.8 percent (16) and 6.8 percent (14) of Professionals have poor work knowledge on Limsoft, Libsoft, Newgenlib, Slim++ and In House Developed library automation software in their designated libraries. 4.9 percent (10) of the respondents have poor work knowledge on Libsys and Winisis in their work spot. Very less, 2.9 percent (06) of the LIS Professionals have poor work knowledge on Koha in their workplace.

It is found from the below table that, 15.5 percent (32) of the respondents have very poor work knowledge on Sanjay,VTLS and In House Developed library automation software in their libraries, followed by 14.6 percent(30) of the LIS Professionals also have very poor work knowledge on Limsoft in their work spot. Next to this, 13.6 percent (28) and 11.7 percent (24) of the respondents have very poor work knowledge on Libsoft and SLIM++ in their libraries.7.8 percent(16) and 6.8 percent(14) of the LIS Professionals have very poor work knowledge on Winisis,Newgenlib and Koha respectively in their workplace. Very less 5.8 percent (12) of the respondents have very poor work knowledge on Libsys in their work spot.

It is also being observed from the below table that,65.00 percent(134) of the LIS Professionals are not aware about work knowledge on In House Developed library automation software, followed by 62.1 percent(128) of the respondents are not aware about work knowledge on Sanjay and Limsoft respectively in their workplace. Next to this, 60.2 percent (124) and 52.4 percent (108) of the LIS Professionals are not aware about work knowledge on VTLS,SLIM++ and Libsoft respectively in their work spot. 47.6 percent (98) and 44.7 percent (92) of respondents are not aware about work knowledge on Winisis and Newgenlib in their libraries.

30.09 percent (62) and 27.2 percent (56) of the LIS Professionals are not aware about work knowledge on Koha and Libsys in their workplace.

Table 5.2.8: Proficiency rate on Library Automation Software

Description	1	2	3	4	5	Not Aware	Total
LIBSYS	86(41.7)	26(12.6)	16(7.8)	10(4.9)	12(5.8)	56(27.2)	**206(100)**
WINISIS	20(9.7)	44(21.4)	18(8.7)	10(4.9)	16(7.8)	98(47.6)	**206(100)**
SLIM++	6(2.9)	20(9.7)	18(8.7)	14(6.8)	24(11.7)	124(60.2)	**206(100)**
KOHA	44(21.4)	46(22.3)	34(16.5)	6(2.9)	14(6.8)	62(30.09)	**206(100)**
NEWGENLIB	26(12.6)	38(18.4)	20(9.7)	14(6.8)	16(7.8)	92(44.7)	**206(100)**
SANJAY	4(1.9)	8(3.9)	16(7.8)	18(8.7)	32(15.5)	128(62.1)	**206(100)**
VTLS	2(1.0)	4(1.9)	14(6.8)	30(14.6)	32(15.5)	124(60.2)	**206(100)**
LIBSOFT	24(11.7)	12(5.8)	20(9.7)	14(6.8)	28(13.6)	108(52.4)	**206(100)**
LIMSOFT	4(1.9)	10(4.9)	18(8.7)	16(7.8)	30(14.6)	128(62.1)	**206(100)**
In House Developed	12(5.8)	6(2.9)	8(3.9)	14(6.8)	32(15.5)	134(65.0)	**206(100)**
Any Other							

Figures in the parentheses show the percentage

5.2.9 Proficiency rate on Network Connection and Access

It can be seen from the below table that, 63.10 percent(130) of the respondents are very good in accessing E-Mail in their work spot, followed by 55.33 percent(114) of the respondents are very good knowledge of accessing Internet and World Wide Web respectively in their workplace. Next to this,32 percent(66) of the respondents are very good knowledge about to connection of Local Area Network (LAN) in their libraries. 29.1 percent (60) of the LIS Professionals are very good in Configuration of LAN within the Library and Intranet in their libraries. 23.3 percent(48) and 22.3 percent(46) of the respondents are very good in connection of Wide Area Network (WAN) and Configuration of Intranet in their respective designated libraries.19.4 percent(40)

and 13.6 percent(28) of the LIS Professionals are also have very good in connection of Virtual Private Network (VPN), VSAT and Extranet in their work spot.

It is inferred from the below table that,28.15 percent(58) of the LIS Professionals are good in connection of Internet and World Wide Web in their workplace, followed by 27.18 percent(56) of the respondents are good in connection of Intranet in their work spot. Next to this,26.2 percent(54) and 24.27 percent(50) of the LIS Professionals are good in Configuration of Intranet and access E-Mail in their libraries. 22.3 percent (46) and 20.4 percent (42) of the respondents are good in Configuration of LAN within the Library, Access of Local Area Network (LAN) and Wide Area Network in their respective libraries. 14.6 percent (30) of the LIS Professionals are good in connection of Virtual Private Network (VPN) in their work spot. 8.73 percent (18) and 5.82 percent (12) of the respondents are good in connection of VSAT and Extranet in their workplace.

It is found from the below table that, 14.6 percent(30) of the LIS Professionals have satisfaction knowledge about connection of Virtual Private Network (VPN) in their work spot, followed by 13.6 percent(28) of the respondents have satisfaction knowledge on connection of Extranet in their workplace. Next to this, 12.6 percent (26) and 11.7 percent (24) of the LIS Professionals have satisfaction knowledge about connection of Wide Area Network (WAN) and Configuration of LAN within the Library. 10.7 percent (22) and 9.7 percent (20) of the respondents have satisfaction knowledge on connection of Local Area Network and VSAT in their libraries. 6.88 percent (14) and 3.88 percent (08) of the LIS Professionals have satisfaction knowledge about Configuration of Intranet and access of Intranet in their respective libraries. 2.91 percent(06) of the respondents have satisfaction knowledge about access of Internet and World Wide Web in their workplace. Very few, 0.97 percent (02) of the LIS Professionals also have satisfaction knowledge about use of E-Mail in their work spot.

It is depicted from the below table that,14.6 percent(30) of the LIS Professionals are poor knowledge about connection of VSAT in their workplace, followed by 12.62 percent(26) of the respondents are poor knowledge on connection of Extranet in their work spot. Next to this, 4.9

percent (10) and 3.88 percent (08) of the LIS Professionals are poor in Configuration of Intranet, connection of Virtual Private Network (VPN) and Intranet in their libraries. 2.9 percent(06) of the respondents are poor in Configuration of LAN within the Library, connection of Local Area Network (LAN) and Wide Area Network (WAN) in their respective designated libraries. Very few,1.94 percent(04) and 0.97 percent(02) of the LIS Professionals are also poor in access of E-Mail, Internet and World Wide Web in their workplace.

The below mention table describes that, 7.8 percent(16) of the LIS Professionals are very poor in connection of Virtual Private Network (VPN) and VSAT in their work spot, followed by 6.79 percent(14) of the respondents also very poor in connection of Extranet in their workplace. Next to this, 4.85 percent (10) of the LIS Professionals are very poor in connection of Intranet, Internet and World Wide Web in their libraries. 3.9 percent (08) of the respondents are very poor knowledge about connection of Local Area Network (LAN) and Wide Area Network (WAN) in their work spot. Very few, 2.9 percent (06) of the LIS Professionals are also very poor knowledge on Configuration of Intranet and Configuration of LAN within the Library.

It is also being observed from the below table that, 47.6 percent(98) of the LIS Professionals are not aware about connection of Extranet in their work spot, followed by 45.7 percent(94) of the respondents are also not aware about connection of VSAT in their respective libraries. Next to this, 38.8 percent (80) and 36.9 percent (76) of the LIS Professionals are not aware about connection of Virtual Private Network (VPN), Wide Area Network (WAN) and Configuration of Intranet in their workplace. 31.06 percent (64) and 28.15 percent (58) of the respondents are not aware about Configuration of LAN within the Library, connection of Intranet and Local Area Network (LAN) in their work spot. Very few, 7.76 percent(16) and 5.82 percent(12) of the LIS Professionals are not aware about access of Internet and World Wide Web,E-Mails in their workplace.

Table 5.2.9: Proficiency rate on Network Connection and Access

Network Connection	**1**	**2**	**3**	**4**	**5**	**Not Aware**	**Total**
Configuration of Intranet	46(22.3)	54(26.2)	14(6.8)	10(4.9)	6(2.9)	76(36.9)	**206(100)**
Configuration of LAN within the Library	60(29.1)	46(22.3)	24(11.7)	6(2.9)	6(2.9)	64(31.06)	**206(100)**
Local Area Network (LAN)	66(32.0)	46(22.3)	22(10.7)	6(2.9)	8(3.9)	58(28.15)	**206(100)**
Wide Area Network (WAN)	48(23.3)	42(20.4)	26(12.6)	6(2.9)	8(3.9)	76(36.9)	**206(100)**
Virtual Private Network (VPN)	40(19.4)	30(14.6)	30(14.6)	10(4.9)	16(7.8)	80(38.8)	**206(100)**
VSAT	28(13.6)	18(8.73)	20(9.7)	30(14.6)	16(7.8)	94(45.7)	**206(100)**
Extranet	28(13.6)	12(5.82)	28(13.6)	26(12.62)	14(6.79)	98(47.6)	**206(100)**
Intranet	60(29.12)	56(27.18)	8(3.88)	8(3.88)	10(4.85)	64(31.06)	206(100)
Internet and World Wide Web	114(55.33)	58(28.15)	6(2.91)	2(0.97)	10(4.85)	16(7.76)	**206(100)**
E-Mail	130(63.1)	50(24.27)	2(0.97)	4(1.94)	8(3.88)	12(5.82)	**206(100)**

Figures in the parentheses show the percentage

5.2.10 Proficiency rate on Use of Website

Website usage and management of the LIS Professionals are verified in the Table 5.2.10. 69.05 percent (144) of the LIS Professionals are very good in use of websites in their designated libraries, followed by 59.02 percent (122) of the respondents are very good in accessing and searching of online databases in their workplace. Next to this,53.04 percent(110) of the respondents are very good in searching and accessing bibliographical databases respectively in their work spot.35.9 percent(74) of the LIS Professionals are very good in Use of Web Camera in their respective designated libraries.17.5 percent(36) and 16.5 percent(34) of the respondents are very good in Design of Website and Mobile Casting in their workspot.12.6 percent(26) and 11.7 percent(24) of the LIS Professionals are very good knowledge about Podcasting and Webcasting in their workplace.

It is inferred from the below table that, 24.3 percent(50) of the LIS Professionals are good knowledge about use of website in their respective libraries, followed by 23.3 percent(48) of the respondents are good in searching and accessing Online Databases and Searching and Accessing Bibliographic Databases in their work spot. Next to this, 21.4 percent (44) and 19.4 percent (40) of the LIS Professionals are good knowledge about design of website and webcasting in their workplace. 15.5 percent (32) and 11.7 percent (24) of the respondents are good knowledge about Mobile Casting, Podcasting and Use of Web Camera respectively in their work spot.

It is found from the below table that, 21.4 percent(44) of the LIS Professionals have satisfaction knowledge about use of web camera in their respective work spot, followed by 20.4 percent(40) of the respondents also have satisfaction knowledge on design of Website in their workplace. Next to this, 16.5 percent (34) and 15.5 percent (32) of the LIS Professionals have satisfaction knowledge on podcasting and mobile casting in their libraries. 12.6 percent (26) and 10.7 percent (22) of the respondents have satisfaction knowledge on webcasting and Searching or Accessing Bibliographic Databases in their work spot. 8.7 percent (18) of the LIS Professionals have satisfaction knowledge on Searching and Accessing Online Databases in their libraries. Very

few, 1.00 percent (02) respondents have satisfaction knowledge on use of website in their respective libraries.

It is depicted from the below table that,14.6 percent(30) of the LIS Professionals are poor in use of webcasting in their respective libraries, followed by 9.7 percent(20) of the respondents also poor in use of podcasting in their workplace. 8.7 percent (18) and 6.8 percent (14) of the LIS Professionals are poor in use of mobile casting and web camera in their work spot. 4.9 percent (10) and 3.9 percent (08) of the respondents are poor in design of website and searching and accessing bibliographic databases in their respective libraries. 2.9 percent (04) and 1.9 percent (02) of the LIS Professionals are poor in use of website and searching and accessing online databases in their respective workplace.

It can be seen from the below table that, 13.6 percent (28) of the LIS Professionals are very poor in use of website in their respective libraries, followed by 9.7 percent(20) of the respondents are also very poor in use of web casting in their respective work spot. 6.8 percent (14) and 2.9 percent (06) of the LIS Professionals are very poor in use of web camera, mobile casting, podcasting and searching and accessing online databases in their workplace. Very few, 1.9 percent (04) of the respondents are very poor in use of website and searching and accessing bibliographic databases in their respective work spot.

It is also being observed from the below table that,38.8 percent(80) of the LIS Professionals are not aware about in use of podcasting in their respective libraries, followed by 36.9 percent(76) of the respondents are also not aware about in use of mobile casting in their libraries. 32.00 percent (66) and 22.3 percent (42) of the LIS Professionals are not aware about in use of webcasting and design of website in their libraries. 17.5 percent (36) of the respondents are not aware about in use of web camera in their respective libraries. Very few, 6.8 percent (14) and 3.9 percent (08) of the LIS Professionals are not aware about in use of searching and accessing bibliographic databases and searching and accessing Online databases in their workplace.

Table 5.2.10: Proficiency rate on Use of Website

Websites	**1**	**2**	**3**	**4**	**5**	**Not Aware**	**Total**
Use of Website	144(69.9)	50(24.3)	2(1.0)	6(2.9)	4(1.9)	0.0	**206(100)**
Design of Website	36(17.5)	44(21.4)	42(20.4)	10(4.9)	28(13.6)	46(22.3)	**206(100)**
Searching and Accessing Online Databases	122(59.2)	48(23.3)	18(8.7)	4(1.9)	6(2.9)	8(3.9)	**206(100)**
Searching and Accessing Bibliographic Databases	110(53.4)	48(23.3)	22(10.7)	8(3.9)	4(1.9)	14(6.8)	**206(100)**
Use of Web Camera	74(35.9)	24(11.7)	44(21.4)	14(6.8)	14(6.8)	36(17.5)	**206(100)**
Webcasting	24(11.7)	40(19.4)	26(12.6)	30(14.6)	20(9.7)	66(32.0)	**206(100)**
Mobile Casting	34(16.5)	32(15.5)	32(15.5)	18(8.7)	14(6.8)	76(36.9)	**206(100)**
Podcasting	26(12.6)	32(15.5)	34(16.5)	20(9.7)	14(6.8)	80(38.8)	**206(100)**

Figures in the parentheses show the percentage

5.2.11 Proficiency rate on Use of Web Tools

It is found from the below table that, 66.00 percent (136) of the respondents are very good in use of WhatsApp, followed by 64.01 percent (132) of the respondents are also very good in use of Facebook respectively. Next to this, 62.01 percent (128) and 60.02 percent (124) of the respondents are very good in the use of YouTube and Wikipedia respectively. 55.3 percent (114) of the LIS Professionals are very good in use of web opac in their libraries. 47.6 percent (98) and 44.7 percent (92) of the respondents are very good in use of LIS –Forum and Skype respectively in their workplace. 43.7 percent (90) and 42.7 percent (88) of the LIS Professionals are very good in use of Orkut and Education Tubes at their work spot. 40.8 percent (84) and 39.8 percent (82) of the LIS Professionals are very good in use of Twitter and Blogs at their workplace.

It is also inferred from the below table that,38.8 percent(80) of the LIS Professionals are good in use of Blogs respectively at their workplace, followed by 33.00 percent(68) of the respondents are also good in use of LIS –Forum in their libraries. Next to this, 28.2 percent (58) of the respondents are also good in use of Web OPAC at their work spot. 27.2 percent (56) and 24.3 percent (50) of the LIS Professionals are good in use of Education Tubes and Wikipedia in their libraries. 23.3 percent (48) and 19.4 percent (40) of the LIS Professionals are good in use of YouTube, Facebook, Twitter and What Sapp in their workplace. 13.6 percent (28) and 12.6 percent (26) of the respondents are good in use of Skype and Orkut in their work spot.

It is depicted from the below table that,12.6 percent(26) of the LIS Professionals have satisfaction knowledge about use of Skype at their workplace, followed by 11.7 percent(24) of the respondents also have satisfaction knowledge on Twitter at their libraries. Next to this, 7.8 percent (16) and 5.8 percent (12) of the LIS Professionals have satisfaction work knowledge about Orkut, LIS –Forum and Web OPAC at their workplace. 4.9 percent (10) and 3.9 percent (08) of the respondents have satisfaction knowledge on Blogs, Education Tubes and YouTube respectively in their work spot. 2.9 percent (06) and 1.9 percent(04) of the LIS Professionals have satisfaction knowledge on Wikipedia and Facebook respectively in their libraries.

It can be seen from the below table that,6.8 percent(14) of the LIS Professionals are poor in use of Skype respectively at their libraries, followed by 5.8 percent(12) of the respondents are also poor in use of Orkut at their workplace. Next to this, 3.9 percent (08) and 2.9 percent (06) of the LIS Professionals are poor in use of Blogs, Education Tubes, Twitter and LIS- Forum respectively in their work spot. Very few, 1.9 percent (04) and 1.00 percent (02) of the respondents are also poor in use of Web OPAC, Whatsapp, Wikipedia and Facebook respectively at their respective workplace.

It is being observed from the below table that, 10.7 percent(22) of the LIS Professionals are very poor in use of Skype and Twitter respectively at their work spot, followed by 8.7 percent(18) of the respondents are also very poor in use of Orkut at their workplace. Next to this, 7.8 percent(16) of the LIS Professionals are very poor in use of Education Tubes,Facebook and Whatsapp in their libraries. 6.8 percent(14) of the respondents are very poor in use of LIS-Forum and Web OPAC at their workplace. Very few, 3.9 percent (08) and 1.0 percent (02) of the LIS Professionals are also very poor in use of Blogs, Wikipedia, YouTube, Khan Academy and NPTEL Videos at their work spot.

The below mention table describes that,21.4 percent(44) of the LIS Professionals are not aware about in use of Orkut in their respective workplace, followed by 14.6 percent(30) of the respondents are also not aware about in use of Education Tubes and Twitter in their libraries. Next to this, 11.7 percent (24) and 8.7 percent (18) of the LIS Professionals are not aware about in use of Skype and Blogs at their work spot. 7.8 percent (16) and 5.8 percent (12) of the respondents are not aware about in use of Wikipedia and Facebook respectively at their workplace. 4.9 percent (10) and 3.9 percent (08) of the LIS Professionals are not aware about in use of Youtube, Whatsapp and LIS –forum at their work spot. Very few, 1.9 percent (04) of the respondents are also not aware about in use of Web OPAC at their respective workplace.

Table 5.2.11: Proficiency rate on Use of Web Tools

Web Tools	1	2	3	4	5	Not Aware	Total
Blogs	82(39.8)	80(38.8)	10(4.9)	8(3.9)	8(3.9)	18(8.7)	**206(100)**
Wikipedia	124(60.2)	50(24.3)	6(2.9)	2(1.0)	8(3.9)	16(7.8)	**206(100)**
YouTube	128(62.1)	48(23.3)	8(3.9)	4(1.9)	8(3.9)	10(4.9)	**206(100)**
Education Tubes	88(42.7)	56(27.2)	10(4.9)	6(2.9)	16(7.8)	30(14.6)	**206(100)**
Facebook	132(64.1)	40(19.4)	4(1.9)	2(1.0)	16(7.8)	12(5.8)	**206(100)**
Orkut	90(43.7)	26(12.6)	16(7.8)	12(5.8)	18(8.7)	44(21.4)	**206(100)**
Skype	92(44.7)	28(13.6)	26(12.6)	14(6.8)	22(10.7)	24(11.7)	**206(100)**
Twitter	84(40.8)	40(19.4)	24(11.7)	6(2.9)	22(10.7)	30(14.6)	**206(100)**
LIS-Forum	98(47.6)	68(33)	12(5.8)	6(2.9)	14(6.8)	8(3.9)	**206(100)**
Web OPAC	114(55.3)	58(28.2)	12(5.8)	4(1.9)	14(6.8)	4(1.9)	**206(100)**
WhatsApp	136(66)	40(19.4)		4(1.9)	16(7.8)	10(4.9)	**206(100)**
Any Other					2(1.0)	204(99)	**206(100)**

Figures in the parentheses show the percentage

5.2.12 Proficiency rate of knowledge on Digital Library

Digital library skills of the LIS Professionals were analysed in the table. It is found from the below table that, 43.07 percent(90) of the respondents are very good in handling open access databases in their libraries, followed by 38.08 percent(80) of the respondents have very good knowledge of RFID Technology in their work spot. 37.09 percent (78) of the respondents have very good knowledge about E-Learning Systems and use of Dspace-Digital Library Software creation of Metadata for E-Books and E-Journals. 35.9 percent (74) and 30.1 percent (62) of the LIS Professionals have very good work knowledge on Digital Institutional Repository System (IRS) and Greenstone-Digital Library Software archived of E-Resources in their respective libraries. 25.2 percent(52) and 13.6 percent(28) of the respondents have very good work knowledge about Content Management and Federated Search in their work spot.

It is depicted from the below table that,24.3 percent(50) of the LIS Professionals have good work knowledge about Dspace-Digital Library Software Creation of Metadata for E-Books,E-Journals, Greenstone - Digital Library Software archived of E-Resources and Federated Search in their respective libraries, followed by 22.3 percent(46) of the respondents have good work knowledge on Open Access Databases in their work spot. Next to this, 20.4 percent (42) and 17.5 percent (36) of the LIS Professionals have good work knowledge about use of Digital Institutional Repository System (IRS) and E –Learning Systems respectively in their workplace. 16.5 percent(34) and 15.5 percent(32) of the respondents have also good work knowledge about Content Management and RFID Technology in their workplace.

It is found from the below table that, 27.2 percent(56) of the LIS Professionals have satisfaction use of work knowledge on Content Management in their respective work spot, followed by 25.2 percent(52) of the respondents also have satisfaction use of work knowledge on Federated Search in their workplace. Next to this, 16.5 percent (34) of the LIS Professionals have satisfaction work knowledge on Digital Institutional Repository System (IRS) and E –Learning Systems in their work spot. 12.6 percent (26) and 11.7 percent (24) of the respondents have satisfaction knowledge on Dspace - Digital Library Software Creation of Metadata for E-Books, E-Journals, Greenstone - Digital Library Software archived of E-Resources and Open Access Databases in their libraries. Very few, 8.7 percent (18) of the LIS Professionals have satisfaction use of work knowledge on RFID Technology in their respective libraries.

It is inferred from the below table that,12.6 percent(26) of the LIS Professionals are poor in use of work knowledge on Greenstone -Digital Library Software archived of E-Resources in their workplace, followed by 10.7 percent(22) of the respondents also poor in use of work knowledge on Federated Search in their work spot. Next to this,9.7 percent(20) of the LIS Professionals are poor in use of work knowledge about Dspace - Digital Library Software Creation of Metadata for E-Books,E-Journals in their respective libraries. 7.8 percent (16) and 6.8 percent (14) of the respondents are poor in use of Content Management and RFID Technology in their work spot. 4.9 percent (10) and 3.9 percent (08) of the LIS Professionals are also poor in use of work knowledge on Open Access Databases, E –Learning Systems and Digital Institutional Repository System (IRS) in their work spot.

It can be seen from the below table that, 11.7 percent(24) of the LIS Professionals are very poor in use of work knowledge about Digital Institutional Repository System (IRS) in their respective libraries, followed by 9.7 percent(20) of the respondents are also very poor work knowledge on E –Learning Systems and Open Access Databases in their work place. Next to this, 8.7 percent (18) of the LIS Professionals are very poor in use of work knowledge about RFID Technology, Content Management and Federated Search in their work spot. 7.8 percent (16) of the respondents are also very poor in use of work knowledge on Dspace -Digital Library Software Creation of Metadata for E-Books, E-Journals, Greenstone -Digital Library Software archived of E-Resources in their workplace.

The below mention table describes that,21.4 percent(44) of the LIS Professionals are not aware about in use of RFID Technology in their respective libraries, followed by 17.5 percent(36) of the respondent are also not aware about in use of Federated Search in their workplace. Next to this, 14.6 percent (30) of the LIS Professionals are not aware about in use of Content Management and E –Learning Systems in their work spot. 13.6 percent (28) and 11.7(24) of the respondents are not aware about in use of Greenstone -Digital Library Software archived of E-Resources and Digital Institutional Repository System (IRS) in their libraries. Very few, 7.8 percent (16) of the LIS Professionals are not aware about in use of work knowledge about Dspace -Digital Library Software Creation of Metadata for E-Books,E-Journals and Open Access Databases in their respective libraries.

Table 5.2.12: Proficiency rate of knowledge on Digital Library

Description	**1**	**2**	**3**	**4**	**5**	**Not Aware**	**Total**
Dspace -Digital Library Software Creation of Metadata for E-Books,E-Journals	78(37.9)	50(24.3)	26(12.6)	20(9.7)	16(7.8)	16(7.8)	**206(100)**
Greenstone -Digital Library Software archived of E-Resources	62(30.1)	50(24.3)	24(11.7)	26(12.6)	16(7.8)	28(13.6)	**206(100)**
Use of Federated Search	28(13.6)	50(24.3)	52(25.2)	22(10.7)	18(8.7)	36(17.5)	**206(100)**
Content Management	52(25.2)	34(16.5)	56(27.2)	16(7.8)	18(8.7)	30(14.6)	**206(100)**

E –Learning Systems	78(37.9)	36(17.5)	34(16.5)	8(3.9)	20(9.7)	30(14.6)	**206(100)**
Digital Institutional Repository System (IRS)	74(35.9)	42(20.4)	34(16.5)	8(3.9)	24(11.7)	24(11.7)	**206(100)**
Open Access Databases	90(43.7)	46(22.3)	24(11.7)	10(4.9)	20(9.7)	16(7.8)	**206(100)**
RFID Technology	80(38.8)	32(15.5)	18(8.7)	14(6.8)	18(8.7)	44(21.4)	**206(100)**

Figures in the parentheses show the percentage

Testing of Hypothesis

H1: Majority of the LIS Professionals working in Special Libraries in Karnataka have good work knowledge of ICT Skills and Competencies.

Table Number	**5.2.6**	**5.2.7**	**5.2.8**	**5.2.9**	**5.2.10**	**5.2.11**	**5.2.12**
Mean	2.30	2.56	3.02	2.15	2.23	2.07	2.30
S.D	.57	.74	.78	.51	.57	.95	.22
Z-Statistic	17.6798	8.62975	0.283896	24.0634	19.3238	14.072	46.1026
Significant	**Sig**	**Sig**	**Not Significant**	**Sign**	**Sig**	**Sig**	**Sig**

Conclusion: Research hypothesis is statistically significant for all questions, which means ICT Skills and Competencies of LIS Professionals working in Special Libraries in Karnataka are at satisfactory levels with respect to hardware, software, network connection and access, website, website tools and digital library. Whereas Table 5.2.8 shows research hypothesis is not statistically significant. It indicates majority of the LIS Professionals working in Special Libraries in Karnataka need ICT training to update and improve in handling library automation software. Hence it is suggested the LIS Professionals working in Special Libraries in Karnataka motivated to attend Workshops, Conferences, In-house Training Programmes, Seminars and Lectures to improve their work knowledge on library automation software's. Hence the above stated H1 hypothesis is accepted and proved.

Means and methods of acquiring ICT Skills through CEP by LIS Professionals

5.2.13 Attending Continuous Education Programme

Table 5.2.13 clearly shows that, 11.7 percent (24) of the respondents are not attended any conferences with their institution sponsorship. Whereas 52.4 percent (108) of the respondents are attended 1-5 no.of conferences, followed by 5.8 percent (12) of the respondents attended 5-10 conferences and 6.8 percent (14) of the respondents attended more than 10 conferences. This shows that, majority of the LIS Professionals are deputed to attend the conference etc.

Again 17.5 percent (36) of the respondents are not attended any conferences, which were not sponsored by the concern institutions. Whereas 32.00 percent (66) of the respondents attended up to 05 conferences without any sponsorship, followed by 1.9 percent (04) of the respondents attended 5-10 and more than 10 conferences. It is very surprisingly noted that, 46.6 percent (96) of the respondents are not aware about the seminar and conferences.

Further the table shows that, 10.7 percent (22) of the respondents are also record their opinion that, they were not attended any workshop with institution sponsorship. Whereas 57.03 percent (118) of the respondents are attending 1-5 workshops, which are sponsored by the institution, followed by 2.9 percent (06) and 5.8 percent (12) of the respondents were attended 5-10 and more than 10 workshops respectively.

Further it is analyzed that, 21.4 percent (44) of the respondents were not attended the workshop which was not sponsored by the institution. Whereas 26.3 percent (54) of the respondents are attended workshop which are not sponsored by the institution.

18.4 percent (38) of the LIS Professionals are not attended any refresher course. Whereas 21.4 percent (44) of the respondents were attended the refresher course, followed by 1.9 percent (04) and 1.0 percent (02) of the respondents attended 5-10 and more than 10 refresher courses. 57.3

percent (118) of the respondents are not aware of the refresher courses organized by different institutions.

14.6 percent (30) of the respondents were not attended the In-House training programme deputed by their respective organizations. Whereas 44.7 percent(92) of them are attended such training program up to 5 times, followed by 2.9 percent(06) and 7.8 percent(16) of the respondents were attended such courses 5-10 times and more than 10 times respectively. Again 30.1 percent (62) of all the respondents are unaware about such programmes.

Table 5.2.13: Attendance in Continuous Education Programme

Attendance in CEP	**Not attened**	**1-5**	**05-10**	**Above 10**	**Not Aware**	**TOTAL**
Conference Attended :Institution Sponsored	24(11.7)	108(52.4)	12(5.8)	14(6.8)	48(23.3)	**206(100)**
Conference Attended :Institution NOT Sponsored	36(17.5)	66(32.0)	4(1.9)	4(1.9)	96(46.6)	**206(100)**
Workshop Participation : Institution Sponsored	22(10.7)	118(57.03)	6(2.9)	12(5.8)	48(23.3)	**206(100)**
Workshop Participation : Institution NOT Sponsored	44(21.4)	54(26.2)	-	-	108(52.4)	**206(100)**
Refresher Courses	38(18.4)	44(21.4)	4(1.9)	2(1.0)	118(57.3)	**206(100)**
In House Training programmes / Workshops	30(14.6)	92(44.7)	6(2.9)	16(7.8)	62(30.1)	**206(100)**
Others (Please Specify)						**206(100)**

Figures in the parentheses show the percentage

5.2.14 Reasons for attending the Continuous Education Programme (CEP)

LIS Professionals were asked to indicate the importance of attending continuous education programme (CEP) and the results are shown in the Table. 96.01 percent(198) of the LIS Professionals attended continuous education programme to acquire new skills, which shows developments in ICT has a positive influence on majority of LIS Professionals participation in professional development programmes, followed by 94.2 percent(194) of the LIS Professionals attended the continuous education programme to get trained in the latest technology. Next to this, 88.3 percent (182) of the LIS Professionals attended the continuing education programme to improve their library services. 83.5 percent (172) of the LIS Professionals also agreed that, attending continuous education programme to update knowledge for basic education in their libraries. 72.8 percent (150) and 67.00 percent (138) of the LIS Professionals find out the reason for attend the continuous education programme is to improve relations with fellow professionals and to train Junior Staff in their workplace. 40.08 percent (84) of the LIS Professionals pointed out that, continuous education programme is mandatory for promotions. Surprisingly very few, 4.9 percent (10) of the LIS Professionals find out the reason for attend the continuous education programme is sharing of information with other library professionals related to library development and to strengthen the professional association with involvement in Conferences / Workshops.

It is depicted from the below table that,59.2 percent(122) of the LIS Professionals opposed that, attending the continuous education programme is mandatory for promotions, followed by 33.00 percent(68) of the LIS Professionals also opposed that, to train Junior Staff in their libraries. Next to this, 27.2 percent (56) of the LIS Professionals opposed that, to attend the continuous education programme is to improve relations with fellow professionals in their profession. 16.5 percent (34) and 11.7 percent (24) of the LIS Professionals point out and opposed that, attend the continuous education programme to update knowledge for basic education and improve library services in their libraries. Very less, 5.8 percent (12) and 3.9 percent (08) of the LIS Professionals opposed that, attending the continuous education programme to get trained in the latest technology and acquire new skills.

Table 5.2.14: Reasons for attending the Continuous Education Programme (CEP)

	Opinion		
Reasons for attending the Continuous Education Programme	**Yes**	**No**	**Total**
To acquire new skills	198(96.1)	8(3.9)	**206(100)**
To update knowledge for basic education	172(83.5)	34(16.5)	**206(100)**
To get trained in the latest technology	194(94.2)	12(5.8)	**206(100)**
To improve library services	182(88.3)	24(11.7)	**206(100)**
To train Junior Staff	138(67.0)	68(33.0)	**206(100)**
To improve relations with fellow professionals	150(72.8)	56(27.2)	**206(100)**
It is mandatory for promotions	84(40.8)	122(59.2)	**206(100)**
Any Other (Please Specify)	10(4.9)	196(95.1)	**206(100)**

Figures in the parentheses show the percentage

Testing of Hypothesis

H3: LIS Professionals working in Special Libraries in Karnataka need more exposure and training in ICT Skills to render ICT based information resources and services.

Various Methods	**Table Number -5.2.13**	**Table Number - 5.2.14**
Mean	13.37321	1.22
SD	14.24915	0.19
Z- Statistic	36.7349	20.3634
Significance	Significant	Significant

Conclusion: The data analysis presented in the Table 5.2.13 and Table 5.2.14 clearly indicates that, the LIS Professionals working in Special Libraries in Karnataka need ICT based training to an greater extent to be competent enough to render ICT based library services in modern era. Hence the above hypothesis has been accepted. Hence the above stated H3 hypothesis is accepted and proved.

5.2.15 Reasons for not attending the Continuous Education Programme (CEP)

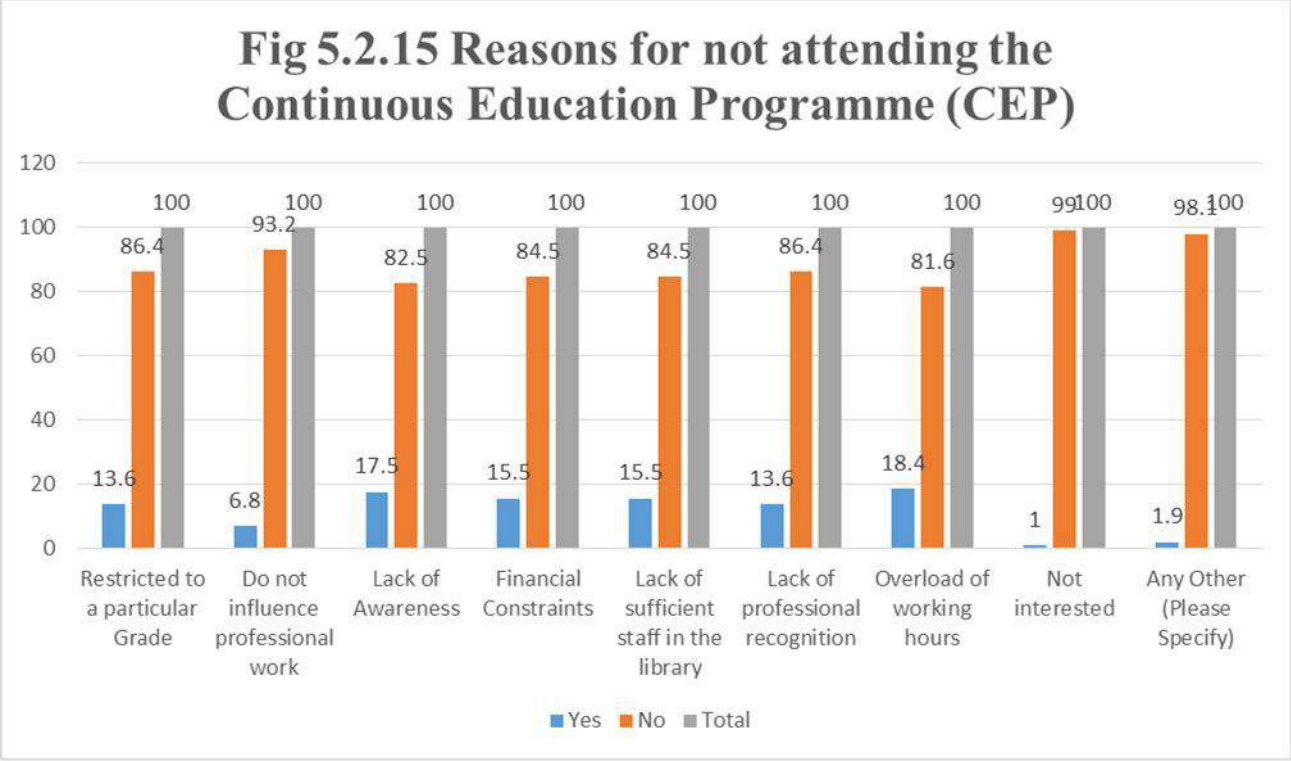
Analysis of the reasons for not preferring continuing education programme revealed by LIS Professionals depicted here in the below mention table. 18.4 percent(38) of the LIS Professionals opined that, overload of working hours is the barrier to attend continuous education programme, followed by 17.5 percent(36) of the LIS Professionals opined that, lack of Awareness is also major barrier to attend continuous education programme. Next to this,15.5 percent(32) and 13.6 percent(28) of the LIS Professionals opined that, financial Constraints,lack of sufficient staff in the library, restricted to a particular grade and lack of professional recognition are also the main reasons for not attend continuous education programme. 16.8 percent (14) of the LIS Professionals mention that, do not influence professional work is also one of the reason to not attend continuous education programme. Very less, 1.00 percent (02) of LIS Professionals opine that, not interest or lack of interest not to attend any continuous education programme. Surprisingly very few of them, 1.9 percent (04) of the LIS Professionals mention that, lack of information, not support from higher authorities regarding leave facility and financial support are also major barrier not to attend continuous education programme.

It is also depicted from the below table that, 99.00 percent (204) of the LIS Professionals have positive opinion regarding interested to attend continuous education programme, followed by 93.2 percent (192) of the LIS Professionals are opposed the opinion regarding do not influence professional work. Next to this, 86.4 percent (178) of the LIS Professionals are also opposed the opinion regarding, restricted to a particular grade and lack of professional recognition. 84.5 percent (174) and 82.5 percent (170) of the LIS Professionals are also opposed the opinion regarding, financial Constraints, lack of sufficient staff in the library and lack of Awareness. 81.6 percent (168) of the LIS Professionals are also opposed the opinion that, overload of working hours.

Table 5.2.15: Reasons for not attending the Continuous Education Programme (CEP)

Reasons for not attending the CEP	Yes	No	Total
Restricted to a particular Grade	28(13.6)	178(86.4)	**206(100)**
Do not influence professional work	14(6.8)	192(93.2)	**206(100)**
Lack of Awareness	36(17.5)	170(82.5)	**206(100)**
Financial Constraints	32(15.5)	174(84.5)	**206(100)**
Lack of sufficient staff in the library	32(15.5)	174(84.5)	**206(100)**
Lack of professional recognition	28(13.6)	178(86.4)	**206(100)**
Overload of working hours	38(18.4)	168(81.6)	**206(100)**
Not interested	2(1.0)	204(99.0)	**206(100)**
Any Other (Please Specify)	4(1.9)	202(98.1)	**206(100)**

Figures in the parentheses show the percentage



Testing of Hypothesis

H2: LIS Professionals working in Special Libraries in Karnataka face constraints in acquiring ICT Skills due to various reasons.

Table Number	Mean	S.D	Z-Statistic	Significance
5.2.15	1.88	0.09	64.05564	Significant

Conclusion: Research hypothesis is statistically significant for the question considered for the research which shows problems or constraints to acquire ICT skills in special library with various reasons including Overload of working hours, Lack of Awareness, Financial Constraints, Lack of sufficient staff in the library, Restricted to a particular Grade, Lack of professional recognition, Do not influence professional work. These are the reasons or constraints to acquire ICT skills for LIS Professionals working in Special Libraries in Karnataka. Hence the above stated H2 hypothesis is accepted and proved.

5.2.16 Effect of CEP on updating ICT Skills of LIS Professionals

The analysis about opinion to know whether the training methods have contributed any effect on updating skills on LIS Professionals is shown in the table. 59.22 percent (122) of the LIS Professionals opined that, continuous education programme has helped to update skills to a certain extent, followed by 33.00 percent (68) of the respondents opined that, continuous education programme has helped to update skills to a great extent. Next to this, 8.7 percent (18) of the LIS Professionals opined that, continuous education programme not applicable to updating their ICT Skills. Very less, 1.9 percent (04) of the LIS Professsionals opined that, continuous education programme not at all helped in updating skills / knowledge.

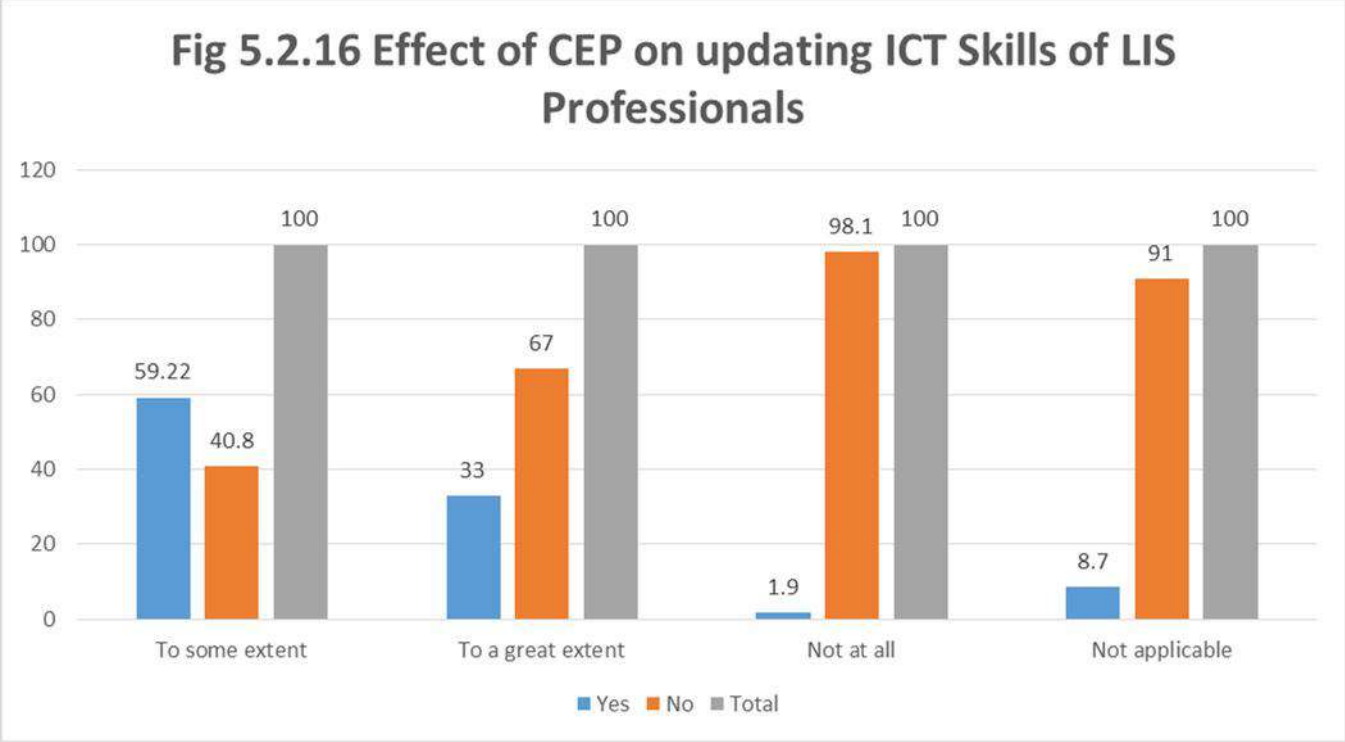
It is depicted from the below table that, 98.1 percent(202) of the LIS Professionals opposed that, continuous education programme has helped in updating their ICT skills, followed by 91.00 percent(188) of the respondents also opposed that,continuous education programme applicable to

updating their ICT Skills. Next to this, 67.00 percent (138) of the LIS Professionals opposed that, continuous education programme has helped to a great extent in updating their ICT Skills. 40.8 percent (84) of the LIS Professionals opposed that, continuous education programme has helped in updating their ICT skills to some extent.

Table 5.2.16: Effect of CEP on updating ICT Skills of LIS Professionals

	Opinion		
Effect of Continuous Education Programme (CEP) on updating ICT Skills of LIS Professionals	**Yes**	**No**	**Total**
To some extent	122(59.22)	84(40.8)	**206(100)**
To a great extent	68(33.0)	138(67.0)	**206(100)**
Not at all	4(1.9)	202(98.1)	**206(100)**
Not applicable	18(8.7)	188(91.0)	**206(100)**

Figures in the parentheses show the percentage



5.2.17 Suggestions for updating the Knowledge / Skills of LIS professionals

LIS Professionals suggested for updating their knowledge and skills shows that, majority of the respondents 84.05 percent(174) of the respondents have given utmost priority to regular attendance of relevant conference/ workshops, followed by 82.05 percent(170) of the LIS Professionals opined that, In-House training programmes for staff development will help in updating the skills / knowledge. Next to this, 81.6 percent (168) and 80.6 percent (166) of the respondents suggest that, learning from web resources and discussion of professional matters with colleagues will help in updating the skills /knowledge. Out of the total population taken for the study, 79.6 percent(164) and 77.7 percent(160) of the LIS Professionals suggest that, searching internet for relevant professional information and undertaking individual research work/publications with regularly reading relevant professional literature will help much in updating the skills / knowledge. 70.9 percent (146) of the LIS Professionals suggest that, going for higher studies/formal courses will help in updating the knowledge / skills. 64.1 percent (132) and 61.2 percent (126) of the LIS Professionals opined that, reading general books/literary works and involvement in teaching will also help in updating the skills / knowledge. Very less,3.9 percent(08) of the LIS Professionals suggest that, involvement in all library section work, taking advice and suggestion from higher authorities related daily routine work and showing dedication towards library profession will also help to improve the skills / knowledge of the LIS Professionals.

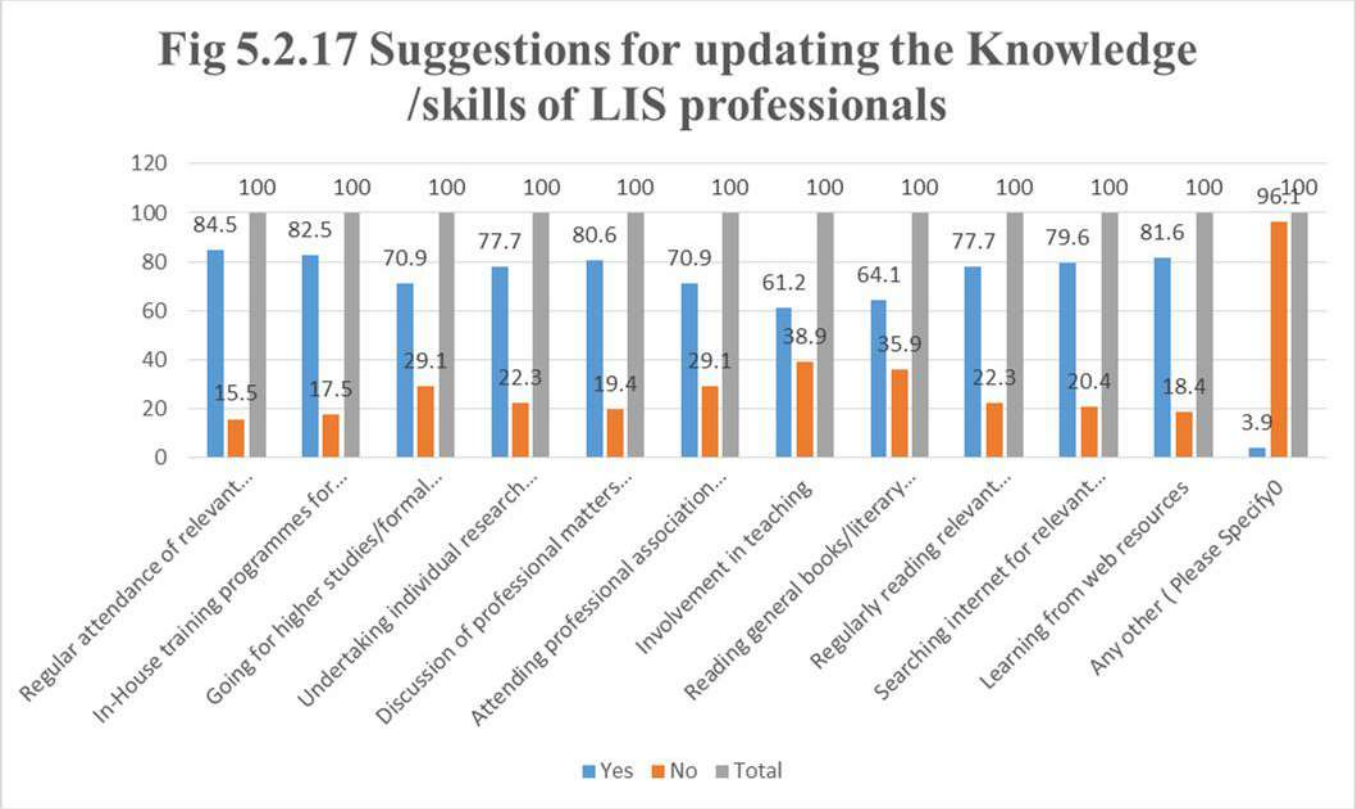
It is also inferred from the below table that,38.9 percent(80) of the LIS Professionals suggest that, involvement in teaching will not help much in updating the skills / knowledge, followed by 35.9 percent(74) of the LIS Professionals suggest that, reading general books/literary works will not help in updating the knowledge / skills. Next to this, 29.1 percent (60) of the LIS Professionals suggest that, going for higher studies/formal courses and attending professional association meetings will not help in updating the skills /knowledge. 22.3 percent(46) and 20.4 percent(42) of the LIS Professionals suggest that, undertaking individual research work/publications, regularly reading relevant professional literature and searching internet for relevant professional information will not help much in updating the skills / knowledge. 19.4

percent (40) and 18.4 percent(38) of the LIS Professionals suggest that, discussion of professional matters with colleagues and learning from web resources will not help much in updating the skills / knowledge. 17.5 percent(36) and 15.5 percent(32) of the LIS Professionals suggest that, In-House training programmes for staff development and regular attendance of relevant Conference / Workshops will not help in updating the skills / knowledge.

Table 5.2.17: Suggestions for updating the Knowledge /skills of LIS professionals

	Opinion		
Suggestions for updating the Knowledge /skills of LIS professionals	**Yes**	**No**	**Total**
Regular attendance of relevant Conference/Workshops	174(84.5)	32(15.5)	**206(100)**
In-House training programmes for staff development	170(82.5)	36(17.5)	**206(100)**
Going for higher studies/formal courses	146(70.9)	60(29.1)	**206(100)**
Undertaking individual research work/publications	160(77.7)	46(22.3)	**206(100)**
Discussion of professional matters with colleagues	166(80.6)	40(19.4)	**206(100)**
Attending professional association meetings	146(70.9)	60(29.1)	**206(100)**
Involvement in teaching	126(61.2)	80(38.9)	**206(100)**
Reading general books/literary works	132(64.1)	74(35.9)	**206(100)**
Regularly reading relevant professional literature	160(77.7)	46(22.3)	**206(100)**
Searching internet for relevant professional information	164(79.6)	42(20.4)	**206(100)**
Learning from web resources	168(81.6)	38(18.4)	**206(100)**
Any other (Please Specify0	8(3.9)	198(96.1)	**206(100)**

Figures in the parentheses show the percentage



Testing of Hypothesis

H4: ICT Skills Training updates/ improves the knowledge and skills of the LIS Professionals working in Special Libraries in Karnataka.

Table Number	Mean	S.D	Z-Statistic	Significance
5.2.16	1.74	0.26	13.39	Significant
5.2.17	1.24	0.08	45.36	Significant

Conclusion: Research hypothesis is statistically significant for the questions considered for the research which shows ICT skill training updates/improves the knowledge and skills of the LIS Professionals working in Special Libraries in Karnataka. Hence the above stated H4 hypothesis is accepted and proved.

5.2.18 Conclusion

Infrastructure facilities in special libraries in Karnataka are not enough to provide suitable experience in the emerging technologies and support professional development to the library staff, which in turn will help in providing enhanced technology based services to the users. The study revealed that the LIS Professionals working in special libraries in Karnataka are highly qualified and majority has a positive attitude towards continuing education programme and its importance in professional development. Majority of the LIS Professionals preferred to update their technology skills and knowledge by participating in continuing education programmes. The analysis of ICT skills and awareness of various technologies revealed that, LIS Professionals are moderately skilled in various technologies and applications, but the awareness level was low in the case of various library automation softwares. Most of the LIS Professionals had a positive attitude towards the application of ICT based services in libraries. The main problems in ICT utilization was the lack of training in ICT applications as pointed out by majority of LIS Professionals. The importance of staff training and participation in institution's training/ workshops was stressed to update the knowledge and skills of LIS Professionals.

CHAPTER -06

SUMMARY OF FINDINGS, SUGGESTIONS AND CONCLUSION

6.1 Introduction

The aim of this study is to evaluate the application of ICT for management competencies and training need analysis of LIS professionals working in special libraries in Karnataka. Information and communication technology plays a vital role in all aspects of nation's development. Development of every system, organization and institution depend upon the advanced technological applications. In the 21st century, libraries have emerged as a knowledge storehouse instead of traditional libraries like dumping resources in vast area. Advances in ICT have brought revolutionary changes in the art and craft of content management through digital technology. The LIS professionals have to meet several challenges in the digital era. There is a need to equip the LIS professionals with appropriate ICT skills and enhance their professional competence. A review of literature suggests that LIS professionals should be enabled to make use of the technologies for effective knowledge management in the special libraries. The present study attempts to evaluate the ICT skills among LIS professionals working in special libraries in Karnataka.

Some of the ICT applications are library automation, e-learning technology, digital storage and database management, internet and intranet, e-resources developments, digital libraries, institutional repositories, library portals, e-mail alert services, list serves, SMS services, online information retrieval and communication technologies etc. These developments in the libraries convert traditional libraries into modern libraries. Presently almost all special libraries are hybrid and mixed libraries, which include semi automation, and both printed and as well as digital form of literatures. Ultimately to handle the various ICT applications, there is need to recruit trained and skilled library professionals.

Now a days library professional have huge opportunity to get training in various workshops, staff development programmes (SDP), orientation courses, refresher courses, information literacy training programmes, conferences, seminars, symposiums, forum discussions, group discussions, hands on trainings, short term courses in state level, national level as well as international level on advanced technological applications in library general and theoretical in nature. Nevertheless, to learn technological applications, practical training is needed along with classroom teaching. The training program resource people know the needs of the trainee library professionals. Under these circumstances, the evaluation and assessment of the competences and skills of the library professionals is needed. Therefore, the library expert only knows the competence excellent, good or poor. To understand all these and to impart such competence, a specialized training programme is needed to design.

However, there is much to be done still to make library professionals competent. The study tries to find out to be useful in examining the present skills and competences of library and information science professionals working in special libraries in Karnataka State. Based on the data analysis, the following findings have been listed below.

6.2 Major Findings of the Study

PART - 01

1. 39.39 percent (26) of the respondents belong to the cadre of Librarian out of 66 respondents taken for the study.
2. 39.39 percent (26) of the respondents belong to Research and Development Libraries out of 66 respondents taken for the study.
3. 60.61 percent (40) of libraries were established during 1951-2000 out of 66 respondents taken for the study.
4. 72.73 percent (48) of the respondents belong to male category out of 66 respondents taken for the study with respect to gender. Among the surveyed respondents major numbers of

respondents are upper age that forms 54.55 percent (36) are coming above 45 years age group out of 66 respondents taken for the study.

5. 57.58 percent (38) of the respondents are having PG Degree Qualification out of 66 respondents taken for the study with respect to educational qualification. Majority of the 60.61 percent (40) of the respondents are having the experience of above 25 years out of 66 respondents taken for the study.
6. 46 libraries have more than two Librarians in their libraries out of 66 respondents taken for the study.
7. 27.3 percent (18) of the libraries got financial assistance from Central Govt and Autonomous body.
8. 12 librarians opined that, there is no library committee in their organizations out of 66 librarians taken for the study.
9. 44 librarians opined that, libraries will functions for six days in week and functions for 08 hours per day out of 66 librarians taken for the study.
10. 26 libraries under the study are situated at Administration Block, Office Block, and somewhere in the corner of the organization, out of 66 libraries taken for the study.
11. 38 libraries having collection of more than 10,000 Books, followed by 32 and 34 libraries having more than 50 Print Journals / Magazines with 50-100 E-Journals in their libraries. Surprisingly, 32 librarians not aware of Patents, Standards and Reports. Very large no.of (54) and (48) librarians not aware of Microform and Digital Institutional Repository out of 66 libraries taken for the study.
12. Majority of the libraries (60) having more than two computers in their libraries to perform daily routine work. And next to this 54 Libraries having more than two Server machine, Printer and Scanner in the libraries. Very interestingly, few (18) libraries having Digital camera in their libraries out of 66 libraries taken for the study.
13. Majority of the librarians (60) are using Library Management Software for the daily routine work of the library out of 66 libraries taken for the study. More than 50.00 percent of the

librarians are not aware about Antivirus Software, Network Operating System and Database Management Software.

14. Library automation software is used with various modules to maintain different types of library services by majority of the librarians under the study. 58 Libraries are automated Cataloguing and OPAC module respectively. Next to this 54 and 50 libraries are automated Circulation and Barcode Generation, Database Creation module respectively.

15. Majority of the librarians (34) opined that, leased line is available for internet connection in the libraries out of 66 libraries. Surprisingly, more than 24 librarians agreed that they are not aware of internet connection for their libraries out of 66 librarians taken for the study.

16. CAS, SDI, Web OPAC, Internet Based Services, Online Databases are the top five preferred services offered by librarians in special libraries irrespective of their type or nature.

17. Most of the libraries subscribed the Science direct (20), and it is followed by EBSCO and ProQuest (14) out of 66 libraries taken for the study.

18. 701-1000 no.of users visited the library during the calendar year in 32 libraries, out of 66 libraries taken for the study. In 28 libraries transaction of books is above 1000.

19. Out of 66 Librarians 64 of them agreed that, ICT application facilitates quick access to current data, ICT Application improves quality of library services, ICT Application help to enhance knowledge and skills of library professionals, ICT Application increased job satisfaction of library professional.

20. 96.97 percent (64) of the respondents are good in using of computers, followed by 87.88 percent (58) of the librarians also good in use of Photocopy Machine in their respective libraries. Next to this, 81.82 percent (54) and 63.63 percent (42) of the respondents are good in use of laptop, scanners and multipurpose computers in their respective workplace out of 66 libraries taken for the study.

21. 84.85 percent (56) of the respondents are good in use of MS –Word in their respective libraries, followed by 81.82 percent (54) of the librarians also good in use of MS-Excel. Next to this,72.73 percent(48) and 63.63 percent(42) of the respondents are good in use of E-Mail,

Web Browser, Document Reader(Ex:Adobe Acrobat), MS-Power Point and Installation of Library Automation Software in their respective libraries out of 66 libraries taken for the study.

22. 42.42 percent (28) of the respondents are having good work knowledge of LIBSYS out of 66 libraries taken for the study.

23. 87.88 percent (58) of the respondents are good in connection and access of E-Mail in their work spot, followed by 63.64 percent (42) of the librarians also good in connection and access of Internet and WWW. Next to this, 42.42 percent (28) and 36.36 percent (24) of the respondents are good in configuration of LAN within the library and configuration of intranet in their respective workplace out of 66 libraries taken for the study.

24. 75.76 percent (50) of the respondents are good in design and development of websites in their respective workplace, followed by 66.67 percent (44) of the librarians are also good in searching and accessing online databases in their work spot. Next to this, 45.45 percent (30) and 36.36 percent (24) of the respondents are also good in use of website and searching and accessing online databases out of 66 libraries taken for the study.

25. 78.79 percent (52) of the respondents are very good in use of Wikipedia and YouTube in their respective libraries, followed by 72.73 percent (48) of the librarians are also good in use of Facebook and Whats App in their respective workplace. Next to this, 66.67 percent (44) and 63.64 percent (42) of the respondents are good in use of Web OPAC and LIS-Forum in their respective work spot out of 66 libraries taken for the study.

26. 60.61 percent (40) of the respondents are good in Dspace or any other Digital Library Software Creation of Metadata for E-Books, E-Journals in their respective libraries, followed by 57.57 percent (38) of the librarians are also good work knowledge on open access databases. Next to this, 51.51 percent (34) and 45.45 percent (30) of the respondents are good work knowledge on E –Learning System and Digital Institutional Repository System (IRS) out of 66 libraries taken for the study.

27. 81.08 percent (54) of the librarians opined that, there is a need of training for development and administration of databases, library systems and digital content management, including

digital and virtual libraries respectively for LIS Professionals, followed by 72.07 percent (48) of the librarians said there is a need for training for hardware maintenance, Knowledge management and Metadata management including MARC for updating their skills in these areas. 69.07 percent (46) of the librarians suggest that, there is a need of training for development and management of bibliographic databases and Computer programming respectively.

28. 84.85 percent(56) of the respondents opined that, Lack of skilled staff are barriers to ICT application in their respective libraries, followed by 78.79 percent(54) of the librarians also opined that, difficulty in recruiting and retaining qualified ICT Staff.

29. 78.08 percent (52) of the librarians opined that, there is a need of training through Workshops and In House Training programmes / Workshops for LIS Professionals to update their skills and knowledge, followed by 72.07 percent (48) of the librarians also opined that, there is a need for training through create awareness of new databases and attending Conference / Seminars / Hands on experience Course for LIS Professionals will help in updating their skills and knowledge. Very interestingly majority of the 75.08 percent (50) of the librarians opined that, Long Term Refresher Courses will not help much for LIS Professionals to update their skills and knowledge.

30. Year by year increasing of deputation of LIS Professionals to attend ICT Training/Course/Workshop/Seminar/Conferences by their respective organizations for updating their ICT Skills and knowledge. Majority of 158 LIS Professionals deputed for attending ICT Training/Course/Workshop/Seminar/Conferences in 2015 -16 by their respective organizations for updating their ICT Skills and knowledge.

31. 51.05 percent (34) of the respondents opined that, training method has helped to update skills to a great extent.

32. 84.84 percent(56) of the respondents have given utmost priority to In-House training programmes for staff development will be improving skills / knowledge of LIS Professionals, followed by 78.8 percent(52) of the respondents opined that, regular attendance of relevant

Conference/Workshops and searching internet for relevant professional information will also help in updating the skills / knowledge of LIS Professionals.

PART -02

33. 35.92 percent (74) of the respondents belong to the cadre of Library Assistant out of 206 respondents taken for the study.

34. 46.60 percent (96) of the respondents belong to Research and Development Libraries out of 206 respondents taken for the study.

35. Male respondents were 72.82 percent (150) out of 206 respondents.29.13 percent (60) under 30 year's age group out of 206 respondents taken for the study.

36. Maximum of 73.79 percent(152) of the LIS Professionals have PG Degree Qualification out of 206 respondents.30.12 percent(62) of the respondents are having the experience of less than 05 years out of 206 respondents under the study.

37. Maximum of 92.2 percent (190) of the respondents are good in use of computers, followed by 78.6 percent (162) of the LIS Professionals are also good in use of Laptops. Next to this, 71.8 percent (148) and 69.9 percent (144) of the respondents are good in use of Scanners and Photocopy Machine in their respective workplace out of 206 respondents taken for the study.

38. 90.3 percent (186) of the respondents are good in use of MS-Word and MS-Excel in their work spot, followed by 88.3 percent (182) of the LIS Professionals are also good in use of E-Mail in their respective libraries. Next to this, 80.6 percent (166) of the respondents are good in use of MS-Power Point and Document Reader (Ex: Adobe Acrobat) in their workplace out of 206 respondents taken for the study.

39. 54.3 percent (112) of the LIS Professionals have good work knowledge on LIBSYS in their respective workplace, followed by 43.7 percent (90) of the respondents are also good in use of Koha out of 206 respondents taken for the study.

40. 87.37 percent (180) of the respondents are good in connection and access of E-Mail in their work spot, followed by 83.48 percent (172) of the LIS Professionals are also good in connection and access of Internet and World Wide Web. Next to this, 56.3 percent (116) and

54.3 percent (112) of the respondents are good in connection and access of Intranet and Local Area Network (LAN) out of 206 respondents taken for the study.

41. 94.02 percent (194) of the respondents are good in use of websites in their workplace, followed by 82.05 percent (170) of the LIS Professionals are also good in use of searching and accessing online databases. Next to this,76.07 percent(158) of the respondents good in use of searching and accessing bibliographic databases out of 206 respondents taken for the study.

42. 85.04 percent of the respondents (176) are good in use of Social network site What Sapp in their workplace, followed by 84.05 percent (174) of the LIS Professionals are good in use of Wikipedia in their work spot. Next to this, 83.05 percent (172) of the respondents are good in use of Facebook and Web OPAC respectively in their libraries out of 206 respondents taken for the study.

43. 66.00 percent (136) of the respondents are good in handling open access databases in their respective libraries, followed by 62.02 percent (128) of the LIS Professionals are also good in handle of Dspace or any other Digital Library Software Creation of Metadata for E-Books, E-Journals. Next to this, 54.04 percent (112) of the respondents are good in handling of RFID Technology and Greenstone or any other Digital Library Software archived of E-Resources out of 206 respondents taken for the study.

44. 66.01 percent (136) of the LIS Professionals were participated in Workshop Sponsored by their institutions followed by 65.04 percent (134) of the LIS Professionals were participated in Conference Sponsored by their institutions.

45. 96.01 percent (198) of the LIS Professionals are attended continuing education programme (CEP) to acquire new skills, followed by 94.02 percent (194) of the respondents are also attended continuing education programme (CEP) to get trained in the latest technology. Next to this, 88.03 percent (182) and 83.05 percent (172) of the LIS Professionals are attended continuing education programme (CEP) to improve library services and update knowledge for basic education.

46. 59.22 percent (122) of the LIS Professionals opine that, continuous education programme has helped to update skills to a some extent.

47. 84.46 percent (174) of the respondents have given utmost priority to regular attendance of relevant conference/ workshops will help in updating the skills / knowledge of the LIS Professionals, followed by 82.52 percent (170) of the respondents also have given utmost priority to In-House training programmes for staff development will also help in updating the skills / knowledge of the LIS Professionals.

6.3 Suggestions of the Study

Based on the findings, following suggestions are made.

1. Researcher identified that, most of the special libraries were set up in Bangalore only. Very less number of special libraries is established in the other parts of Karnataka State. Hence, it is suggested to establish more number of special libraries in other parts of Karnataka State by the State and Central Governments respectively.

2. Less number of ICT skilled LIS Professionals are working in the special libraries. It is suggested to recruit ICT Skilled professional to provide accurate and proper services to the user community.

3. Suggestion is made to develop more collections on e-journals, e-books, online databases and institutional digital repositories as these resources are carried out important valuable information.

4. The library professionals must convince the authority of special libraries to come forward to construct independent functional buildings for the library. Many libraries are housed at present in an Administration Block, Office Block, and somewhere in the corner of the organization.

5. Due to the revolution in information and communication technology, it is essential that the special libraries to computerize all the operations and activities of the libraries for handling the daily routine activities easy and smooth.

6. Majority of the special libraries lag behind in providing ICT based services, i.e., E-Books, Multimedia service and Electronic Document delivery service. This is due to lack of knowledge on ICT Skills. Hence, it is needed to train the LIS Professionals and also increase the technological infrastructure of the library through library budget.

7. When compared to user community, there is a shortage of computer systems in the library. This is affecting in providing computer related services to the users. Hence, it is needed to increase in the number of computer systems in the library.

8. It is strongly suggested to train LIS Professionals in library management software

9. It is essential to provide internet facilities in the libraries. It is suggested to provide leased line internet facilities with sufficient bandwidth in all the special libraries of Karnataka state for effective utilization of e-resources.

10. It is suggested to organize the more short-term courses, to encourage professionals to attend more workshops at least twice in a year.

11. It is suggested to organize centralized training programme for e-learning technologies in special libraries.

12. It is suggested to conduct more short-term course to improve the knowledge about the electronic publications, publishers and electronic/digital libraries and it is very essential to organize the Centralized Refresher courses to all the library professionals working in the special libraries by the competent authority.

6.4 Further Areas of Research

The researcher has made an attempt to examine the ICT skills of LIS professionals working in special libraries in Karnataka state. But, during the course of the study, it is understood that there are many areas of special library management is not covered .The present research was carried out for the evaluation of library and information science professional's skills and competences in ICT, Managerial Competences, Librarianship, Information Standards skills, Training and Development and Means and methods of acquiring

ICT skills of Library and information professionals working in special libraries in Karnataka state. Based on the observations and findings of the study, it is noted that a few studies concerned with following areas may also be undertaken.

1. Training needs analysis of library and information science professionals working in the special libraries in Karnataka state.
2. Design and development of e-learning activities in the special libraries of Karnataka state
3. Management of collection development of e-resources and institutional repositories in special libraries of Karnataka state.
4. Design and development of short terms courses, refresher courses for LIS Professionals working in the special libraries of Karnataka state.

6.5 Conclusion

The present age is considered as information age. The knowledge and information needs of the present clientele cannot be satisfactorily and effectively meet through books and periodicals alone. A lot of information in this computer age is produced and presented in other than the conventional forms. Thus, the non-conventional rather non-book materials do contain a considerable quantity of knowledge and information. To do so, the well-equipped library must have access to the mediated information contained in non-book materials, retrospective and latest literature on technical, other related sciences, advanced ICT infrastructure and well trained, skilled, qualified, and competitive library professionals. Every library professional role working in the special libraries in Karnataka state is very important in managing and developing the library.

As an observation made, the special libraries are having less number of library professionals at higher level. Majority of the library professionals are Library Assistants and most of the others working in the special libraries are semi-professionals. Thus it is suggested to recruit professionally qualified LIS Professionals to improve the quality of service effectively and

efficiently. Majority of the higher level library professionals must be given a specialized training at least once in two years.

In Karnataka state, there are many Universities, Colleges, Medical, Engineering, Research and Development Centers which are conducting training programmes, refresher courses, Faculty Development Programmes (FDP) for their staff. But most of these are general in nature. So it is suggested to come forward for special libraries to take initiation to organize advanced training programmes, refresher courses, managerial competencies, especially for library and information science professionals working in the special libraries.

Hence, it is a prerequisite condition that LIS professionals to be aware of the recent trends in information services. Further, the professionals need to be trained on modern lines so as to enable then to install and extend ICT based information services. On account of this trend, it is found essential that special libraries have the library advisory committee to oversee the functioning of library and to improve upon the services on continual basis to meet the needs of the students, faculty and other users. The library committee helps in judicious allocation of budgets, acquisition of need based information sources, development of infrastructure facility and deputation of staff for acquiring knowledge and skills. The committee will also recommend for improvements from time to time based on the feedback analysis report. On the other hand they have to impart knowledge and train their users in using ICT facilities and accessing various online information services. In this direction, the librarians of special libraries have to play two major roles. One in knowing the information sources and the other in establishing rapport with user community of their libraries. Here librarian is expected to bridge the gap with the thorough knowledge of ICT.

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Information and Communication Technology (ICT) Skills among the LIS Professionals Working in Special Libraries in Karnataka. An Evaluative Study.

QUESTIONNAIRE FOR PRINCIPAL LIBRARY AND INFORMATION OFFICER / INFORMATION MANAGER / KNOWLEDGE MANAGER

PART –A: General Information

1. Name:

2. Designation:

3. Name of the Library and Category:

4. Establishment of the Library:

5. Classification of the respondents according to age and sex

Age	Male	Female
Below 30		
Between 31-35		
Between 36-40		
Between 41-45		
Above 45		

6. Qualifications and experience of the respondents

	Tick		Tick
Academic & Professional Qualifications		**Experience**	
UG (BLISc)		Below 5 years	
PG (MLISc)		Between 6-10 years	
PGDLAN,PGDCA Etc		Between 11-15 Years	
MPhil		Between 16-20	
PhD in LIS		Above 20 years	

7. Details of Professional Staff (Staff Strength)

Sl No	Designation	No.of Staff	Sl No	Designation	No.of Staff
7.1	Chief Librarian		7.7	Senior Technical Officer	
7.2	Senior Librarian		7.8	Research Associate	
7.3	Librarian		7.9	Senior Library & Information Assistant	
7.4	Deputy Librarian		7.10	Senior Information Assistant	
7.5	Principal Technical Officer		7.11	Library Assistant	
7.6	Assistant Librarian		7.12	Manager	
			7.13	Assistant Manager	

8. Funding Sources for Library

Sl NO	Funding Sources	Please Tick	Sl NO	Funding Sources	Please Tick
8.1	Central Government		8.4	Autonomous	
8.2	State Government		8.5	Govt .Undertaking	
8.3	Private		8.6	Others (Please specify)	

10. Is there any Library Advisory Committee for your Library?
Yes /No

If Yes

Sl.No	Functions of Library Committee	✓ Please Tick
10.1	Formulating a development plan for the Library	
10.2	Framing the rules and regulation for the use of the Library	

10.3	Examining proper implementation of library policy	
10.4	Allotment of funds and checking of library expenditure	
10.5	Any Other(Please Specify)	

11. Library Working Days & Timings

Sl No	Working Days	Timings
11.1	Monday to Friday	
11.2	Saturday	
11.3	Sunday	
11.4	Holidays	

12. Do you have Independent Library Building? Yes / No
If Yes

Sl.No	Total space available for the Library	Dimension
12.1	<200 Sq.mts	
12.2	201 -400 Sq.mts	
12.3	401 -600 Sq.mts	
12.4	601 -800 Sq.mts	
12.5	801 -1000 Sq.mts	
12.6	Above 1000 Sq.mts	

13. Library Collection

Sl No	Library Collection	Qty	Sl No	Library Collection	Qty
13.1	Books		13.6	Reports, Patents and Standards	
13.2	Print Journal / Magazines		13.7	CDs,DVDs	
13.3	Online Journals & Databases		13.8	Microfilm,Microfische & Micro tape	
13.4	Bound Volumes of Journals		13.9	Institutional and Digital Repositories	
13.5	Thesis, Dissertations & Project Reports		13.10	Others (Please specify)	

14. Infrastructure (Status of Availiabilty of Hardware)

Sl No	Hardware	Qty	Sl No	Hardware	Qty
14.1	Computer and Laptops		14.6	LCD Projector	
14.2	Server Machines		14.7	UPS	
14.3	Printers		14.8	Fax Machine	
14.4	Scanner		14.9	Photocopy Machine	
14.5	Barcode Scanner		14.10	Digital Camera	

15. Details of Library Software Used:

Sl No	Details of Library Software	Please Tick
15.1	Library Management Software	
15.2	Digital Library Software	
15.3	Database Management Software	
15.4	Network Operating System	
15.5	Antivirus Software	

16. Details of Library Automation

Sl No	Library Automation	Mark	Sl No	Library Automation	Mark
16.1	Database Creation		16.7	Barcode Generation	
16.2	Circulation		16.8	Digitization of documents	
16.3	Acquisition		16.9	Office File Works	
16.4	Cataloguing		16.10	Stock Verification	
16.5	Serial Control		16.11	Security Check	
16.6	OPAC				

17. Internet Connection (Please Mark)

Sl NO	Internet Connection	Tick
17.1	Leased Line	
17.2	Ordinary Dial up	
17.3	ISDN Dial up	
17.4	VSAT	
17.5	Lease Line and Bandwidth	
17.6	Not Aware	

18. ICT Based Library Services

Sl No	Types of Service	Please Mark	Sl No	Types of Service	Please Mark
18.1	Current Awareness Service(CAS)		18.7	Library Website / Portal	
18.2	Selective Dissemination of Service(SDI)		18.8	Internet Based Services	

18.3	Multimedia Service		18.9	CD/DVD Based Services	
18.4	Web OPAC		18.10	Online Databases	
18.5	E-Books		18.11	Electronic Document Delivery Services	
18.6	E-Journals		18.12	Others(Please Specify)	

19. Library databases

Sl No	Library databases	Mark	Sl No	Library databases	Mark
19.1	Current Contents		19.6	Indian Science Abstracts	
19.2	CAB Abstracts		19.7	Chemical Abstracts	
19.3	AGRIS		19.8	EBSCO	
19.4	PROQUEST		19.9	Science direct	
19.5	EMERALD		19.10	Others(Please Specify)	

20. Library Usage Statistics

Sl No	Library Usage	Library Usage Statistics
20.1	No.of visitors visited the Library	
20.2	Transaction of Books	

21. Please indicate your opinion regarding the application of ICT In your library:

Sl No	Opinion regarding the application of ICT in the library	Agree	Disagree
21.1	ICT Application facilitates quick access to current data		
21.2	ICT Application improves quality of library services		
21.3	ICT Application help to enhance knowledge & skills of professionals		
21.4	ICT Application increased job satisfaction of Library professionals		

21.5	ICT Application help to improve communication		
21.6	ICT Application improve the status of the library		
21.7	ICT makes an integration within the library		
21.8	ICT Application reduce workload of library professional		
21.9	ICT disturbs routine work of the library		
21.10	ICT affects regular budgeting provision		

PART –B: Evaluation of Information Communication Technology (ICT) Skills of Librarians

Please rate your Library Staff level of competency in all skills in the column provided for self-rating.

Please use a standard six point's scale:

Very Good (1), Good (2), Satisfaction (3), Poor (4), Very Poor (5),Not Aware(6)

1. Information Technology Components

Information Technology Components	**1**	**2**	**3**	**4**	**5**	**6**
Use of Computers						
Use of Laptop						
Use of IPod						
Use of Photocopy Machine						
Use of Digital Camera						
Use of Fax Machine						
Use of Mobile Communication with Computers						
Use of Multipurpose Computers						
Use of Scanners						
If any other Please Specify:						

2. Software

Software	**1**	**2**	**3**	**4**	**5**	**6**
Installation of Operating System						
Installation of Library Automation Software						
Installation of Digital Library Software						
Windows 2013						
Windows NT						

Windows XP						
Linux						
Novel Netware						
Unix(Specify)						
Mac OS						
MS-Word						
MS-Excel						
MS-PowerPoint						
Document Reader(Ex:Adobe Acrobat)						
E-Mail						
Web Browser						
Statistical Packages						
Graphical Presentation						
HTML\ XML editors						
DBMS						
Oracle						
SQL						
Use of Word Processing						
Use of File Conversion						
Use of File Bibliographic Conversion						
Use of Tabulation						
Use of Animation						
Any Other (Please Specify)						

3. Library Automation Software

Library Automation Software	**1**	**2**	**3**	**4**	**5**	**6**
LIBSYS						
WINISIS						
SLIM++						
KOHA						
NEWGENLIB						
SANJAY						
VTLS						
LIBSOFT						
LIMSOFT						
In House Developed						
Any Other (Please Specify)						

4. Network Connection and Access

Network Connection and Access	**1**	**2**	**3**	**4**	**5**	**6**
Configuration of Intranet						
Configuration of LAN within the Library						
Local Area Network (LAN)						
Wide Area Network (WAN)						

Virtual Private Network (VPN)						
VSAT						
Extranet						
Intranet						
Internet and World Wide Web (www)						
E-Mail						

5. Website

Website	**1**	**2**	**3**	**4**	**5**	**6**
Use and Design of Website						
Searching and Accessing Online Databases						
Searching and Accessing Bibliographic Databases						
Use of Web Camera						
Webcasting						
Mobile Casting						
Podcasting						

6. Use of Web Tools

Use of Web Tools	**1**	**2**	**3**	**4**	**5**	**6**
Blogs						
Wikipedia						
Youtube						
Education Tubes						
Facebook						
Orkut						
Skype						
Twitter						
LIS-Forum						
Web OPAC						
WhatsApp						
Any Other (Please Specify)						

7. Digital Library

Digital Library	**1**	**2**	**3**	**4**	**5**	**6**
Dspace -Digital Library Software Creation of Metadata for E-Books,E-Journals						
Greenstone -Digital Library Software archived of E-Resources						
Use of Federated Search						
Content Management						
E –Learning Systems						
Digital Institutional Repository System						

(IRS) Services						
Open Access Databases						
RFID Technology						

PART –C: Training and Development for LIS Professionals

Please indicate your choice on the following training need for LIS Professionals

Sl.No	Nature of Training for LIS Professionals	Yes	No
1	Development and administration of databases		
2	Hardware maintenance		
3	Digital Content management, including digital and virtual libraries		
4	Knowledge management		
5	Development and management of bibliographic databases		
6	Network administration		
7	Metadata management including MARC		
8	Computer programming		
9	Website / portal development and maintenance		

2. The following barriers to ICT for application in my library.

Sl No	Barriers to ICT in general	Yes	No
1	Non-availability of required ICT Hardware and Software		
2	Inadequate Budget for ICT		
3	Lack of skilled staff		
4	Difficulty in recruiting and retaining qualified ICT Staff		
5	Unwillingness among staff to use ICT		
6	Library lacks updated ICT strategy		

7	Lack of commitment by top management		
8	Lack of training facility for ICT Skills		

3. What mode of training do you provide to your staff while using ICT in your Library?

Sl No	Training Method	Tick	Sl No	Training Method	Tick
1	Conference / Seminars / Hands on experience		5	In House Training programmes / Workshops	
2	Workshops		6	Training from time to time	
3	Short Term Refresher Courses		7	Awareness to new database	
4	Long Term Refresher Courses		6	Addition to any new ICT	

4. Number of library staff deputed for special ICT Training / Workshop / Seminar / Conference during last Five years

Sl No	Staff Deputed for ICT Training / Workshop/Seminar/Conference	2015-16	2014-15	2013-14	2012-13	2011-12
1	Total Numbers					

5. How far has the ICT Training contributed to update your LIS Professionals Skills

Sl No	Update knowledge through ICT Training	Tick	Sl No	Update knowledge through ICT Training	Tick
1	To some extent		3	Not at all	
2	To a great extent		4	Not applicable	

6. What are your suggestions for updating the Knowledge/Skills of LIS Professionals?

Sl No	Suggestions for updating the Knowledge/Skills of LIS Professionals	Tick
1	Regular attendance of relevant Conference/Workshops	
2	In-House training programmes for for staff development	
3	Going for higher studies/formal courses	
4	Undertaking individual research work/publications	
5	Discussion of professional matters with colleagues	
6	Attending professional association meetings	
7	Involvement in teaching	
8	Reading general books/literary works	
9	Regularly reading relevant professional literature	
10	Searching internet for relevant professional information	
11	Learning from web resources	
12	Any other (Please Specify0	

Information and Communication Technology(ICT) Skills among the LIS Professionals Working in Special Libraries in Karnataka. An Evaluative Study

Questionnaire for Library & Information Science Professionals

PART –A: General Information about the LIS Professional

1. Name:

2. Designation:

3. Name of the Library and Category:

4. Classification of the respondents according to age and sex

	Male	**Female**
Below 30		
Between 31-35		
Between 36-40		
Between 41-45		
Between 46-50		
Above 50		
Total		

5. Qualifications and experience of the respondents

	Tick
Academic Qualifications	
UG	
PG in Library Science	
MPhil in LIS	
PhD in LIS	
Experience	
Below 5 years	
Between 6-10 years	
Between 11-15 Years	
Between 16-20	
Between 21-25 years	
Above 25 Years	

PART –B: ICT Skills among LIS Professionals

Please rate your level of competency in all skills in the column provided for self-rating. Please use a standard Six Point's Scale

Very Good (1), Good (2), Satisfaction (3), Poor (4), Very Poor (5) Not Aware (6)

1. Information Technology Components

Information Technology Components	**1**	**2**	**3**	**4**	**5**	**6**
Use of Computers						
Use of Laptop						
Use of IPod						
Use of Photocopy Machine						
Use of Digital Camera						
Use of Fax Machine						
Use of Mobile Communication with Computers						
Use of Multipurpose Computers						
Use of Scanners						
If any other Please Specify:						

2. Software

Software	**1**	**2**	**3**	**4**	**5**	**6**
Installation of Operating System						
Installation of Library Automation Software						
Installation of Digital Library Software						
Windows 2013						
Windows NT						
Windows XP						
Linux						
Novel Netware						
Unix(Specify)						
Mac OS						
MS-Word						
MS-Excel						
MS-PowerPoint						
Document Reader(Ex:Adobe Acrobat)						
E-Mail						
Web Browser						
Statistical Packages						
Graphical Presentation						
HTML\ XML editors						
DBMS						
Oracle						
SQL						

Use of Word Processing						
Use of File Conversion						
Use of File Bibliographic Conversion						
Use of Tabulation						
Use of Animation						
Any Other (Please Specify)						

3. Library Automation Software

Library Automation Software	**1**	**2**	**3**	**4**	**5**	**6**
LIBSYS						
WINISIS						
SLIM++						
KOHA						
NEWGENLIB						
SANJAY						
VTLS						
LIBSOFT						
LIMSOFT						
In House Developed						
Any Other (Please Specify)						

4. Network Connection and Access

Network Connection and Access	**1**	**2**	**3**	**4**	**5**	**6**
Configuration of Intranet						
Configuration of LAN within the Library						
Local Area Network (LAN)						
Wide Area Network (WAN)						
Virtual Private Network (VPN)						
VSAT						
Extranet						
Intranet						
Internet and World Wide Web (www)						
E-Mail						

5. Website

Website	**1**	**2**	**3**	**4**	**5**	**6**
Use of Website						
Design of Website						
Searching and Accessing Online Databases						
Searching and Accessing Bibliographic Databases						
Use of Web Camera						
Webcasting						
Mobile Casting						
Podcasting						

6. Use of Web Tools

Web Tools	1	2	3	4	5	6
Blogs						
Wikipedia						
Youtube						
Education Tubes						
Facebook						
Orkut						
Skype						
Twitter						
LIS-Forum						
Web OPAC						
WhatsApp						
Any Other (Please Specify)						

7. Digital Library

Digital Library	1	2	3	4	5	6
Dspace -Digital Library Software Creation of Metadata for E-Books,E-Journals						
Greenstone - Digital Library Software archived of E-Resources						
Use of Federated Search						
Content Management						
E –Learning Systems						
Digital Institutional Repository System (IRS)						
Open Access Databases						
RFID Technology						

PART –C: Means and Methods of Acquiring ICT Skills through CEP

1. In your service period have you attended any Continuing Education Programme (CEP) ?

Please Tick the appropriate category below

Sl No	Training Methods	Not Attended	1-5	6-10	Above 10
1	Conference Attended :Institution Sponsored				
2	Conference Attended :Institution NOT Sponsored				
3	Workshop Participation : Institution Sponsored				
4	Workshop Participation : Institution NOT Sponsored				
5	Refresher Courses				
6	In House Training programmes / Workshops				

2. Please List the Reasons for Attending the Continuous Education Programmes(CEP)

Sl No	Reasons for Attending the CEP	Tick
1	To acquire new skills	
2	To update knowledge for basic education	
3	To get trained in the latest technology	
4	To improve library services	
5	To train Junior Staff	
6	To improve relations with fellow professionals	
7	It is mandatory for promotions	
8	Any Other (Please Specify)	

3. If you have not attended, the reasons for not attending the Continuous Education Programmes(CEP)

Sl No	Reasons for not attending the CEP	Tick
1	Restricted to a particular Grade	
2	Do not influence professional work	
3	Lack of Awareness	
4	Financial Constraints	
5	Lack of sufficient staff in the library	
6	Lack of professional recognition	
7	Overload of working hours	
8	Not interested	
9	Any Other (Please Specify)	

4. How far has the Continuous Education Programmes (CEP) contributed to update your Skills

Sl No	Update Knowledge Through CEP	Tick
1	To some extent	
2	To a great extent	
3	Not at all	
4	Not applicable	

5. What are your suggestions for updating the Knowledge/Skills of LIS Professionals?

Sl No	Suggestions for updating the Knowledge / Skills of LIS Professionals	Tick
1	Regular attendance of relevant Conference/Workshops	
2	In-House training programmes for for staff development	
3	Going for higher studies/formal courses	
4	Undertaking individual research work/publications	
5	Discussion of professional matters with colleagues	
6	Attending professional association meetings	
7	Involvement in teaching	
8	Reading general books/literary works	
9	Regularly reading relevant professional literature	
10	Searching internet for relevant professional information	
11	Learning from web resources	
12	Any other (Please Specify0	

List of Special Libraries

1. Abdul Nazir Saab State Institute for Rural Development & Panchayat Raj,Mysuru.
2. Administrative Training Institute(ATI),Mysuru.
3. All India Institute of Speech and Hearing (AIISH),Bangalore.
4. Bangalore Hospital,Bangalore.
5. Bangalore Technological Institute(BTI),Bangalore.
6. Bharat Electronics Limited(BEL),Bangalore
7. BOSCH Limited,Bangalore.
8. British Library,Bangalore.
9. Capgemini,Bangalore.
10. Central Food Technological Research Institute (CFTRI) Mysore
11. Central Institute of Indian Languages,Mysuru.
12. Central Manufacturing Technology Institute (CMTI), Bangalore.
13. Central Power Research Institute (CPRI) Bangalore
14. Central Prison Library,Bangalore
15. Central Prison Library,Bellary
16. Central Prison Library,Mysuru.
17. Central Sericultural Research & Training Institute (CSRTI) Mysore
18. Central Sericultural Training and Research Institute (CSTRI) Bangalore
19. Centre for Multidisciplinary Research (CMDR),Dharwad.
20. Centre for Nano and Soft Matter Sciences,Bangalore.
21. Commando Hospital, Bangalore.

22. Deccan Herald, Bangalore.

23. Federation of Karnataka Chambers of Commerce and Industries (FKCCI), Bangalore

24. HCL Technologies,Bangalore.

25. Hindustan Uniliver Limited, Bangalore.

26. Hinustan Aeronautics Limited, Bangalore.

27. Hippocampus Children's Campus, Bangalore.

28. Honeywell, Bangalore.

29. IBM India Private Limited,Bangalore.

30. Indian Institute of Astrophysics (IIA) Bangalore

31. Indian Institute of Horticultural Research (IIHR) Bangalore

32. Indian Institute of Human Settlements(IIHS),Bangalore

33. Indian Institute of Plantation Management (IIPM), Bangalore.

34. Indian Institute of Science (IISc), Bangalore

35. Indian Plywood Industries Research and Training Institute (IPIRTI) Bangalore

36. Indian Space Research Organization (ISRO), Bangalore

37. Indian Statistical Institute (ISI), Bangalore

38. Institute for Social and Economic Change(ISEC), Bangalore

39. ITC Life Sciences and Technology Centre, Bangalore.

40. J.S.S.Polytechnic for Physically Handicapped, Manasagangothri, Mysore.

41. Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) Bangalore

42. John.F.Welch Technology Centre,Bangalore.

43. Jubiliant Biosis, Bangalore.

44. Judges Library, High Court of Karnataka, Bangalore.

45. Judges Library, High Court of Karnataka, Dharwad.

46. Judges Library, High Court of Karnataka, Kalburgi.

47. Kahaitan and Co, Bangalore.

48. Karnataka State Financial Corporation(KSFC), Bangalore.

49. National Aerospace Laboratories (NAL) Bangalore

50. National Assessment and Accrediation Council(NAAC),Bangalore.

51. National Bureau of Agricultural Insect Resourses (NBAIR),Bangalore.

52. National Bureau of Agriculturally Important Insects, HA Farms Post, Hebbal, Bangalore

53. National Centre for Biological Science (NCBS) Bangalore

54. National Institute of Advanced Studies(NIAS),Bangalore.

55. National Institute of Animal Nutrition and Physiology, Bangalore

56. National Institute of Design (NID), Bangalore.

57. National Institute of Fashion Technology(NIFT),Bangalore.

58. National Institute of Mental Helath and Neuro Sciences (NIMHANS), Bangalore.

59. National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI), Bangalore.

60. National Tuberculosis Institute, Bangalore.

61. Novell Software Development, Bangalore.

62. Population Research Centre,Dharwar

63. Project Directorate on Animal Disease Monitoring and Surveillance, Hebbal, Bangalore

64. Raman Research Institute (RRI) Bangalore

65. Sahitya Akademi,Bangalore.

66. Secretariat Library, Vidhana Soudha, Bangalore

67. Secretariat Library, Vikasa Soudha, Bangalore

68. Suvarna TV, Bangalore.

69. Tata Consultancy Services (TCS),Bangalore.

70. Times of India, Bangalore

71. Wipro Limited, Bangalore.

72. Zee Kannada,Bangalore.