

APPLICATION OF ICT IN COLLEGE LIBRARIES OF AIZAWL CITY

*A Dissertation submitted in partial fulfillment of the requirement for the Degree of
Master of Philosophy in Library and Information Science*

Submitted by

S. Sialai

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M. Phil. Registration No.: MZU/M. Phil./194 of 20.05.2014

Supervisor

Dr. Akhandanand Shukla

Assistant Professor



**DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
MIZORAM UNIVERSITY
2014**

DECLARATION

I, **S. Sialai**, hereby declare that the subject matter of this dissertation is the record of the work done by me, the contents of this dissertation did not form the basis for the award of any previous degree to me, or to do the best of my knowledge to anybody else, and that the dissertation has not been submitted by me for any research degree in any other University/Institute.

This is being submitted to the Mizoram University for the degree of Master of Philosophy in the Library & Information Science.

Date:

(S. Sialai)

(Supervisor)

(Head)

MIZORAM UNIVERSITY

(A Central University)

Department of Library & Information Science

Tanhril, Aizawl – 796 004

Gram: MZU PO BOX: 190, Phone: 0389-2331607/2331608

Email: akhandanandshukla@gmail.com

Dr. Akhandanand Shukla

Assistant Professor

C E R T I F I C A T E

This is to certify that the dissertation entitled “**APPLICATION OF ICT IN COLLEGE LIBRARIES OF AIZAWL CITY**” submitted by **S. Sialai** for the award of the Degree of Master of Philosophy in Library & Information Science is carried out under my supervision. This is the candidate’s original work and is worthy of examination.

Date:

Place: Aizawl, Mizoram

(Dr. Akhandanand Shukla)

Supervisor

Countersigned by

Head of Department

Department of Library & Information Science

Mizoram University

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(S. SIALAI)

Place: Aizawl, Mizoram

ABBREVIATIONS

AACR	-	Anglo-American Cataloguing Rules
ACP	-	Accelerated Graphics Port
ALU	-	Arithmetic Logic Unit
AICS	-	Academy of Integrated Christian Study
AICTE	-	All India Council for Technical Education
ATA	-	Advanced Technology Attachment
ATI	-	Administrative Training Institute
ATLA	-	American Theological Library Association
CAS	-	Current Awareness Service
CCTV	-	Closed-circuit television
CD	-	Compact Disc
CD-ROM	-	Compact Disc-Read Only Memory
CDS/ISIS	-	Computerized Documentation Service/Integrated Sets of Information Systems
DBMS	-	Database Management System
DDC	-	Dewey Decimal Classification
DDS	-	Document Delivery Service
DSL	-	Digital Subscriber Line
DVD	-	Digital Versatile Disc
ECIL	-	Electronic Corporation of India Limited
ENIAC	-	Electronic Numerical Integrator And Computer
EISA	-	Extended Industry Standard Architecture
FDDI	-	Fiber Distributed Data Interface

FTP	-	File Transfer Protocol
GAC	-	Government Aizawl College
GANC	-	Government Aizawl North College
GAWC	-	Government Aizawl West College
GB	-	Gigabytes
GJC	-	Government Johnson College
HBC	-	Hrangbana College
HTML	-	Hypertext Markup Language
HTTP	-	Hypertext Transfer Protocol
ICT	-	Information and Communication Technology
IIT	-	Indian Institutes of Technology
INDEST	-	Indian National Digital Library in Engineering Sciences and Technology
IP	-	Internet Protocol
ISBD	-	International Standard Bibliographic Description
ISI	-	Indian Statistical Institute
IT	-	Information Technology
JTC	-	J. Thankima College
LAN	-	Local Area Network
LCD	-	Liquid Crystal Display
LIS	-	Library and Information Science
MAN	-	Metropolitan Area Network
MARC	-	Machine-Readable Catalogue
MLC	-	Mizoram Law College
MP	-	Madhya Pradesh

NASA	-	National Aeronautics and Space Administration
NIRMALS	-	Network Information Resources Management of Academic Library System
NSF	-	National Science Foundation
OPAC	-	Open Access Catalogue
PC	-	Personal Computer
PUC	-	Pachhunga University College
RAM	-	Random Access Memory
RFID	-	Radio Frequency Identification
RLIN	-	Research Libraries Information Network
SDI	-	Selective Dissemination Information
SOUL	-	Software for University Libraries
TCP/IP	-	Transmission Control Protocol/Internet Protocol
TLSS	-	Total Library Software Systems
TRC	-	T. Romana College
UGC	-	University Grant Commission
UK	-	United Kingdom
UNESCO	-	United Nations Educational, Scientific and Cultural Organization
UNICEF	-	United Nations International Children's Emergency Fund
UPS	-	Uninterrupted Power Supply
URL	-	Uniform Resource Locator
WAIS	-	Wide Area Information Servers
WAN	-	Wide Area Network
WWW	-	World Wide Web
ZRSC	-	Zirtiri Residential Science College

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CHAPTER – I

INTRODUCTION

1.1 Introduction

In this fast changing world information technology and information management are going to play an important role. Information has already been recognized as one of the basic resources for the socio-economic development of a country. Information has now rather acquired the status of the most sought after resource of such as computers, telecommunications, biotechnology, etc. are given importance because they store, generate, manipulate, communicate information.

We are experiencing the impact of the new technology on every facet of information handling. The advent of digital computer has opened up new possibilities in information management, and it is likely to change the information important implications for our thinking about information, and this information processing, storage, and dissemination with the aid of computer is probably called the information technology.

When the first computer, called ENIAC, was developed in 1946 it was a huge as it used electronic tubes with a slow speed and clumsy peripherals. It was the first generation computer. However with the development technology the tubes were replaced by three transistors and later the integrated circuits etc. and consequently the size of consequently the size of computer has been considerably reduced, while the processing speed has gone up marvelously. The computer systems we have in the late eighties or rather at the end of the eighties are based on large scale integration and very large scale integration, and with the availability of the microprocessors, we in India are on the way to developing computer networking.

In India, computers have already invaded the library and information science field and some of the libraries in the college and research organizations have introduced computer systems to automate some of their functions. These functions include book ordering and acquisition, cataloguing, serials control, circulation, generation and publication of bibliographies, indexes, and other documentation lists. The application of the computer system can also be extended to storage and retrieval of bibliographic indexes, and other documentation lists. The application of the computer system can also be extended to storage and retrieval of bibliographic information, and SDI Services. The first computer in India imported from the UK, was installed at the Indian Statistical Institute, Calcutta

in 1955, and in the first decade since as many as 16 computers were installed in different parts of India.

The first indigenous computer was designed in India in 1964 by the ISI, Calcutta in collaboration with the Jadavpur University, Calcutta. This was the introductory phase for computer systems in India, and since then India did not look back in the field of computerization. During the period 1965-72, the process of computerization speeded up with the installation of 170 more computer systems, although most of them were imported from the western countries. Then the ECIL, Hyderabad took over the responsibility and installed as many as 94 indigenous computers during the period 1973-78.

1.2 College Library

The higher education is on the nature of the integration of the further education college library with its community. This high degree of integration can only be achieved if the library is seen and developed as a focal point and an essential service to the college community and if the librarians see themselves as educators. The service and staff are a part of the institution, not separate from it. Their responsibilities do not stop at the library door. The objectives of the library should respond to those of the college and as such should be concerned with preparing students not only for higher education and employment, but also for life. In addition to the traditional role of academic support there is, therefore, emphasis on life skills with implications for a very wide range of materials provision and for user education.

In the less formal atmosphere of a further education college, the library is a very real centre of community life. The library is probably the only place where all levels meet and the librarians perhaps the only members of staff who have contact with every type of student and the opportunity for liaison with the greatest number of staff across the college. This close liaison with colleagues is particularly important in a college where the tendency towards small establishments prevents the appointment of specialist subject librarians to the degree required.

Further education is a very demanding, but also stimulating sector in which to work. It provides great variety and never stands still. The college librarian must be able to

integrate his library with the college and, no less important, integrate himself with his colleagues. He must play a very positive and active role in the provision of education for the whole spectrum of the community. It is very extended role, from shelf-tidying to representation on the decision making panels of the college.

1.3 Information and Communication Technology (ICT)

Information and communications technology (ICT) is often used as an extended synonym for information technology (IT), but is a more specific term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information. The term ICT is also used to refer to the convergence of audio-visual and telephone networks with computer networks through a single cabling or link system. The phrase ICT has been used by academic researchers since the 1980s, but it became popular after it was used in a report to the UK government by Dennis Stevenson in 1997 and in the revised National Curriculum for England, Wales and Northern Ireland in 2000. As of September 2013, the term “ICT” in the UK National Curriculum has been replaced by the broader term “computing”.

ICT Stands for “Information and Communication Technologies,” refers to technologies that provide access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication mediums.

In the past few decades, ICT have provided society with a vast array of new communication capabilities. For example, people can communicate in real-time with others in different countries using technologies such as instant messaging, voice over IP (VoIP), and video-conferencing. Social networking websites like Facebook allow users from all over the world to remain in contact and communicate on a regular basis. Modern ICT have created a “global village,” in which people can communicate with others across the world as if they were living next door. For this reason, ICT is often studied in the context of how modern communication technologies affect society.

1.4 ICT Skills for LIS Professional

The implementation of new and advance technologies in the libraries requires competent staffs with different ICT skills. One of the important factors for successful implementation of ICT is the level of competence of the staff working knowledge of ICT skills for library professionals for handling various library functions to make full use of this potential for handling various library functions. To make full use of this potential in library management it is essential that should have adequate professionals who have through knowledge of ICT application in libraries but in practice most of the library professionals do not have adequate skill of ICTs. The knowledge, skill & interest in various aspect of ICT need to be constantly upgraded among the library professionals. The skill is an ability or proficiency in execution or performance, which is required for a person to plan and execute an action designed to achieve some goal or accomplish a particular task. A skill person has the ability to perform any task successfully. The basic goal of library and information profession has always been to provide access to information for those who need it. The activities realizing this goal have evolved and transformed over the years. Information activities have been guided by the developments in the field of information storage, presentation and archiving of knowledge, information explosion and computers in information retrieval and dissemination on one hand and on the other hand the computer specialist who support the LIS professionals are partners in this endeavor. For successful implementation of ICT tool and services in library, it is essential that LIS professionals are well trained and possess requisite knowledge and technical skills in this respect. The technical skills means those skills which are required to handle ICT based tolls and routines used for library services like computer operation, knowledge of software, telecommunication media, creation of online databases and content management software, information retrieval techniques through Internet etc. Digital library is nothing but advance application of ICT based tools and techniques in the library. Hence LIS professionals have to familiar with the relevant skills to handle ICT and its application in the present digital environment. Some basic ICT skills which required by LIS professionals to apply these ICT technologies in their libraries are: basics of ICTs; networking; database management; web development; management of multiple media; metadata skills; and knowledge of standards such as MARC21, ISBD, Z39.50, Dublin Core etc.

Library professional should update themselves at regular intervals via attending at seminar, workshop, training, short-term programs, symposium and conference etc. to handle modern ICT technology. They are acquire to know-how create linking data, how to do content management, retrieving, sharing and preserving digital information. Due to the fast changing technological developments continuous in service training for working librarian is essential not only to keep them well informed about the latest development in their fields but also to learn new skill in the use of modern technology.

1.5 Impact of ICT on Library Staff Attitude

The library staff attitudes play a vital role for the success of library services in automated environment. Positive attitude and action of staff involved in ICT uses are regarded as crucial inputs for the successful implementation. As per the attitude of library staffs' towards automating library, majority of the staff member are open minded, reasonable and enthusiastic showing genuine interest in learning more and to be included in training & orientation. According to Luquire (1983), "to deal with new technology and maintain balance between human considerations & technology and maintain balance between human consideration and the technology of library automation, better understanding of the complexities of the perceptions and attitudes of people is mandatory". Klerk and Euster (1989) found that the technical services staff accustomed to the detail and specified required by a computer are adopting easily. Prince and Burton (1998) found that senior academic related staffs was largely unbiased in technology while more recently qualified staff being more positive adopter of innovation. Jones (1999) conducted a survey on 218 supporting staff's perceptions and opinions about technological changes in three university libraries and received response from 118 respondents (54%). Most have now experienced a high-tech work environment. Regarding personal reactions to working with new technologies, out of 118 respondents, 39 respondents checked positive terms (excitement, enjoyment, pleasure, and competency), 22 checked negative terms (frustration, inadequacy, dislike, irritation, tolerance) while 57 checked a mixture of positive and negatives terms.

1.6 ICT and LIS Education

LIS education has played a very significant role in the growth of information society through its planned effort to incorporate. The LIS education in India has a unique profile as it started as a voluntary vacation by many university libraries. Today library education

is not more an education for the managers of libraries only but has become an education for consumer of knowledge also. It has change from managing library by librarians to manage the flow of information by one and all and it reached a stage where it is considered as a course to be reckoned with technologically affluent programs and being considered on the agenda of apex bodies offering technical education. It is influenced by ICT component. LIS education and ICT are indispensable now-a-days because LIS schools put a lot of things related to ICT in their courses. Now, every syllabus of library science included ICT components at each and every semester. The new LIS professionals are very well equipped with ICT tool because they are studying so many ICT components as a part of their course: computer with hardware & software, binary numbers, operating systems, programming languages, application softwares, Internet, Web, Internet protocols, Web design, URL, Web browser, search engine, e-mail, open source software, digitization, library automation, OPAC, CD-ROM, DVD, telecommunication (data transmission, wireless communication, satellite, radio signal, spectrum, bandwidth, modem, optical fiber, hub etc.), FTP, e-books/journal, e-publishing, databases, networks, consortia, knowledge mapping, knowledge society, information society etc. Thus, ICT has profound impact on the role of library professionals and offers numerous opportunities for professional and personal carrier development. Library professionals with good ICT skills and expertise will have ample opportunities in profession now. It has become increasingly important for library professionals to acquire and enhance their ICT skill in order to implement new technology in libraries to provide new ICT based library services to users.

1.7 Review of Literature

Lata Suresh, & Singh, Surya Nath. (2014). Status in ICT and health information system. *International Journal of Information, Library and Society*, 3(1), 16-24.

Paper presents a brief survey of the materials that have been selected as part of the research project. These include previous exercises to map ICT in the health sector in developing countries, white papers, technical reports, research reports on the aspects of ICT and public health, policy issues-related, and evaluations in this area.

Seena, S. T., & Sudhir Pillai, K. G. (2014). A study of ICT skills among library professionals in the Kerala University Library System. *Annals of Library and Information Studies*, 61, 132-141.

Literature establishes that a number of studies have been conducted to explore needed competencies of libraries to meet the challenges of digital age. The study also revealed that a good majority (88.6%) of the library professionals is skilled in operating system windows and management of electronic resources is reasonably known to (51.9%) of professionals. Among Web 2.0 technologies, email/ instant messaging on chat was frequently used by (85.9%) of professionals, and wishes was frequently used by (69.1%).

Praveen Kumar. (2013). Application of ICT in public libraries: a study of central state library of Haryana and Chandigarh. *SRELS Journal of Information Management*, 50(1), 93-100.

The study was conducted to investigate the application of ICT in the central state libraries in Haryana and Chandigarh. The study also provides to infer that the library automation is one of the effective and efficient applications of ICT.

Ruan, L. & Qiang, Z. (2013). The role of information technology in academic libraries' resource sharing in Western China. *Library Trends*. 62(1), 180-204.

This paper studies the Chinese academic libraries where it needs more to provide ICT infrastructure in the western regions of China for resource sharing within the academic libraries. The study collected and collated from CALIS, the Ministry of Education of the Library, and the Information Command Council. This paper reveals the economic inequalities in the Eastern and Western Regions of China. The study shows that the information sharing resources are huge in Eastern China whereas in Western Regions it is less due to insufficient funds. Although in the eastern regions it is well provided funds from the central government which is lacking in the Western Regions of China. Due to this the students face problems in western China in terms of ICT infrastructure. There is a great demand to the central government to provide more fund and ICT infrastructure to the western

region equally with the eastern parts for the development and growth of the country through CALIS.

Vanden Elzen, A. M. & Roush, J. (2013). Brawling in the library: gaming programs for impactful outreach and instruction at an academic library. *Library Trends*, 61(4), 802-813.

This study presents the gaming programs for the students in the Academic libraries. It plays a very important role for the students for their higher education the libraries not only need to focus on instructing students about library resources but also need to actively reach out to them by integrating gaming programs in academic libraries. This study also reflects the integration of games in academic libraries in Wisconsin, USA and the staff of the University Library has been successfully incorporating games into library outreach programming. It shows the effective results to the students efficiently by offering such kind of video gaming in the university libraries. It also studies about the partnership for planning games as well as the marketing and impact results on its users.

Davendra & Nikam, K. (2012). OPAC and user perception in law university libraries in the Karnataka: a study. *International Journal of Information Dissemination and Technology*. 2(4), 301-306.

This study presents the use of OPAC and Web OPAC by the users at Law university in Karnataka. It also reveals about the students respondents regarding the usage of OPAC through internet how usually they access from outside campus and within campus. The rate of success of locating the document of their interest from OPAC was 75 percent. Significantly, the satisfaction level of the users was high with the OPAC facilities.

Maan, I. S. (2012). Usages of ICT products and services: a case study of Adesh Institute of Engineering & Technology, Faridkot (Punjab). *International Journal of Information Dissemination and Technology*, 2(4), 296-300.

The study reveals the use of ICT products and services by the students and staff of the Adesh Institute of Engineering and Technology. The study demonstrates

and elaborates the usages of ICT products and services such as how they search from the library? Whether they are satisfied with the online services provided by the library? How the problems faced by the users? and suggestions have been given to make the library services more effective and efficient to cater the information needs of the students and other users. There is a significant difference in the use of e-resources by the university library users. The study shows the profile of the institution, needs, scope and objectives including the research methodology as well as the data analysis and interpretation.

Pandya, J. D., Patel, S.S., & Poluru, L. (2012). Current content alerts through RSS Feeds: a web 2.0 approach. *International Journal of Information Dissemination and Technology*, 2(4), 278-286.

This paper reveals about the alert service using RSS feeds providing as a part of current awareness service targeting the current Information needs of the users. Information push service is one of the most important functions of a library consisting of electronic resources. They have also highlighted on the do's and don'ts of RSS Technology.

Thanuskodi, S. (2012). Use of Internet by the faculty members of Arts and Science Collage in Cuddalore district, Tamilnadu, India: a case study. *International Journal of Information Research*, 2(2), 207-225.

This study examines the use of Internet by the faculty members of Arts and Science Collages in Cuddalore described by frequency of Internet use, purpose of using the Internet, use of different Internet services and impact of Internet on research/ teaching. A questionnaire was prepared and sent to 70 faculty members of the college. The result indicated that 58.62% of respondents access the Internet from college library and 91.37% respondents indicated that research and teaching is the primary purpose for using Internet.

Murugusan, N. & Balasubramani, R. (2011). Application of ICT based resources and services in research and development libraries in Tamil Nadu. *European Journal of Social Sciences*, 23(1), 157-164.

This study is conducted to inspect the application of ICT in Library for research and development in Tamil Nadu, India. The study provides recommendations to give priority to digital library initiatives; consortia based subscription to enhance effective and efficient use of ICT in the library for research and development in Tamil Nadu.

Manir Abdullahi, K (2011). Application of ICT's in libraries of higher education institutes: a panacea catapulting library development in Africa. *Journal of Library & Information Technology*. 31(1), 65-71.

This study revealed that the implication of ICT's in libraries of higher education institutes in Africa and exposed the ICT impact on libraries of higher education. The paper has analyzed the efforts made by the higher education's libraries in Africa to recognize, re-structure 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 ICT into higher education's libraries. The paper also highlights the reasons why ICT application is taking a snail speed in library development in Nigeria and provides the solutions as a panacea for library development in Africa.

Kumar, A. M. & Kumar, A. B. (2010). Application of ICT by related manpower problems in the college libraries of Burdwan. *Journal of Library & Information Technology*, 30(4), 44-52.

This study shows that the application of ICT in academic institutions in West Bengal has increased in the recent years but the computerization work of general degree college libraries of Burdwan Sadar (North and South) is very slow due to certain problems. The lack of trained manpower is one of the major causes of slow computerization and ICT application in college library of Burdwan. They also examines the situation of IT application and related manpower problems in government-aided degree college libraries of Burdwan Sadar, West Bengal.

Kannappanavar, B. U., & Ravi, K. B. (2010). Application of information and communication technologies in some selected special libraries in Bangalore (Karnataka).

This study was conducted to investigate the application of ICT in some selected special libraries in Bangalore (Karnataka). 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. The study provides recommendations to enhance library automation and effective and efficient application of ICT.

Sampath Kumar, B. T., & Biradar, B. S. (2010). Use of ICT in college libraries in Karnataka, India: a survey program. *Electronic Library and Information System*, 44(3), 271-282.

The study presents a comprehensive survey about use of ICT in college libraries in Karnataka. The findings help college librarians, local government and also the UGC, New Delhi to evaluate the college library status in Karnataka. The purpose of this study is to examine the use of ICT in thirty one college libraries in Karnataka, India by investigating the ICT infrastructure, current status of library automation, barriers to implementation of library automation and also librarian's attitudes towards the use of ICT.

Devchaudhary, G. B. (2007). ICT and electronic library: management and delivery within the traditional library.

The study revealed that the electronic library is growing fast in parallel to the traditional library. It examines that libraries are under a lot of pressure to achieve their noble goals much faster than planned, to adopt new technologies, to compete with others in managing the tremendous growth of information and to be able to lead in the area. The management and delivery of information in an electronic library differs from traditional library in many ways. The purpose of this paper is to collect the management and delivery problems rise out of adoption of the electronic library and to present possible solutions in the areas of five basic parts of scientific management-planning, organizing, staffing, directing and controlling.

Islam, S., & Islam, N. (2007). Use of ICT in libraries: an empirical study of selected libraries in Bangladesh. *Library Philosophy and Practice*.

The study presents the needs of ICT and it changed the way of the work of libraries and information centers. The study also stated that librarians, library patrons and supporters, and, above all, the government, must help develop ICT-based libraries to meet the changing demands of the users.

Adeyoyin, S. O. (2006). Information and communication technology literacy among the staff of West African university libraries: a comparative study of Anglophone and Francophone countries. *Electronic Library*, 25(4), 694-705.

The study contained original work that related to differences between English and French-speaking university staff as regards ICT literacy and as such it will be useful for library technology planners and educators. The aim of this paper is to ascertain the ICT literacy level among the staff of Anglophone (English-speaking) university library staff and their counterparts in francophone (French-speaking) university libraries in West Africa.

Chauhan, B. P. (2006). ICT enabled library and information service. Winter School on ICT Enabled Library and Information Service: 1-10.

This paper presents how conventional library and information services can be delivered more efficiently and effectively by using ICT and it also highlights the new ICT enabled LIS profession particularly in a Web based environment. It also discussed about how common ICT tools can be applied to provide new innovative service.

Haneefa, Mohamed. (2006). Information communication technology infrastructure in special libraries in Kerala. *Annals of Library and Information Studies*, 53, 31-42.

This study examines ICT infrastructure and its importance in a modern library or information centre. It also exposed that ICT is the electronic means of capturing, processing, storing and communicating information. It encompasses an array of

hardware, software, services and networks that enable access to digital information. This study investigates the current state-of-the art, ICT infrastructure and the extent of the use of electronic information resources in special libraries of Kerala. The special libraries in Kerala have ICT infrastructure (like hardware, software and communication facilities) to some extent even then ICT based resources and services are not reaching to the users up to the expected extent. The findings of this study would assist special libraries in India to develop strategies and policies that could make better use of ICT based resources and services.

Adeyoyin, S. O. (2005). Information and communication technology literacy among the staff of Nigerian university libraries. *Library Review*, 54(4), 257-266.

This paper highlights a representative overview of the attainment level of the library staff in an important area of professional competence, and it shows the importance of addressing the gap between the desired levels of Information Communication Technology Literacy and the actual levels. The aim of this paper is to ascertain the levels of Information and Communication Technology Literacy among library staff in a range of Nigerian University.

Neeelameghan, A. (2003). Development communication and ICTs. In: *Information Access, Management and Exchange in the Technological Age*. Ed. by Bavakutty, M. et al. New Delhi: Ess Ess Publications. pp. 22-48.

The paper presents the background and premises of the human civilization and development in Information Communication Technology from then and now. It also highlights the impact of ICT on education research and scholarly communication as well as managing of ICT in decision making, resource mobilization and deployments , program implementation and monitoring, marketing, budgeting, office management etc. the paper studies more about the impact in society, wealth, work culture in rural community, developing in communication. It also briefly considers research and study, management and e-governance as a case study.

Noushad Ali, P. M., & Musthafa, K. M. (2003). WLAN and its application in university library services. In: *Information Access, Management and Exchange in the Technological Age*. Ed. by Bavakutty, M. et al. New Delhi: Ess Ess Publications. pp. 125-130.

The study reveals about the importance of providing wireless local area network within the university to access and retrieved the Web OPAC at anytime by the users connected through the intranet by the computer. It studies about the services provided through WLAN can be more effective and efficient for the students in the campus through WLAN. Lastly, libraries can make assisting the library users instead of taking to the terminals he can make the terminals to the right user.

Abdul Majeed, K. C. & Bavakutty, M. (2003). Assessing the quality of information sources and services in academic libraries: a new management technique for librarians in the technological age. In: *Information Access, Management and Exchange in the Technological Age*. Ed. by Bavakutty, M. et al. New Delhi: Ess Ess Publications. pp. 150-189.

Study presents the library is a service organization dealing with tangible assets and intangible services. It presents the tangible assets of library includes the library building, furniture, equipments, information resources and staff, and the intangible services includes all services rendered by library staff to its users. The paper also discusses how the quality of services provided in libraries can be measured and used for improving library services and attracts more users. The results of the study conducted in a post graduate college library to see how far the service quality determinants are applicable in libraries.

Nagarajan, M. & Surianarayanan, S. (2003). Library and information science research in the changing scenario of digital information and communication technologies. In: *Information Access, Management and Exchange in the Technological Age*. Ed. by Bavakutty, M. et al. New Delhi: Ess Ess Publications. pp. 83-93.

The study presents the library and information research in early days where the researcher have to spend a lot of money, manpower, material and minute for literature collection, data collection and analysis etc. But through the use of ICT,

LIS research is becoming more easy and efficient for the researchers in the changing scenario. Digital ICT's how the revolution in the field of science and technology has created a tremendous changes in the field of information and communication technology by computers and networking facilities like Internet, e-mail, EDI, online data access that have become very powerful channels for spearheading the data transmission. The digitization of library resources and emergence of digital libraries and virtual libraries have become the real backbone of the research activities.

Manjunatha, K. & Shivalingaiah, D. (2003). Information access in libraries: methods and problems. In: *Information Access, Management and Exchange in the Technological Age*. Ed. by Bavakutty, M. et al. New Delhi: Ess Ess Publications. pp. 65-82.

This study present the growth of IT has paved way to unprecedented phenomenon of access to information. It discuss about information formats and types, methods of information access, information access process, problems of information access in developing countries. The paper also proposed an information access model integrating print and electronic resources.

Goswami, A. (1999). Application of information technology in library services. *Library Herald*, 33, 1-2.

The author has highlighted the importance and components of automating library and its application for development of libraries and information centers as well. He further discussed the use of automation technology relevant to the activities of the library which include collection development, cataloguing, classification, circulation, reference work and preservation measures. The paper has also focused on various networks among libraries and the impact of interest on storing, processing and dissemination of information.

Kumbar, M. (1995). Use of information technology in library service. *Herald of Library Science*, 35.

The author has mentioned the recent technological advances in electronic and its impact on modern society. He also has referred to the technologies that have

highly revolutionized the library and information services. However, he pointed out the need for application of modern technology in library and information works and services. Discussion on information technology in relation to modern library automation and networking has been done by the author including emphasis on the application of CD-ROM technology in developing bibliographic databases. The author has further stated the creation and growth of library network at national and international level of speedy retrieval of information.

Nair, R. Raman. (1992). *Computer applications to libraries and information science*. New Delhi: Ess Ess, 143-145.

The author has explicitly discussed about the computer applications in various areas of library services, discussions over library software also have been done in the book depicting various modules of operations in library services.

Rajasekhar, T. B. Computer software for library and information work. *In: Handbook for libraries: archives and information centers in India* (vol. 5, pp. 147-149). New Delhi.

Author has vividly discussed about the computer software available in globe and India which can be made available to various library system for library operations including services. He further mentioned about the modules of operations in the library.

Krishna Kumar. (1980). Application of computer: a challenge or change. *ILA Bulletin*, 16, 122-129.

While describing the reason for use of computers in libraries the authors has mentioned the areas of application with special reference to automation of reference and information services. The state-of-the-information system likely to exists in 2000 AD. He enumerated the issues for discussion relating to application of computers in India and mentioned the reasons for slow adoption of computer. He placed for greater involvement of librarian in the application of information technology.

1.8 Research Design

1.8.1 Statement of the Problem

The primary aim of any library vested with the providing services and to determine the user's satisfaction. As already discussed that, ICT play dynamic role to accelerate the library services in managing information and various library operations and services and its use in the libraries has brought revolutionary changes in the library from collection management to delivery of services still then, the users are not amenable to adequate information for their study and research leading thereby to cause alarm among them. This is more prevalent in college library systems those covered under the study. Further, problems lie with the users regarding their acquaintance to the technologies adopted in the libraries under study.

1.8.2 Objectives of the Study

The objectives of the proposed research work are as to:

- a. Assess the status of ICT facilities available in college libraries of Aizawl City,
- b. Assess how many information professionals are trained in handling of information and communication technology,
- c. Identify the limitations of the libraries in using ICT based services, and
- d. Suggest best practices for increasing the ICT application in college libraries.

1.8.3. Research Methodology

The following methods are used for data collection and its analysis including interpretation in the study.

Questionnaire: Two structured questionnaire were framed; one for the college librarian to ascertain the infrastructures developed by the library to provide the library services, and another for the college students or the users to access the services being provided by the library. The questionnaire meant for the users were distributed randomly among 200 users at selected colleges and 157 (about 78%) users given their response for this study to elicit the data relating to the study. Further, another set of questionnaire meant for the librarians were distributed among 10 librarians of college libraries of Aizawl City and all librarians given their response to obtain the library data covered under study. A

considerable amount of information on the resources, facilities, and services of these libraries was collected from their printed brochures and official websites etc.

Interview: To supplement the data, personal visit had been carried out to all the college libraries to gather same data through interview/discussion method relating to the study to know the status of ICT application in the library and to understand their practical problems in utilizing ICT facilities.

1.8.4 Scope of the Study

The scope of the present study is limited to the College Libraries of Aizawl City. There are 10 college libraries in Aizawl City which are given in following table:

Table 1: List of College Libraries in Aizawl City

SN	College Libraries (with abbreviation)
1.	Pachhunga University College Library (PUC)
2.	Government Aizawl College Library (GAC)
3.	Government Hrangbana College Library (HBC)
4.	Government Aizawl West College Library (GAWC)
5.	Government Aizawl North College Library (GANC)
6.	Government T. Romana College Library (TRC)
7.	Government Zirtiri Residential Science College Library (ZRSC)
8.	Government J. Thankima College Library (JTC)
9.	Government Johnson College Library (GJC)
10.	Mizoram Law College Library (MLC)

1.8.5 Significance of the Study

Use of ICT for promoting education and development has always been a part of policy and plan documents on education. At the moment, the decision makers at both central and state are favoring inclusion of new ICT tools and techniques in education (adopting cloud based virtual classrooms/universities, e-learning and m-learning initiatives). The Government of India has implemented several national as well as state specific schemes that run concurrent to large number of privately led ICT initiatives at school and higher education levels. However there is significant disparity in ICT usage between institutions in urban areas and those in semi-urban/rural parts of the country. The quality of ICT infrastructure and its use is limited in a large percentage of autonomous/affiliated colleges especially due to lack of trained IT staff, connectivity issues and shortage of funds. The present study is an attempt to know the actual condition of ICT application of

college libraries of Aizawl City in present scenario and to suggest the best practices for improvement upon the existing ICT application.

1.9 Chapterisation

The study is presented in following chapters:

Chapter 1 – deals with the introduction of ICT, college library, ICT skills for LIS professionals, impact of ICT on library staff attitude, ICT and LIS education. The chapter also includes the review of related studies in the field of ICT and the research design which covers the scope, significance, statement of the problem and research methodology adopted for the study.

Chapter 2 – deals with the concept of ICT for libraries, history of ICT in libraries, library automation, computer infrastructure requirement for the completion of automation, changing role of LIS professionals in ICT application in libraries, digital library, ICT application in libraries, impact of ICT on libraries, functions of ICT applications and Internet facilities for library.

Chapter 3 – deals with the application of ICT in college libraries of Aizawl city and an overview of the college as well as their libraries.

Chapter 4 – presents the analysis of data and findings of the study through tables and figures with suitable interpretation.

Chapter 5 – deals with the conclusion of the whole study and suggestions for the selected college libraries to improve them for future.

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CHAPTER – II

APPLICATION OF ICT IN LIBRARIES

2.1 Introduction

The use of computers has been steadily increasing in science and technology since the Second World War. Most of the advanced countries of the world have made much advance in this respect but India has just made a start, especially in industry and business and there also these are witnessing stiff opposition from the employees and their trade because of the fear of retrenchment. However, their application is increasing day by day in science, technology, industry and business. Libraries are no exception to them. As the library authorities and librarians are becoming aware of their potential uses, these are being put to more use. So that not only some courses in computer applications are being arranged regularly by the private sector, but they are finding their pride place in library science courses also. For example, the syllabuses of the Master's Course in Library and Information Science of many Indian universities have included "Computer Application in Libraries" as a part of the papers. It is hoped that by their use, libraries would increase in the years to come in India, though not at a rapid speed, especially because of our socio-economic conditions and the prohibitive of their installation and maintenance. A computer is a device which is capable of accepting information/data automatically, applying sequence of prescribed processes to the information/data and supplying the results of these processes. The computer is a tool with innumerable components, interconnected in a very complex way. Besides the main machine, the central processor unit, there are many peripheral devices. Because of great computing power, speed, ability to execute complex processing functions, storage capacity and reliability, the computer is being used in almost all fields. Computer technology, both hardware and software, is deriving all benefits from the advances made in solid state physics and electronics. During the last few decades, the tremendous advances in these subject fields affected such rapid changes in computer technology that it may be said to have ushered in a revolution.

Modern technological advances had an overall impact on the computer hardware in all aspects – the machine, operations and the cost. The primary impact on the machine was the diminishing of size. The earlier computer was large enough. The weight of ENIAC was 30 tons. It consumed much electricity and produced much heat. The second and the third generation computers became smaller and smaller as a result of the use of electronics and micro-electronics. There are more than 50,000 integrated circuits in a modern computer, but the size is smaller than that of the earlier computer.

A computer stores a large quantum of data in the memory, much in the cache memory and performs complex operations for various computations. So, it should be perfectly reliable. The vacuum tubes were not so reliable. The transistors had also certain flaws. They sometimes broke off from circuit boards. The chip has no soldered wires and each circuitry is more compact. So, the failure points are almost nil, and it has become most reliable.

2.2 Information and Communication Technology (ICT) for Libraries

In the past, volume of information was not as large it is today, and the libraries were in the position to organize the information materials through manual operation. But since the 2nd World War, there has been a tremendous output of information, which has been usually referred to as information explosion. The materials of information in both print and non-print media (i.e. manuscripts, books, journals, reports, films, discs, tapes) continue to be produced and used in greater and greater quantities. As Xerox Corporation put it in one of their promotional brochures in 1984, “recorded knowledge has doubled during the last twelve years. It will double again during the next ten”. This vast amount of information has to be processed, stored and retrieved whenever required. The very complexity and magnitude of the problem makes it an impossible task to process by manual method. Library and information professionals are increasingly being compelled to take the help of semi-automatic and automatic machines for information handling. The revolutionary developments in information technology have two impacts. Firstly, as more and more information is readily available in machine-readable form, there has been a fundamental shift in the concerns of the information profession from “more information” to “accurate, up-to-date and timely information”. Secondly, as computers are used increasingly for provision of information, librarians and other information professionals must familiarize themselves with the latest technological development in this field.

2.3 History of Application of ICT in a Library

The American pioneers of library automation were outlasted more than other countries. In 1930s, Herman Hollerith of the US Census Bureau invented Punch Card technology with the help of Dr. Jolul Show Billings, the efforts of library automation system was began at that time. In 1936, Ralph Parker installed Hollerith Punch Card system at the University of Texas for circulation control of the library and in the mid of 1940s the

system was also experimented in the serial record control. In 1950, the Library of Congress introduced a book catalogue using Punched Cards. In 1960s, the first library automation was developed in U.S. In the 1970s, Integrated computer chips and storages devices were also developed and RLIN and WLN was started the online library networks. Some libraries using microcomputers of their organizations to started automation during that decade. In 1980s, the use of computers in libraries increased greatly. The more user friendly and lower cost microcomputers were rapidly developed. Many library automation packages came into the market and in the late 1980s, CD-ROMs that contained databases, information and software were also introduced. In 1990s, the development of computer networking was started. The overwhelming explosion of technology with the latest one penetrate the library automation system till date that started using high technology services and security system in the library to facilitate information protection, sources and services. Library automation in India was first started at Hyderabad whereas Aizawl Theological College (ATC) was begun their library computerized in 2002 and is the first library automation in Mizoram.

It seems like all the pioneer library automation were comes out mostly from USA and others from British because they firstly started library automation and ICT application in the library. The ex-librarian of British Library, Maurice B. Line said about the pioneer of library automation in his article “Forty years of library automation: a personal reflection” said that “While I was in Newcastle one of the first major conferences on library automation took place at Brasenose College Oxford. Most of the British and American pioneers of library automation were present; they included Fred Kilgour, Henriette Avram, Richard De Gennaro, Jack Wells and John Jolliffe. Also present were such figures as Sir Frank Francis, Douglas Bryant, Sir Peter Swinnerton-Dyer and Peter Laslett. Most of the papers were given by Americans, who were a few years ahead of the British. For myself, the main benefit was the contacts I made there, notably Dick De Gennaro and Fred Kilgour, whose contributions to library automation outlasted most of the others”.

2.4 Library Automation

Library automation is the application of machines to carry out the library operation or activity. Computer is one of the most important tools to automate library, it enhances the activities of libraries in automating the operations. The computer technology coupled

with telecommunication and multimedia technology has developed the new possibilities in handling and transfer of information. Library automation is important to provide more and very high speed information accession, to minimize staff requirements, it facilitates handling of huge data or information and it increases library uses. Because of that new technology application, libraries are now able to offer services that are more effective. The basic requirements for automating library are the selection of computers with right hardware and software, computer skilled professional, conversion and standardization of data, resources and services. Some popularly used library automation software are as follows:

- a) Libsys, from LIBSYS Ltd. Gurgaon
- b) SOUL, from INFLIBNET, Ahmedabad
- c) SLIM, from Algorithms, Pune
- d) E-Granthalaya, from NIC, New Delhi
- e) TLSS, from Total IT Solutions, New Delhi

2.4.1 Infrastructure Requirement for Library Automation

a) Hardware and Software

The hardware requirement includes computers and its related peripherals including printers. The software part requires availability of integrated library automation package.

b) Barcode Reader

It is a simple machine readable codes that the computers can reproduce directly into the bit streams 0's and 1's. It is a series of black bars and white spaces of varying breadths. The code is read by a scanning device which send message to the computer that determines the code from the width of bars and spaces. The basic requirements are data entry terminal, decoder (inbuilt/external), scanning devices, barcode printer, collection database, membership database, barcode labels, communication software, and software for generating barcodes.

c) Radio Frequency Identification (RFID)

It is a combination of radio frequency based technology and microchip technology. The information contained on microchips in the tags that is affixed to the library materials is read using radio frequency technology. The data transmitted by the tag

may provide identification or location information, or specifies about the product tagged, such as price, colour, date of purchase, etc. The RFID gates at the library exit may be as wide as three feet because the tags can be read at a distance of up to two feet by each of two parallel exit gate sensors.

2.4.2 Areas of Library Automation

In the fully automated library, there are two types of operation works: library house-keeping operations, and library information handling operations which are performed with the help of computers. Library automation encompasses the house keeping operations which are performed by computers. The house keeping operations brings acquisition, cataloguing, circulation and serial control.

a. Acquisition

It plays a vital role in a library, it builds up information resources by ordering and purchasing of books or non-print items. The activities of acquisition in a library comprises budget management, book/non-print material selection, preparation of order list, sending orders to the publishers, duplicate checking, payment of bills, stamping, accessioning, updating record file and control of book budget.

b. Cataloguing

It is a list of documents which includes whole information about documents like call number, accession number, author, title, publisher, publishing place and year etc. The activities of cataloguing includes preparation of main entry, added entry, authority files, index files/subject heading list, arrangement of catalogue, centralized and shared cataloguing, provision of access points in a variety of ways and in an appropriate physical form, OPAC database and report.

c. Circulation

It is one of the most important functions in the library, regarded as the centre of activities in the library. The works of circulation involves making barcode of member ID cards, bar-coding of the library materials, issue & return, reservation, renewal, reminder, recall, collection of overdue charges, inter library loan, library gate control system, withdrawal, stock verification and binding.

d. *Serial Control*

Serial control is recording and maintenance of data regarding serials subscribed by the library. Computerization of serial control leads to effective and efficient control over subscription, claiming, reminders and cancellations (Thapa, 2007). The activities of serial control includes selection and approval, acquisition, inputting of serial data, ordering of new journals, renewal of subscription, receipt and control, accessioning, invention of lists of serials/data files, indexing article, interface with union catalogue.

2.5 Digital Library

The first use of the term digital library, in print, may have been in a 1988 report to the Corporation for National Research Initiatives. These draw heavily on “As We May Think” by Vannevar Bush in 1945, which set out a vision not in terms of technology, but user experience. The term virtual library was initially used inter-changeably with digital library. A distinction is often made between content that was created in a digital format, known as born digital, and information that has been converted from a physical medium, e.g. paper, by digitizing. It should also be noted that not all electronic content is in digital data format. The term hybrid library is sometimes used for libraries that have both physical collections and electronic collections.

The term digital library was first popularized by the NSF, DARPA, NASA Digital Libraries Initiative in 1994 with the funds of \$24.4 million from the US federal. This funding came through a joint initiative of the National Science Foundation (NSF), the Department of Defense Advanced Research Projects Agency (DARPA), and the National Aeronautics and Space Administration (NASA). That US federal funds would be distributed for “digital library” research among six universities which were Carnegie Mellon University, the University of California at Berkeley, the University of Michigan, the University of Illinois, the University of California at Santa Barbara, and Stanford University.

A digital library is a type of information retrieval system. It is a combined use of digital computing, storage, and communications machinery together with the contents like multimedia database, information mining, information warehouse, information retrieval, on-line information repositories, electronic library, imaging database, World Wide Web

(WWW), and Wide Area Information Services (WAIS). Software is also needed to reproduce and extend the services like collecting, cataloging, finding, and disseminating the information. In this system, a collection of information is stored in a digital format in computer memories and accessible via computers that are available on the Internet or on DVD-ROM disks.

2.6 Changing Role of LIS Professionals in ICT Environment

The development of ICT and their application in library and information centers has changed the nature of collections; the needs of users; the library environment and the roles of LIS professionals. The old concept of book centered librarianship has changed to the user-centered librarianship. ICTs have paved path to new roles for LIS professionals. The LIS professionals as creators, communicators, leaders, mentors, and lifelong learners are monitoring the trends in technology continuously to provide global information instantaneously to end-users through ICTs. In the Web environment, options of sources and format of information and flow of information have great impact on the role of libraries and library professionals. In development of collection tools, techniques and approaches has increasingly entered in the field of library services globally. It forces to change the way they are functioning in providing the information needs of their users. These new roles require different personalities for librarians as well as different skills and knowledge. The focus is on power to draw together different forms of communication, smoothly integrating them within a digital environment and providing access to the stored information using computer systems via telecommunications which are fast, friendly and interactive. The globalization of ICTs has posed various challenges before the LIS professionals in the nature of collections, the information environment and the radical change in the expectations and needs of the users. In digital environment, LIS professional's competence lies in:

- a) Speeding up access to information
- b) Speeding up spread of information
- c) Filtering material chosen by users
- d) Organizing user information sources in standardized keyword and classification schemes
- e) Developing expert vocabulary

Before adapting to any changes in libraries, the LIS professionals have to analyze the organizational conditions, to what extent both higher officials and team members are willing and prepared to accept these changes. When creating a new role within the digital library, the LIS professionals must have the curiosity, adaptability, flexibility, confidence and ability to interact with users outside the library, a passion to educate, can do attitude with team oriented spirit, and ability to think globally. Creativity is required to deal with the changes in collections, services, and users.

The LIS professionals in libraries will become agents of accessibility and integration, linking users to a range of digital information available through licensing agreements or other means. LIS professionals have been working to re-tool library services in order to make them more useful for patrons to find organize, and interact with information in a way that has infinite potential for user customization. These new types of services are a shift from “isolated information silos” to “interlinked computing platforms”. Smith (2006) proposes nine important factors which are key elements to achieve successful and sustained change by any LIS professional. They are: ensure readiness for change; plan for change; lead change; manage change; support change; deal with resistance to change; communicate effectively; follow through, evaluate, learn; and attend to the human factor. Ashcroft (2004) suggested the qualifications for a modern librarian to be a mix of old and new ones and that synthesis derives from the need to organize documents and information in a hybrid environment. He identified six categories for basic skills:

- [1] Professional
- [2] Marketing and promotion
- [3] Evaluation
- [4] Communication – negotiation – collaboration
- [5] Censorship
- [6] Personal transferable skills

As new technologies come along, library and information science professionals experiment and try to find ways to employ the new tools in their libraries. Technology has posed a challenge and given an opportunity to re-design library organization. Technological developments enabled networking, file storage and graphic user interfaces. This challenge has paved the way for serious thinking on the capabilities to

compensate for reduced budgets. LIS professionals need to adapt to the new mindset of users linking new technologies, information, and patrons. The essence of being a library liaison has been defined as one who “connects users with their information needs, whatever the format and whatever the technology”.

2.7 ICT Application in Libraries

Information Technology means a variety of technological applications in the process of communication of information. The term “information technology” has been used as collective term for the whole spectrum of technologies providing the ways and means as to acquire, store, transmit, retrieve and process information. According to the Webster’s New Encyclopedia, information technology is the collective term for the various technologies involved in the processing and transmission of information. Thus information technology includes computer technology, communication technology, multimedia technology, optical technology, networking and barcode technology, etc.

a) Computer Technology

The computer is perhaps the most useful modern tool yet developed. Computer can store every variety of information recorded by people, recall it whenever need arises and can calculate millions of times faster than the human brain. Thus, computer can do precisely all those jobs in the library for which we use many devices with a set detailed instructions.

b) Communication Technology

It is used in communicating the information from generator to the user of the information. For communicating the information, any type of communication system is applied such as verbal, telephone, etc. Some communication tools like telephone, fax, television, e-mail, and Internet are very much popular these days for communicating with the person are some of the necessary components in the library services.

c) Multimedia Technology

Multimedia technology is most commonly applied to the simultaneous use of sound, text, image and video in preparing presentations. Multimedia applications are also used in some bigger libraries where the special kinds of students have to access and used for it.

d) Optical Technology

The emergence of compact disc for storage of information is dominating our day to day routine activities. Compact discs are one of the most important and useful electronic media of storing the information. A CD-ROM can store a huge amount of records of library like Ramayana and Mahabharata can be stored in a single piece of compact disc.

e) Networking Technology

Merging of computer and communication technologies has emerged as a networking. This is a system through which two computers can talk to each other. Now, there are so many networks operational throughout the world. In India NICNET, INDONET, PUNNET, CALIBNET, DELNET, INFLIBNET are some of the important networks.

f) Barcode Technology

Barcode technology can be defined as a self contained message with information encoded in a series of black bars of varying breadths and white spaces between every two of them. These are helpful in terms of circulation work and stack verification work of library documents.

2.8 Impact of ICT on Libraries

Information Technology has wider connotations for librarians that include in addition technologies like repro-micrographic technology, technical communication technologies and database creation and use. Information technology has affected operations of various areas in the library sections which are given below:

a) Library Management

Under this, classification, cataloguing, indexing, database creation, CAS, & SDI works are affected by the information technology.

b) Library Automation

Under this, organizing databases, automating library, & various house-keeping operations are coming which are affected by the information technology.

c) Library Networking

Under this, resource sharing, and information dissemination are coming which have been affected by information technology.

d) Technical Communication

Under this, technical writing, editing, & desk top publishing works are included which are affected by information technology.

2.9 Functions of Library affected by ICT Application

The following operations of the library functions can be speedily processed by the computer. These are outlined briefly as:

A. Acquisition

- i. Duplicate checking
- ii. Preparation of order lists.
- iii. Sending orders to book supplier/s
- iv. Monitoring orders and follows up action
- v. Verification with order file and invoices
- vi. Maintaining state of funds, budget control etc.

B. Cataloguing

- i. Duplicating cataloguing cards
- ii. Preparation of authority file/subject headings list
- iii. Sorting, checking, and filing of catalogue cards
- iv. Automatic generation of added entries
- v. Generating the monthly accession lists
- vi. Developing centralized and cooperative cataloguing system

C. Circulation Control

- i. Registration of members
- ii. Charging and discharging of documents
- iii. Updating the records file
- iv. Preparation of reminders
- v. Maintaining statistics
- vi. Information retrieval etc.

D. Serial Control

- i. Ordering of serials
- ii. Receipt and updating the record file

- iii. Receipt to vendors/publishers
- iv. List of holdings
- v. Maintaining statistics
- vi. Information retrieval etc.

E. Documentation and Information Retrieval

- i. Indexing of micro and macro documents
- ii. Thesaurus construction
- iii. Abstracting work
- iv. Compilation of union catalogue/lists
- v. Bibliographic work
- vi. Searching and print-outs of queries of users

In addition to what has been outlined above, more library operations can be manipulated with the computer system to achieve efficiency, effectiveness, and to reduce per unit costs etc. ICT provides easy access to information resource and the facilities of technologies have been the driver of knowledge society.

2.10 Internet & Library Services

Internet has become an important tool to transfer information and offers a variety of services to create, browse, access, search, communicate and views information. Internet also plays an important role to enhance library services in providing better information service. The information services based on Internet are: e-journal, e-book, library catalogue, technical reports, online databases, Web OPAC, e-mail based information services, online reference services, content page of journal, online bibliographic databases, etc. All these services provide useful information that can be accessed through online tools available over Internet.

2.11 Resource Sharing

a. Infrastructure for Resource Sharing

Computer server (i7, Speed 450 MZ), Computer memory (2 GB), Operating System Software, Hard Disk (500 GB or more), Server Network Interface Card, Network-Compatible applications programs, Usage monitoring software, Virus protection software, Uninterrupted power supply (UPS), CD-ROM/DVD-ROM Drive, Network

Cards, Cable and connectors, Wiring hubs, signal boosters, Web server, multimedia kit, modems, scanner, operating system, web browsing tool, Optical Character Recognition (OCR) Software and good internet connectivity.

b. Areas of Resource Sharing

The network should be able to access some areas over the Internet like online catalogue, indexes, cooperative procurement, co-operative technical operation, preparation of union catalogue, co-operative storage, browsing privilege of cooperative members, cooperative in documentation, exchange of experts, cooperative inter-library loans, document delivery services, consortia purchasing, and collection development etc.

c. Objectives of Resource Sharing & Networking

The main objectives of library resource sharing and networking are:

- By exchanging library resources and information for the user that will help the user to access the resources which are not available in their own library.
- To facilitates the maximum utilization of resources.
- To avoids duplication in resources.
- To make overall improvements of library services.
- To provide better library services with less budget and save the times of user.
- To develop sharing policies for inter library loan and reciprocal agreements for special collections.

Nowadays the cost of reading materials is increasing day by day, so that libraries are facing difficulties to acquire collections. The publication duration of print materials take a long time so that print materials may not relevant enough in compare with soft copy which is available on the Web. The soft copy can be accessed rapidly on the Web at anywhere and then the emphasis is now shifting hard copy to soft copy to provide immediate information service. Therefore, library resource sharing and networking is very important in present ICT era.

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CHAPTER – III

ICT IN COLLEGE LIBRARIES OF AIZAWL CITY

3.1 Introduction

Information Technology (IT) has radically changed all aspects of modern human life. Information itself is so dynamic and its resources are unending. It helps in the educational process, research and developments. Technology also, in a broad sense, is very important to the development of information. Information Technology facilitates transfer of electronic data or information from one place to another, one person to another or one educational institution to another crossing all boundaries. It is the electronic means of capturing, processing, storing and communicating information. It covers any product that will store, retrieve, manipulate, transmit or receive information electronically in digital form. ICT Stands for “Information and Communication Technologies.” ICT refers to technologies that provide access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication mediums. In the past few decades, information and communication technologies have provided society with a vast array of new communication capabilities. For example, people can communicate in real-time with others in different countries using technologies such as instant messaging, voice over IP (VoIP), and video-conferencing. Social networking websites like Facebook allow users from all over the world to remain in contact and communicate on a regular basis. Modern information and communication technologies have created a “global village” in which people can communicate with others across the world as if they were living next door. For this reason, ICT is often studied in the context of how modern communication technologies affect society.

3.2 The College Libraries in Mizoram

The main objective of college library is to become instrument of instruction. In order to determine, how far it has succeeded in achieving the objective, one should determine the extent to which the user uses the library resource for their assignment as an integral part of the curriculum. In other words, we can say that the teaching in the classroom must depend more on library than the textbooks. Therefore, library must become the integral part of teaching program. A college library is expected to support the objectives of the college. Therefore the basic function of the college library is to provide study materials to its user's

in short possible time and serve the requirements of the students, teachers and researchers towards reading, study and research.

Mizoram state is situated in the north eastern part of India and under the process of development. The development of state is depend on good quality of technical education and research and to support good education and research, always we need a good library services because library is a centre from where we disseminate knowledge to develop and promote new knowledge for development of the society. Now the concept of libraries has been changed and it is not only a center for store the book but it is a service center and with the help of ICT, the approach and dimension of libraries has been changed. It is a responsibility of college libraries that with the application of ICT tools and services, they provide best library services to their users to assist in their education, research and development. The ICT has changed the world in a village and networking and resource sharing with the help of internet remove the gap between big and small libraries. With the help of these modern ICT technologies, small libraries can also provide good and satisfactory library services to their users. In the Mizoram, there are around thirty (31) college institutions but more of them are situated in Aizawl city because it is capital of the state.

3.3 The College Libraries in Aizawl City

As per scope of the study, there are ten college libraries in Aizawl City. The brief profiles of colleges and their libraries are given below:

3.3.1 Pachhunga University College (PUC)

PUC is a constituent college of Mizoram University (a central university established by an Act of Parliament of India). It eventually received its fourth name Pachhunga University College (PUC) founded in 1958. It is the oldest and a premier college in the entire state of Mizoram, India, situated in College Veng, a locality located at the eastern side of Aizawl city. The 136 acre campus covered with a verdant reserve of forest makes a serene environment and picturesque scenery. It remains the only institute of higher education in Mizoram to manage undergraduate courses in three disciplines, namely arts, science and commerce. It remains the only institution in Mizoram to be awarded the Indira Priyadarshini

Vriksha Mitra (IPVM) in 1995, the national award for pioneering and innovative contribution in the field of forestation/wasteland management, from the Ministry of Environment and Forests, and the Best College award from the Foundation, twice, consecutively in 2004 and 2006. Pachhunga University College was awarded grade 'B' by National Assessment and Accreditation Council (NAAC). The college caters undergraduate courses in 21 subject areas of Arts, Science, and Commerce streams. It has been successively awarded "The Best College in Mizoram" by the Mizoram Research Foundation. The institution is marching towards the national level from this north-eastern corner of the country.

Presently, there are 93 permanent teachers, including the Principal, 39% of them possess PhD and 12% M. Phil. in their respective fields. There is 71 supporting staff including Assistant Registrar, Section Officer, Clerks, Peons, Drivers and Cleaners. There is 25 technical staff including Laboratory Assistants, Mechanic, Electrician and Carpenters. Average number of enrollment of students is 1350 for the past five years, with approximately 600 fresh admissions every year. In terms of college infrastructure, PUC has one library, various laboratories, hostels, auditorium, playground, sports facility, transportation, medical facility, and research facilities.

3.3.1.1 Library Facilities at PUC

The college library was set ablaze on 4 November 1981. With restoration and procurement, it has now once again emerged into one of the largest institutional libraries in North-Eastern India. There are 42,803 general books; 34,242 textbooks; 8561 reference books; 29 academic journals; and a number of magazines and newspapers. Reprography and Internet access facilities are also available. Library automation work is under progress. Library has the electronic database access facilities through INFLIBNET.

3.3.2 Government Aizawl College (GAC)

Established as "Aizawl College" in 1975 by a team of philanthropic citizens meeting at the office chamber of the then Legislative Assembly Speaker, Dr. H. Thansanga, on the 13th

January 1975. Aizawl College (later renamed College following its take-over by the State Government) was formally inaugurated by Pu Ch. Chhunga, the first Chief Minister of Mizoram. Classes started on the evening of 25.8.1975 with 350 students of Pre-University Class with six lecturers. It was upgraded to Deficit Grant-in-Aid status with effect from 1st November 1984 and became Government on 1st January 1989. The college was included under section 2(f) and 12(B) of the UGC Act 1956 with effect from 17.3.1987. While affiliated to the NEHU, the college was one of the prominent members of the NEHU family. It is now affiliated to Mizoram University. The college has two streams– Art and Commerce with eight different disciplines in stream offering both general and Honours degrees.

3.3.2.1 Library Facilities

The sitting capacity of the college library is around 32 and the library circulation system is computerized. The Aizawl College Library is automated in 2005 by using SOUL software. The classification scheme used in the library is Dewey Decimal Classification (DDC). The collections varieties are: books, journals, and newspapers etc.

3.3.3 Government Hrangbana College (HBC)

The college is named after Hrangbana, a late philanthropist and prominent businessman who generously donated a sum of Rs. 1 lakh to start the college. It was given government recognition as a private college on 6th November 1980 and was upgraded to Deficit Grant-in-Aid status with effect from 1st September 1985. It finally became a Government College with effect from 1st April 2003. Hrangbana College affiliated to the NEHU until 2002, the college was one of the prominent members of the NEHU family. Presently Hrangbana College is affiliated to Mizoram University. The college offers Bachelor of Arts and Bachelor of Commerce (General and Honours). The college was accredited ‘B++’ in 2006 and Re-accredited ‘A’ in 2011 by National Assessment and Accreditation Council (NAAC), Bangalore. Govt. Hrangbana College, with such records, has been selected by the Government of Mizoram to start college in the state from the academic session 2013-14.

3.3.3.1 Library Facilities

Govt. Hrangbana College was established in the year 1980 and it belongs to the state government. The library has a separate space in the college building. The sitting capacity of library has 70 seats. The status of the library collection is: Audio/video cassettes/CDs – 40, Indian Journals – 200, Foreign Journals – 700, accessed through N-LIST. The college library is fully automated in 2005 by using SOUL 2.0. The Hrangbana College library has a future plan for ICT based application services. In future, college library has plan to install RFID system and to procure smartcard printer as well as to launch the separate library website.

3.3.4 Government Aizawl West College (GAWC)

Aizawl West College was founded on 2nd May 1990 with 7 teachers and 150 students with the primary objective of imparting college education in the evening hours for deserving students especially to the students who could not afford education in Day College. When the government upgraded Aizawl College to the status of Government Aided College in 1989, it became a Day College and hence the need of another evening college. While there were colleges in the eastern, southern and northern part of Aizawl city, there was not a single college in the western part of Aizawl city. Thus, considering the need of those students for pursuing their higher education, a new college was opened in the western part with land donated by the residents of the locality of Dawrpuii Vengthar, Aizawl. The college was first affiliated to the North-Eastern Hill University (NEHU) for pre-university (Arts) on 9th March 1992, and Degree (Arts) on 9th June 1994. When Mizoram University was established on 2nd July 2002, the affiliation was transferred to the new university. The college currently has 700 students and 38 teachers with eight departments including Department of English, Mizo, Public Administration, Psychology, History, Education, Political Science, and Economics.

3.3.4.1 Library Facilities

The Government Aizawl West College Library is established in the year 1991. It was the State Government College Library. The library circulation system is computerized and automated in 2012. The DDC classification scheme has been used in the library to classify

the documents. The staff strength in the library is less in number and demand for more staff has been sent to the concerned authorities. The materials of library are available in various forms including Journals, Textbooks, and Newspapers etc. The college library is having the membership of library networks with INFLIBNET. The college library also provides Internet access facility through leased line with 100 mbps connectivity.

3.3.5 Government Aizawl North College (GANC)

Government Aizawl North College, established in 1988, is under the management of the Higher & Technical Education Department, Govt. of Mizoram and is permanently affiliated to Mizoram University. It is a co-educational higher education institution of learning designed for the training of youth in preparation for life and service. It seeks to produce men and women of refined character, fruitful to the society and the nation, educated in a truly educational setting. Students of all castes and creeds are welcome, but every student is expected to recognize and respect the administrative spirit of the college, live and work in consonance with its academic and intellectual ideals. The motto of the college is “Development through Education.” The college is located at one of the choicest spots of Aizawl city, enjoying a temperate climate all the year round. Postal and transport facilities are available at just a stone’s throw from the college. The primary purpose of the college is to provide education and academic atmosphere conducive for the youths to grow in the knowledge of true learning. It stresses academic proficiency and endeavours towards the attainment of high moral and intellectual stability. It seeks to promote cosmopolitan outlook and attitude that are needed for integration, both for the nation and individual. The college received UGC recognition under 2(f) and 12(B) on 27th September 2007 and accredited “B+” by NAAC in 2009.

3.3.5.1 Library Facilities

Government Aizawl North College Library has been established in 1988. Till today, there is no proper budget for the library. Acquisition/ procurement, building construction/ renovation, recruitment of staffs, purchase of furniture etc. are doing without proper budget for the last two decades. The college library is the main resource for the students and teachers of the college. The reading room capacity is about 30-40. The library also

introduced the barcode technology in annual stock verification, and circulation work. The library is having membership of N-LIST of INFLIBNET.

3.3.6. Government T. Romana College (GTRC)

Government T. Romana College is a degree college affiliated to Mizoram University, located in Republic Veng, Aizawl, Mizoram, India. The college was established in 1992 as a private institution, upgraded to Grant-in-Aid status in 2003 and provincialised in 2008. Since its inception, it has been designed as a morning college to allow attendance of self-employed students. The college is committed to the education of the individual giving special care to accommodate academically and economically disadvantaged students. Students are encouraged to seek knowledge and wisdom as lifelong learners, motivated to expand their human potential and develop competencies necessary to function in contemporary society. The college, therefore, has the distinction of being called “the college of grace”, within which it has produced many meritorious students. The college offers a three-year degree course in the Arts stream for Honours and General students in the following subjects: English, Mizo, History, Economics, Education, Sociology, Political Science, and Public Administration. The college is an approved study centre of the Indira Gandhi National Open University (IGNOU) under the Scheme for Open Learning and Conventional Systems, under which the students can pursue their bachelor's degree in subjects like social work, human rights and others. Career-oriented course programs introduced by the University Grants Commission (UGC) have enabled the college to offer Certificate Courses in Computer Application and Mobile Phone Repairing. The courses are designed to ensure that graduates who pass out after completing their conventional degree courses would have knowledge, skills and aptitude for gainful employment in the wage sector in general and self-employment in particular. The college effects 180 teaching days as per the norms of University. Academic progress of students is continually assessed through the conduct of periodic tests, submission of assignments and tutorials. For weak learners, special classes are held by the concerned faculty according to the needs perceived and there is provision for conducting regular classes in remedial English. The NSS and NCC units in the college offer an opportunity to students to take an active part in social services and other useful activities. The students' evangelical union and other bodies including adventure club,

history club, cultural club, chess club etc. cater to varied interest areas and create opportunities for active students' participation in diverse development programs.

3.3.6.1 Library Facilities

Government T. Romana College Library was established in 1992. The college library has a separate building attached with some of the classrooms. The library is the main resource for information requirement of the college students. The sitting capacity for the readers is also quite large and the library has computerized system for circulation work. The collections of library are: text books, newspapers, journals etc. DDC scheme has been used for classifying the documents of the library.

3.3.7 Government Zirtiri Residential Science College (ZRSC)

Government Zirtiri Residential Science College, Aizawl was established by the Government as the only institution that offers purely science education at college level in Mizoram. The college is affiliated to Mizoram University. The principle vision is to cater to the need for higher learning in the college level in various fields of science education in Mizoram. It is envisaged that the knowledge and skills gained with the degree obtained, would facilitate students for future employment opportunities. It also strives to produce students who are responsible citizens equipped with quality education and information in science & technology to be utilized for the development of Mizoram. The college has various facilities for the students including library, laboratories, classrooms, Internet access facility, hostels, canteen, computer laboratory, sports facility, and bank facility. The college offers education in following subjects: English, Physics, Chemistry, Mathematics, Botany, Zoology, Biochemistry, Electronics, Home Science, Computer Science, and Geology.

3.3.7.1 Library Facilities

Government Zirtiri Residential Science College Library is partially automated in the year 2000. The college library has a large volume of collections of science related reading materials and it has been classified according to the Dewey Decimal Classification scheme. Barcoding is used in stack verification and circulation work of the library. The college library has a reading room with 20-30 sitting capacity. The library also subscribe e-journals,

e-documents and other information resources for library users. The library has joined the membership of LIS information networks and connected with the Internet for sharing information and resources among other college libraries of Aizawl city.

3.3.8 Government J. Thankima College (GJTC)

Govt. J. Thankima College owes its origin to the people of Bawngkawn and Durtlang areas of Mizoram. The people of these two areas started the Lalhmingthanga and J. Thankima Colleges in 1992 and 1993 respectively to satisfy the growing need of higher education. J. Thankima and Lalhmingthanga are the two generous donors, in terms of money and land, for establishment of colleges at Bangkawn and Durtlang. General public of these localities also donated for these two colleges. Every family of these localities used to contribute money for meeting the salary of the teachers. These two colleges were amalgamated and named as J. Thankima College on 1st November, 2002. The college is at present functioning as a morning college to serve the cause of the students who are working as manual labours, domestic servants, shop-helpers and employees in government and private sectors during the day time. Most of the students of this college are from weaker sections of the region. The motto and vision of the college is “Soar High in Knowledge”. The college was upgraded to Deficit Grant-in-Aid status with effect from 2002 and it became a Government college with effect from 2007 and presently affiliated to Mizoram University. The college offers Bachelor of Arts degree in English, Mizo, History, Education, Economics and Political Science subjects.

3.3.8.1 Library Facilities

The college has a library with 1528 text books, 367 general books, 109 reference books, and 4 Indian journals. The College Library Committee takes care of its library for further development. The library has only one computer. The library is open on all working days from 6:30 AM to 4:30 PM. During the last five years, the college has spent Rs. 50,000/- for procurement of additional books for the library.

3.3.9 Government Johnson College (GJC)

Govt. Johnson College, Aizawl was established in 1993 and got provisional affiliation to NEHU on 17th December, 1996 and was amalgamated with Bungkawn College on October 24, 2007. Govt. Johnson College, Aizawl was provincialised on October 11, 2007 by the Government of Mizoram. The institution has been granted university affiliation upto degree level on December 17, 1996 and got permanent affiliation on July 1, 2006. The college has been granted UGC recognition under 2(f) & 12(B) on 17th November, 2006. It is located in the heart of Aizawl at Shivaji Tillah, Khatla, in the south western part of Aizawl near the Police Head Quarters.

3.3.9.1 Library Facilities

Government Johnson College Library was established in the year 1993 and it was under the state government. The library has a separate building with the sitting capacity of 20 – 30. The library is open from 9:00 AM to 5:00 PM. The circulation system was computerized and library offers CAS, SDI and Xeroxing services to its users. The library was automated in 2013 by using SOUL 2.0.

3.3.10 Mizoram Law College (MLC)

Mizoram Law College was established in 1983 with a humble beginning, having the name of Aizawl Law College with the initiatives of some prominent citizens, academicians and politicians. First Law class was held at the Govt. J. L. High School (now Govt. J. L. Higher Secondary School) on the 25th August, 1983 and was formally inaugurated by Brig. T. Sailo, the then Chief Minister of Mizoram on the 7th September, 1983. Thereafter, Liandingpuia Law College was established in 1996. Ultimately, Mizoram Government amalgamated the two law colleges in July, 2004 and hence, the college is named as Mizoram Law College w.e.f. October, 2004. The college was firstly affiliated with North-Eastern Hills University (NEHU), Shillong, Meghalaya. Then, with the establishment of Mizoram University in 2000, the college becomes affiliated to the Mizoram University. Mizoram Law College was upgraded to Deficit Grant-in-Aid status on 25th August, 2006 and provincialised on 19th September, 2013.

3.3.10.1 Library Facilities

Mizoram Law College Library was established in 1983. The college library belongs to the State Government. The collections are also large in volumes. The library is automated in 2012. The library has a future plan for ICT based services to subscribe database, e-resources, e-books, and online journals etc.

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CHAPTER – IV

DATA ANALYSIS AND FINDINGS

4.1 Introduction

The application of ICT on library basically employ on its routine functions like acquisition, technical processing, circulation, periodical management, stack verification, digitization and other maintenance works of library. To save the time of the user as well as library workers, nowadays, computerization work is very much important for library. ICT provides such platform through which librarians can provide enhanced and very much improved library services to their users well in time. In present day scenario, libraries as well as librarians have to face many challenges; some of them are:

- Change in the information needs of the users
- Change in the information habit of the users
- Openness of libraries to people (with OPAC, Websites, & Social Networks), and
- Networking which has made possible to expand access to resources.

To cope up with the above mentioned challenges, the libraries have to employ ICT infrastructure. Another side, libraries have shown progress over the past few years due to application of ICT based tools and technologies in their services & facilities.

4.2 Data Analysis & Interpretation

The data analysis and its interpretation have been done to fulfill the purpose of the work and getting meaningful findings from the collected data. The data analysis & its interpretation have been divided into two sections (4.2.0 & 4.3.0) as mentioned below:

- A. Librarians' View/ Library Data (Status of ICT Application in College Libraries)
- B. Users View/ Users Data (Users Satisfaction with ICT Application)

4.2.0 (Librarians' View/ Library Data)

4.2.1 Funding Source of Institution (N=10)

Table 4.2.1: Funding Source of Institution

Funding Source of the Institution	No. of Institutions
State Govt.	9
Central Govt.	1
Semi Govt.	0
Autonomous State Govt.	0
Autonomous Central Govt.	0
Private Sector	0
Any Other	0

Table 4.2.1 shows that majority of colleges of Aizawl city funded by the State Government and only one college i.e. Pachhunga University College is funded by Central Government. The libraries also receive their fund through colleges which belongs to State Government.

4.2.2 Availability of Library Website (N=10)

Table 4.2.2: Library Website Presence

Having Library Website	No. of Libraries
Yes	6
No	4

Availability of Library Website

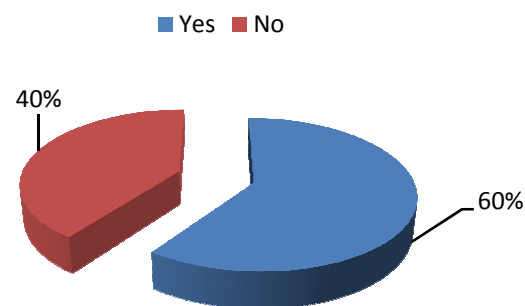


Fig: 4.2.1

Fig. 4.2.1 gives information about the colleges of Aizawl city whether they were having separate library website/ webpage or not. The result shows that 60% college libraries were having a library website whereas 40% libraries were not having the separate website.

4.2.3 Availability of Separate Library Building (N=10)

Table 4.2.3: Availability of Separate Library Building

Having Library Building	No. of Libraries
Yes	4
No	6

Availability of Separate Library Building

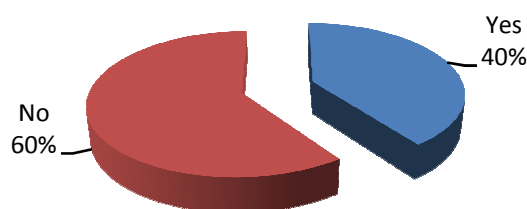


Fig: 4.2.2

Fig.4.2.2 reveals the status of college library building of ten colleges of Aizawl city. The result shows that most of the college libraries (60%) in Aizawl city don't have a separate library building whereas only 40% college libraries were separated from the college's main building and have separate building.

4.2.4 Sitting Capacity of Library (N=10)

Table 4.2.4: Sitting Capacity of Library

Sitting Capacity Range	No. of Libraries
Upto 50	8
51-100	1
101-150	0
151-200	1
201-250	0

Sitting Capacity of Library

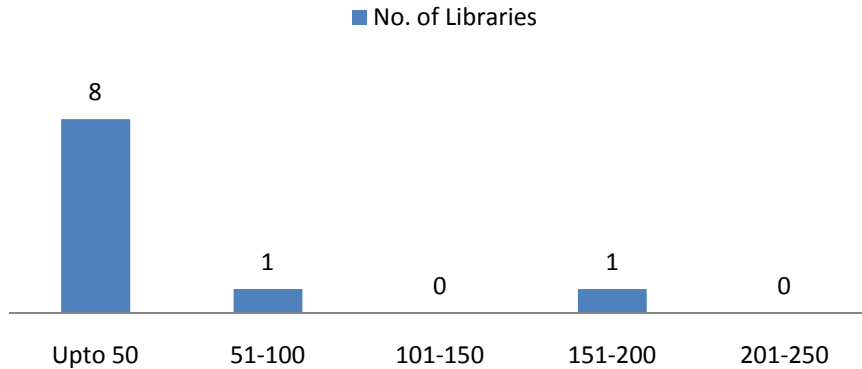


Fig: 4.2.3

Fig.4.2.3 gives information about the sitting capacity of the users in the college libraries of Aizawl city. From the analysis, it has been found that majority of libraries (80%) are having the sitting capacity of less than 50 readers at a time. There are only few libraries having more than 50 readers sitting capacity. Only one college library have sitting capacity upto 200 which was highest among all of the college libraries.

4.2.5 Working Hours of Library (N=10)

Table 4.2.5: Working Hours of Library

Working Hours	No. of Libraries
Upto 8 Hours	10
More than 8 Hours	0

Table 4.2.5 display that all of the college libraries of Aizawl city opens for 8 working hours in a day. There is no library which is exceeding more than 8 working hours in a day.

4.2.6 Academic & Professional Qualifications

To know the librarians academic background, study has been conducted and found that only two librarians have shown interest to provide their educational background related to academic degree. These two librarians possess the Masters Degree and Bachelor of Law and Diploma Degree in Public Administration.

Table 4.2.6: Librarians Professional Qualification

Highest Professional Degree	No. of Librarians
Diploma in LIS	0
Bachelor in LIS	1
Master in LIS	6
M Phil in LIS	1
PhD in LIS	2

On the analysis of librarian's highest professional qualifications, it has been found that majority (60%) of librarians have qualified Masters Degree in Library Science whereas only 20% have Ph. D. in LIS and 10% have M. Phil. in LIS. There is only 10% librarians have Bachelor Degree in Library Science.

4.2.7 Staff Availability in Library

Table 4.2.7: No. of Library Staff

Name of College	Professionals	Semi-Professionals	Professional with IT Competence	Non-Professional
GTRC	1	0	0	1
HBC	1	1	0	2
GAC	1	0	3	0
GJC	1	1	0	0
GAWC	1	1	0	1
PUC	1	2	6	2
ZRSC	1	1	0	1
GANC	2	0	0	1
MLC	1	1	0	1
GJTC	1	0	0	2

Table 4.2.6 shows the staff strength of the ten college libraries of Aizawl city. It has been observed that PUC is having 6 professional staff with IT competence and the Government Aizawl College also having 3 professionals but the rest of the college libraries don't having IT professionals. There is availability of professionals with every college library but some college libraries do not have non-professional staff also.

4.2.8 Availability of Separate Library Budget (N=10)

There is lack of separate library fund/ budget for collection development and for the development of ICT infrastructure.

Table 4.2.8: Availability of Separate Budget

Availability of Budget	No. of Library
Yes	0
No	10

4.2.9 Status of E-Documents in Library

Table 4.2.9: Status of Library Collection

College Library	Audio/Visual Cassettes/CDS	Indian E-Journals	Foreign E-Journals	Databases
GTRC	6	0	0	0
HBC	4	200	700	0
GAC	0	0	0	0
GJC	0	0	0	0
GAWC	0	0	0	0
PUC	0	0	1	0
ZRSC	0	0	0	0
GANC	20	0	0	0
MLC	15	0	0	0
GJTC	0	0	0	0

On the analysis of table 4.2.9, it has been found that all the college libraries are lacking the sufficient electronic documents collection whether it is available in any form. Only one college library i.e. Govt. Hrangbana College Library had the sufficient number of e-journals from the country and from the foreign also. No college library has access facility of any databases. Audio/visual materials like CDs/DVDs are also not available upto satisfactory level.

4.2.10 Information Searching Pattern in Library

Table 4.2.10: Way of Searching Pattern

Search Method	No. of Library
Through Catalogue card	0
Through OPAC	10
Direct Search on Shelves	4
With Help of Library Staff	2

Information Searching Pattern in the Library

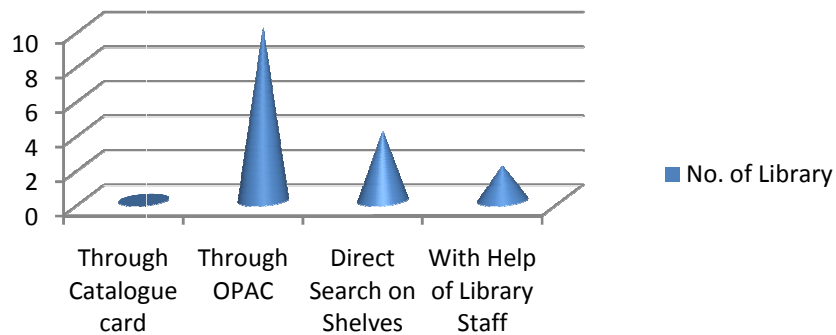


Fig: 4.2.4

The fig. 4.2.4 display the way of locating the reading materials of college libraries. Due to technological advancements, OPAC search has been found most prevalent in every library than direct search on shelves. No user is searching the literature through catalogue card and they have last choice to consult with the library staff.

4.2.11 Computerization of Circulation System (N=10)

Table 4.2.11: Computerization of Circulation System

Status of Circulation System	No. of Library
Computerised	5
Manual	1
Both	4

Status of Circulation System

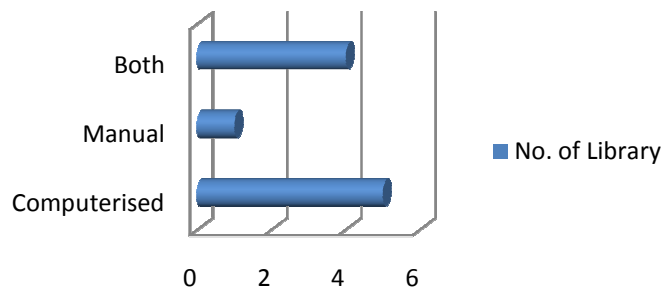


Fig. 4.2.5

From the analysis of fig. 4.2.5, it has been observed that most of the college libraries (50%) were computerized so that they have computerized circulation process in the library. Only 10% college libraries have manual system of circulation process whereas 40% libraries were following both systems i.e. manual method & computerized system of circulation.

4.2.12 Computerized Services offered by Library (N=10)

Table 4.2.12: Computerized Services of Library

Services	No. of Library
CAS	5
SDI	1
Photocopy	8

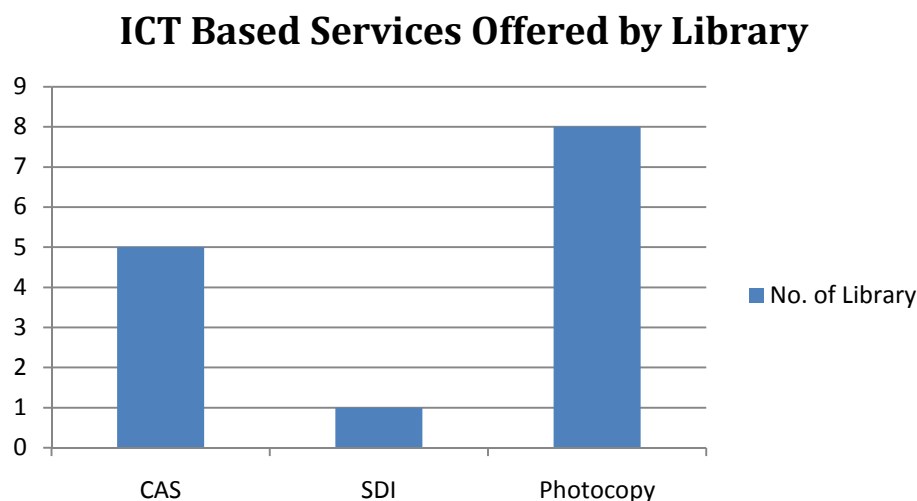


Fig: 4.2.6

The table 4.2.12 and fig. 4.2.6 shows the ICT based services offered by college libraries. The CAS service was offered by 50% college libraries whereas only 10% libraries were offered SDI services to their users. Majority of college libraries (80%) were offering photocopy services to their patrons.

4.2.13 Library Automation Status

Table 4.2.13: Automation Status of Library

Library Automated	No. of Library	Percentage
Yes	9	90%
No	1	10%

The table 4.2.13 shows the current status of library automation of college libraries. On the analysis, it has been found that majority (90%) of college libraries was automated and only 10% were not automated. From the analysis of table 4.2.14, it has been observed that 100% college libraries were using SOUL 2.0 for automating the library.

Table 4.2.14: Software Used in Automation (N=9)

Software Used	No. of Library
SOUL 2.0	9

On the analysis of table 4.2.15, it has been found that majority (78%) of college libraries automated after the year 2010 whereas 22% college libraries were automated before the year 2010.

Table 4.2.15: Year of Automation (N=9)

Automation Completed	No. of Library
Before 2010	2
After 2010	7

On the analysis of table 4.2.16, it has been found that out of 10 college libraries, majority (90%) college libraries were partially automated whereas 10% were under computerization process. There was no library which has fully computerized all the functions of library.

Table 4.2.16: Level of Computerization (N=10)

Status of Computerization	No. of Library
Fully	0
Partially	9
In Process	1

On the analysis of table 4.2.17, it has been observed that all the nine automated libraries (100%) have computerised circulation section then after 56% automated cataloguing section and 44% have OPAC facility. There were few libraries (22%) have automated acquisition section and only 11% have automated serial control management among all 9 college libraries.

Table 4.2.17: Sections Computerized in the Library (N=9)

Sections Computerized	No. of Library (%)
Acquisition	2 (22%)
Circulation	9 (100%)
Serial Control	1 (11%)
Cataloguing	5 (56%)
OPAC	4 (44%)

On the analysis of table 4.2.18, it has been found that only 10% of libraries do not have barcode facility for library functions whereas majority (90%) of college libraries has implemented the barcode in their libraries.

Table 4.2.18: Barcode Implementation (N=10)

Having Barcode	No. of Library
Yes	9 (90%)
No	1 (10%)

Further on the analysis of table 4.2.19, it display that all the automated college libraries were using barcode for circulation work of the library whereas only 2 libraries were utilizing it for annual stack verification work. Beyond these two works, there is no other utilisation option of barcode found in the libraries.

Table 4.2.19: Functions with Barcode (N=9)

Function of Library	No. of Library
Annual Stack Verification	2
Circulation	9
Any other	0

4.2.14 Internet Connectivity in Library - Status

Table 4.2.20: Internet Availability in Library (N=10)

Having Internet Connection	No. of Library
Yes	9
No	1

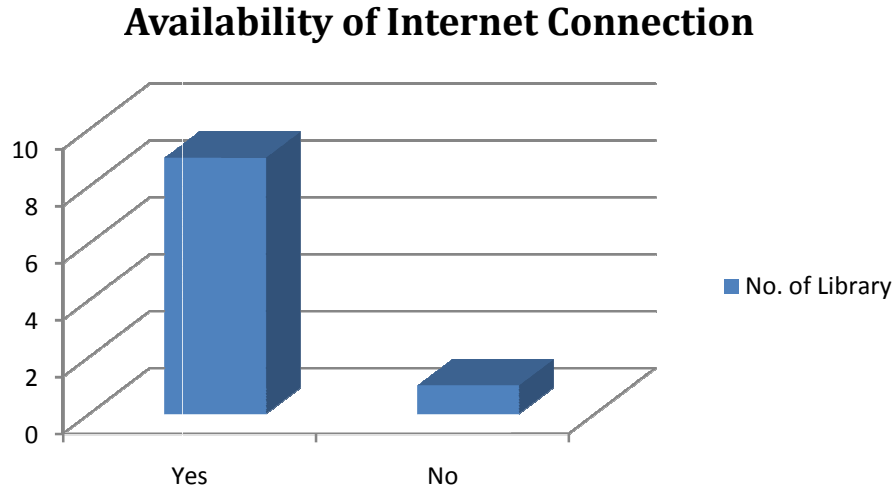


Fig: 4.2.7

The fig. 4.2.7 shows the availability of Internet connection in the college libraries of Aizawl city. There were 90% college libraries which have the Internet connection whereas 10% do not have Internet connection in their libraries. Further on the analysis of table 4.2.21, it has been observed that majority (78%) of the libraries were using Internet for official work as well as information search for the users. For the resource sharing, only 33% college libraries were using the Internet whereas 56% college libraries were using Internet for online database searching for users.

Table 4.2.21: Internet Use in Library (N=9)

Internet Use	No. of Library
Office Work	7
Information Search	7
Online Database Search	5
Resource Sharing	3

Purpose of Internet Use in Library

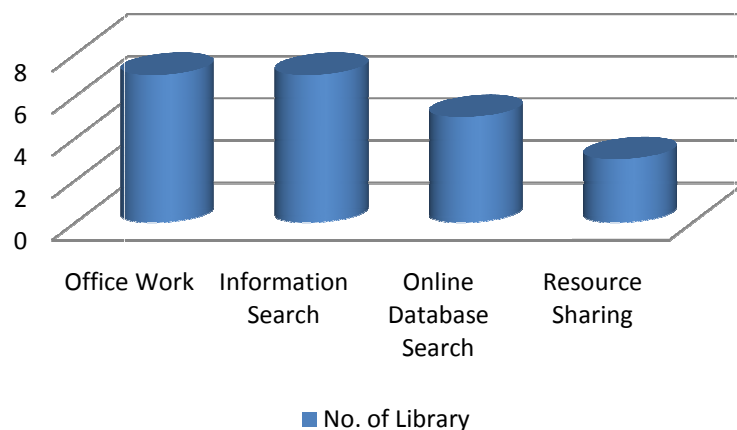


Fig: 4.2.8

4.2.15 Computer's Availability in Library – Status & Use

Table 4.2.22: Computer's Availability in Library (N=10)

No. of Computers	No. of Library
Less than 5	2
Between 6 - 10	6
Between 11 - 15	1
Between 16 - 20	0
Between 21 - 25	1

This table (4.2.22) shows the availability of computers in the college libraries. On the observation of computer's availability, it has been found that 20% college libraries have less than 5 computer machines in their library whereas 10% college libraries have 11-15 computers. The majority (60%) of libraries have computers between 6-10. There were only 10% college libraries that have more than 20 computers in their library.

Table 4.2.23: No. of Internet Connections in Library (N=9)

No. of Connections	No. of Library
Less than 5	5
Between 6 - 10	4

Internet Connectivity vs No. of Computers

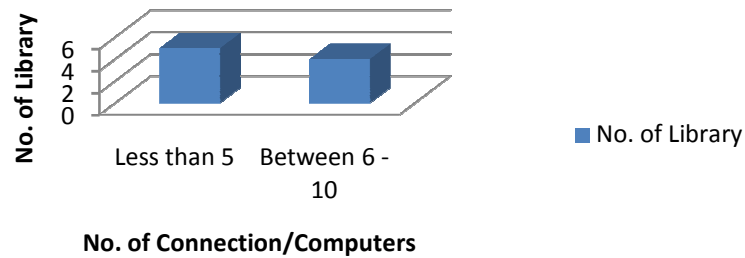


Fig: 4.2.9

The table (4.2.23) and figure 4.2.9 reveals about the Internet connectivity available on number of computers. There were majority (56%) of college libraries have Internet connections upto 5 machines whereas 44% college libraries have Internet connections on 6-10 machines.

Table 4.2.24: Internet Connection Types (N=9)

Connection Types	No. of Library
Dial-Up	1
Leased Line	4
V-SAT	0
Cable Network	1
Wireless Network	2
No information	4

Table 4.2.24 displays the Internet connection types of college libraries of Aizawl city. Out of 9 college libraries, Dial-up connection has been used by one library whereas Leased Line has been used by 4 libraries. No library was using V-SAT connection. The Cable Network system was used by the single library whereas only 2 libraries were using Wireless Network facility for Internet. There were 4 libraries who have not given any information regarding their Internet connection types. This may be due to ignorance of librarians about Internet connection types.

Type of Internet Connection

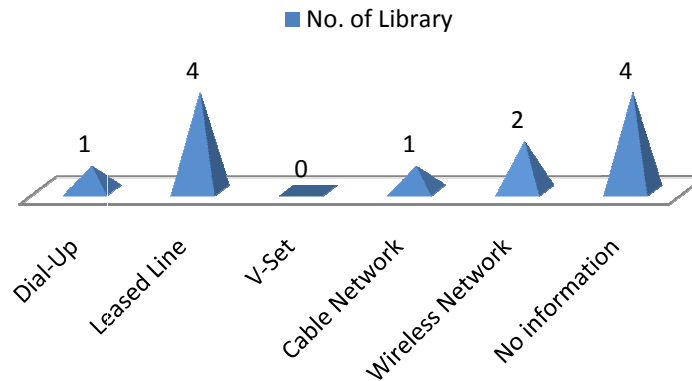


Fig: 4.2.10

Table 4.2.25: Internet Service Charge (N=9)

Having Charge	No. of Library
Yes	0
No	9

There were no college libraries that have charge for Internet use in the library as found from the analysis of table 4.2.25.

4.2.16 Campus LAN – Status & Use

Table 4.2.26: Campus LAN Availability in Library (N=10)

Having Campus LAN	No. of Library
Yes	3
No	7

The table 4.2.26 shows that 30% of the college libraries have Campus LAN facility whereas rest of the 70% college libraries does not have Campus LAN facility.

Table 4.2.27: E-Resources on Campus LAN (N=3)

Response	No. of Library
Yes	3
No	0

Further, there were all the college libraries that have Campus LAN, they have the facility to provide e-resources availability over Campus LAN.

4.2.17 Library Networks Membership – Status & Use

Table 4.2.28: Library Networks Membership (N=10)

Having Membership	No. of Library
Yes	8
No	1
No Response	1

Membership of Library Networks

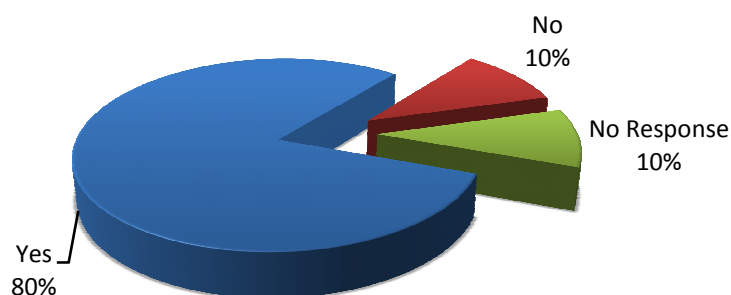


Fig: 4.2.11

The figure (4.2.11) displays the results of membership status of the college libraries of Aizawl city. There were 80% college libraries have professional membership whereas 10% does not have any professional membership. Interestingly 10% libraries do not have responded to the question.

Table 4.2.29: Professional Organisation Membership (N=8)

Professional Organizations	No. of Library
DELNET	0
INFLIBNET	5
OCLC	0
MANLIBNET	0
N-LIST	5
Any Other	0
No Response	2

The table 4.2.29 reveals the college libraries organizational membership details they belongs to and find out that 62.5% of them have joined the INFLIBNET membership and the same percentage also joined N-LIST. There were 25% libraries does not have any response to the question.

4.2.18 Library Consortium – Usefulness

Table 4.2.30: Consortium Use for Resource Sharing (N=10)

Is Consortium Useful	No. of Library
Yes	3
No	0
No Response	7

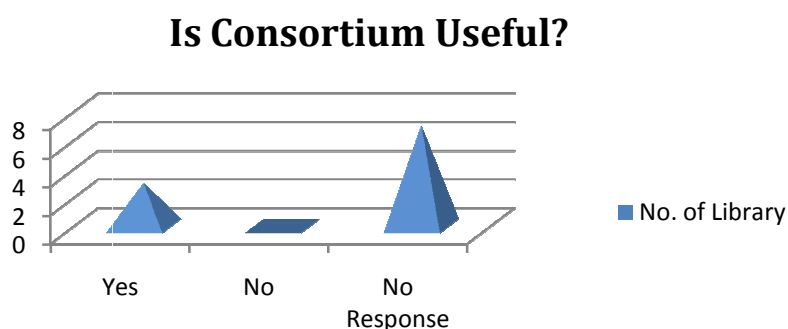


Fig: 4.2.12

Consortium is very much important for library through which it can share and enrich their electronic resources, but only 30% college libraries found it to be useful for them and rest of 70% college libraries had no response to the question. Further, to enquire how consortium is useful for libraries, no librarians have given any response for the query. On the query that whether resource sharing minimizes the cost of library materials? All of the college librarians have accepted that resource sharing minimizes the cost.

4.2.19 Library Services Improvement by using ICT

Table 4.2.31: Library Service Improvement due to ICT (N=10)

Is services improved due to ICT	No. of Library
Yes	7
No	2
No Response	1

The above table shows the improvement of library service through the use of ICT and finds out that 70% of the college libraries have improved their services due to ICT implementation and only 20% of them were not much agrees with the service improvement through ICT implications. 10% college libraries have no response to the question.

4.2.20 RFID Application in Library (N=10)

Table 4.2.32: Status of RFID Application (N=10)

Having RFID	No. of Library
Yes	1
No	9

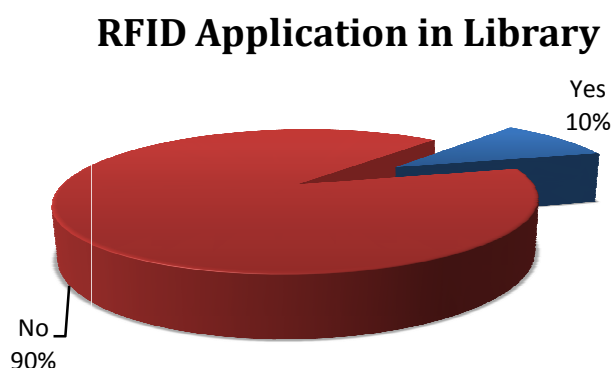


Fig: 4.2.13

The figure 4.2.13 shows application of RFID in the college libraries of Aizawl city and found that most of the college libraries (90%) were not having RFID and only 10% college libraries have implemented RFID application in libraries. Further, to know the future plan to adopt RFID application, out of 9 college libraries, only 22% responded to have RFID in future whereas 78% have no plan to adopt RFID in future (as shown in figure 4.2.14).

Table 4.2.33: Future Plan to Adopt RFID (N=9)

Future Plan for RFID	No. of Library
Yes	2
No	7

Future Plan for RFID

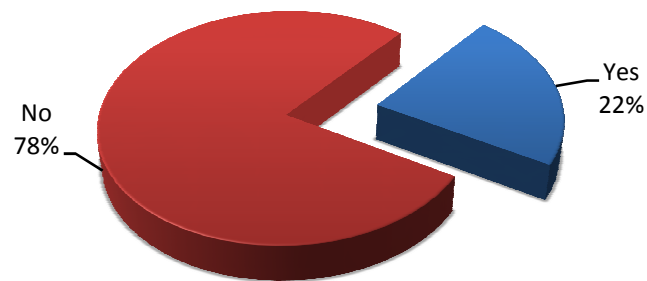


Fig: 4.2.14

4.2.21 Skilled Library Staff to Manage ICT Tools (N=10)

Table 4.2.34: Skilled Library Staff Availability (N=10)

Having Skilled Staff	No. of Library
Yes	3
No	7

Having Skilled Library Staff

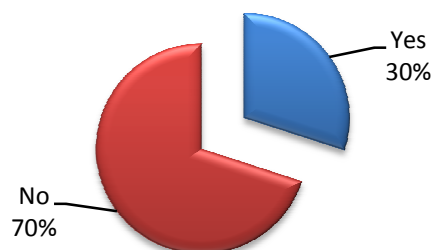


Fig: 4.2.15

The figure 4.2.15 reveals the status of skilled library staffs availability in the college libraries of Aizawl city and found that majority (70%) of college libraries does not have skilled enough staff to manage ICT based resources & services. There are only 30% college libraries have the skilled enough staff to manage ICT based resources & services.

4.2.22 Reasons for Lacking of Skilled Library Staff

On the analysis of reasons behind the lack of skilled enough library staff in college libraries of Aizawl city, it has been found that there is lack of proper ICT based training to library staff, lack of ICT competent staff, and lack of number of staffs in the college libraries. Further, on the analysis of table 4.2.35, it has been found that only 30% college libraries have future plan to train their library staff whereas 60% college libraries does not have any future plan for that. 10% college libraries have no response to the question.

Table 4.2.35: Plan to Train Library Staff (N=10)

Plan for ICT Training	No. of Library
Yes	3
No	6
No Response	1

On the analysis of table 4.2.36, college libraries have two ways to provide ICT based training to their library staff. Majority (67%) college libraries have plan to organize ICT based training in their college whereas 33% college libraries have plan to send the library staff outside for training.

Table 4.2.36: Training Plan (N=3)

Way of Training	No. of Library
Sending them Outside	1
By organizing training program	3

In an answer to the question, it has been found that 60% college librarians were not satisfied with the present ICT infrastructure available in the library whereas only 30% librarians were satisfied with the availability of ICT infrastructure in college libraries. Some (10%) college librarians have not responded to the question.

Table 4.2.37: Training Plan (N=10)

Satisfied with ICT Infrastructure	No. of Library
Yes	3
No	6
No Response	1

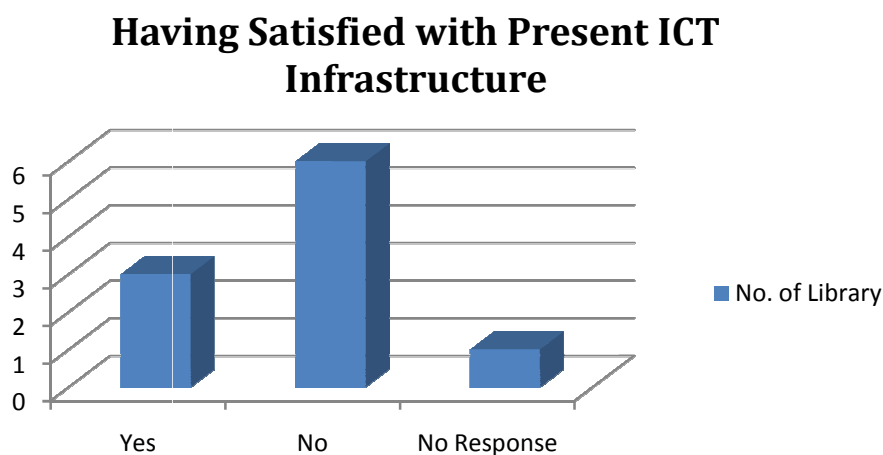


Fig: 4.2.16

Further, to investigate the reason for dissatisfaction with the current ICT infrastructure in college libraries, librarians have responded that they are facing the problem with number of ICT skilled staff in the library and lack of sufficient ICT infrastructure in the college libraries.

4.2.23 Future Plan for ICT based Services in Library

In response to the question, college librarians have given their views with regards to future plan for the development of ICT based services in their library. Some important future plans given by the librarians have been listed below:

- a) To improve library resource sharing
- b) To make library fully automated
- c) To increase the use of networked based resources including online databases, e-journals, and e-books
- d) To make the library security RFID enabled, using of smartcard and launching of separate library website

- e) To upgrade the automation software as per requirement
- f) To provide Internet search facility on more no. of computers in the library
- g) To have a separate library building for enhancing the library services and facilities

4.2.23 Suggestion for Improving Libraries ICT Infrastructure

In response to the question, college librarians have suggested to improve college libraries ICT infrastructure as given below:

- a) Recruitment of ICT skilled professional staff
- b) Recruitment of more number of skilled professional staff
- c) Separate budget for developing ICT infrastructure in the library
- d) Organisation of ICT training program for working library staff

4.3.0 Data Analysis & Interpretation (Users View / Users Data)

4.3.1 Questionnaire Response Ratio (College wise)

Table 4.3.1: Questionnaire Response Ratio

College Name (Code)	Questions Distributed	No. of Responses	Response Ratio (%)
PUC	20	14	70
GJC	20	20	100
ZRSC	20	17	85
HBC	20	20	100
GAC	20	12	60
TRC	20	10	50
MLC	20	19	95
JTC	20	13	65
GANC	20	16	80
GAWC	20	16	80
Total	200	157	78.5

The above table (4.3.1) shows the college wise students response to the questionnaire distributed amongst them. The average response ratio of the questionnaire was found 78.5% among all the ten colleges of Aizawl city.

4.3.2 Academic Background of Students

Table 4.3.2: Academic Qualifications (N=157)

Degree	No. of Respondents	Percent
BA	105	66.88
B.Sc.	31	19.75
B.Com	02	1.27
LLB	19	12.10

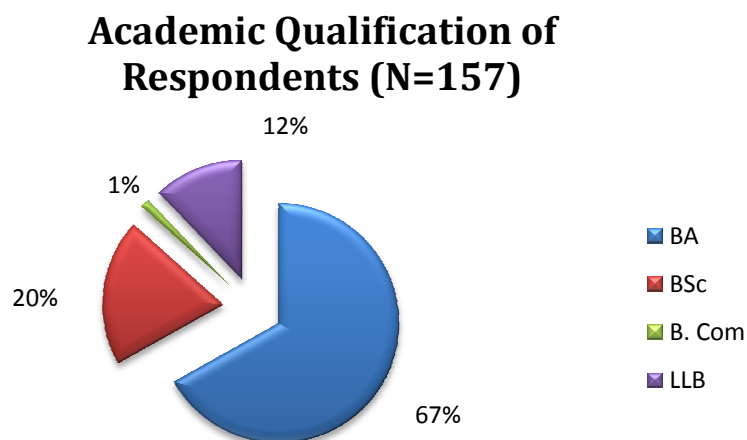


Fig. 4.3.1

Figure 4.3.1 gives the educational qualification of the college students of Aizawl city. On the analysis, about 67% respondent belongs to Bachelor of Arts (BA) background, 20% from Bachelor of Science (B. Sc.), 1% from Bachelor of Commerce background, and 12% respondent belongs to Bachelor of Law.

4.3.3 Semester wise Students Ratio

Table 4.3.3: Semester wise Breakup of Students (N=157)

Semester	No. of Respondents	Percent
1 st Sem	21	13.38
3 rd Sem	63	40.13
5 th Sem	73	46.50

Semester Wise Breakup of Respondents (N=157)

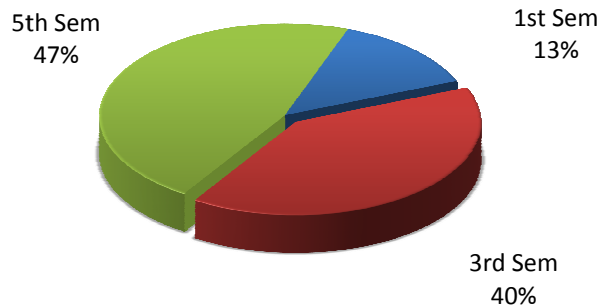


Fig: 4.3.2

This figure reveals about the semester wise breakup of the respondents as shown in the table. The majority (47%) of respondent belongs to 5th semester followed by 3rd semester (40%). The respondents from 1st semester were only 13% which was the least among other two semesters.

4.3.4 Age wise Students Ratio

Table 4.3.4: Age Group Analysis of Students (N=157)

Age Group	No. of Respondents	Percent
Upto 20	83	52.87
21-25	68	43.31
26-30	05	3.18
31-35	01	0.64

The table 4.3.4 shows the Age Group analysis of the respondents. There are 52.87% respondent belongs to the age group of upto 20 years followed by 43.31% respondent from the age group of 21-25 years, and 3% respondent from the age group of 26-30 years. There were less than 1% respondent belongs to age group of 31-35 years.

4.3.5 Gender Analysis of Students

Table 4.3.5: Gender Analysis of Students (N=157)

Gender	No. of Respondents	Percentage
Male	72	45.86
Female	85	54.14

Gender Analysis of Respondents (N=157)

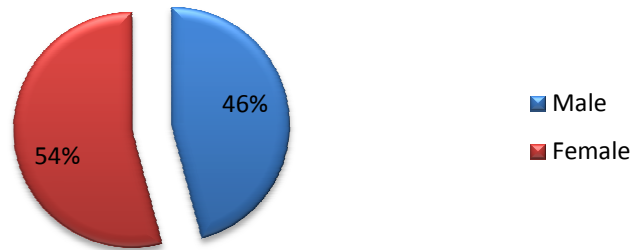


Fig: 4.3.3

The figure 4.3.3 displays the gender analysis of the respondents. There were 54% female respondents and 46% male respondents to the questionnaire.

4.3.6 Library Working Hours

Table 4.3.6: Library Working Hours (N=157)

Working Hours	No. of Respondents	Percentage
> 6 Hours	45	28.66
7-8 Hours	109	69.43
< 8 Hours	03	1.91

Working Hours of Library (N=157)

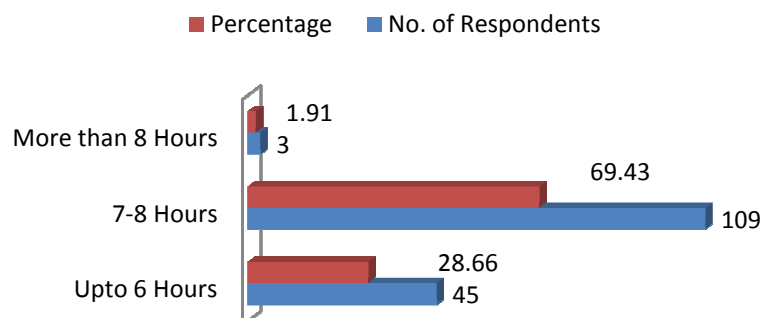


Fig.4.3.4

The figure 4.3.4 shows the awareness of the students about the working hours of their college library. They have given different responses to the question. About 2% respondent said that library opens for more than 8 hours whereas about 29% respondent said that library opens for less than 6 hours. Majority of respondent (69%) said that library opens for 7-8 hours in a day which is relevant with the data provided by college librarians.

4.3.7 Availability of Library Resources

Table 4.3.7: Adequate Library Resources (N=157)

Has Adequate Resources	No. of Respondents	Percentage
Yes	115	73.25
No	26	16.56
No Response	16	10.19

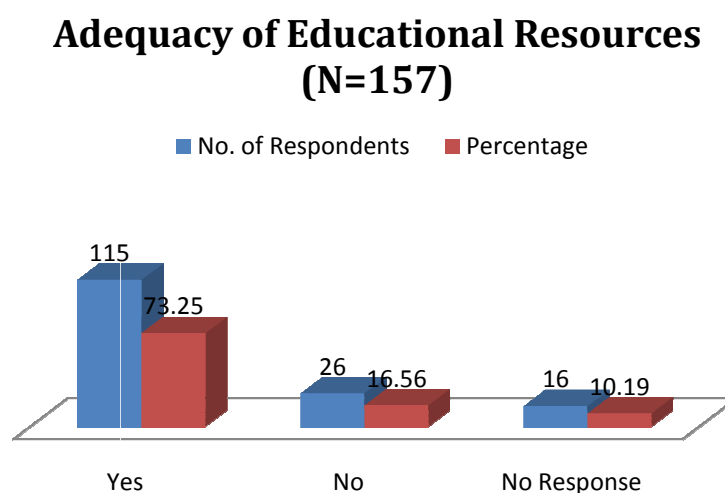


Fig.4.3.5

The figure 4.3.5 highlights the adequacy of educational resources in college libraries of Aizawl city. Majority (73%) of respondents were satisfied/agree with the available library resources whereas about 16% respondents were not satisfied/agree with available educational resources in the library. About 10% respondents were not responded to the question.

4.3.8 Frequency of Library Visit

Table 4.3.8: Frequency of Library Visit (N=157)

Frequency	No. of Respondents	Percentage
Daily	65	41.40
Weekly	55	35.03
Monthly	07	4.46
Occasionally	30	19.11

The above table (4.3.8) shows the frequency of library visited by the students. According to the table given, the college students have responded that there were 65 students (41.40%) who visits the library daily, and 55 students (35.03%) were the weekly visitors, and 4.46% students were monthly visitors of the library. The rest 30 students (19.11%) were visiting library occasionally.

4.3.9 Way to Access the Resources

Table 4.3.9: Way of Access to Resources (N=157)

Way of Access	No. of Respondents	Percentage
Intranet	5	3.18
Internet	79	50.32
Department Library	28	17.83
Any Other	1	0.64
No Response	44	28.03

The table 4.3.9 shows the way of accessing resources by the students if not visited the library through different components such as Intranet by 5 students (3.18%), through Internet by 79 students (50.32%), department library by 28 students (17.83%), and any other method by 1 student (0.64%). Interestingly, 44 students (28.03%) have not responded the question.

4.3.10 Purpose to Visit Library

Table 4.3.10: Purpose to Visit Library (N=157)

Purpose	No. of Respondents	Percentage
Borrow Books	95	60.51
Study	33	21.02
Read Periodicals	14	8.92
All Above	09	5.73
Others	06	3.82

Purpose to Visit the Library (N=157)

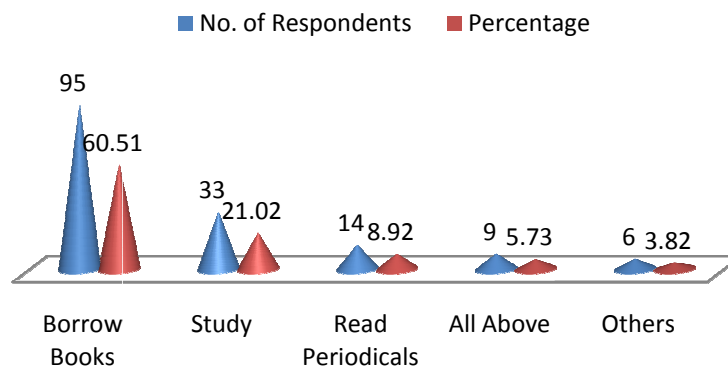


Fig. 4.3.6

The table (4.3.10) and figure (4.3.6) shows the purpose of visiting libraries by the students. There were 95 students (60.51%) visits the library to borrow the books, 33 students (21.02%) visits the library for study purpose, 14 students (8.92%) visits to read periodicals, and 9 students (5.73%) visits for all above mentioned activity in the library. There were 6 students (3.8%) visits the library but not mentioned for what purpose they were visiting the library.

4.3.11 Usefulness of Library

Table 4.3.11: Usefulness of Library (N=157)

Level of Usefulness	No. of Respondents	Percentage
Very Useful	89	56.69
Useful	65	41.40
Least Useful	03	1.91

On the analysis of table 4.3.11, it has been found that, majority (57%) of respondent said that library is very useful whereas 41% respondent feels that it is useful for them. There were 2% respondents thought that library is not very much useful i.e. least useful. By responding this, they declined the use of library in their studies.

4.3.12 Frequent Use of Library Resources

Table 4.3.12: Frequently Used Resources (N=157)

Resources	No. of Respondents	Percentage
Print Sources	115	73.25
Online Sources	22	14.01
Web Sources	16	10.19
CD-ROM/DVDs	0	0.00
Bulletin Board	0	0.00
Others	0	0.00
No Response	5	3.18

Frequently Used Library Resources (N=157)

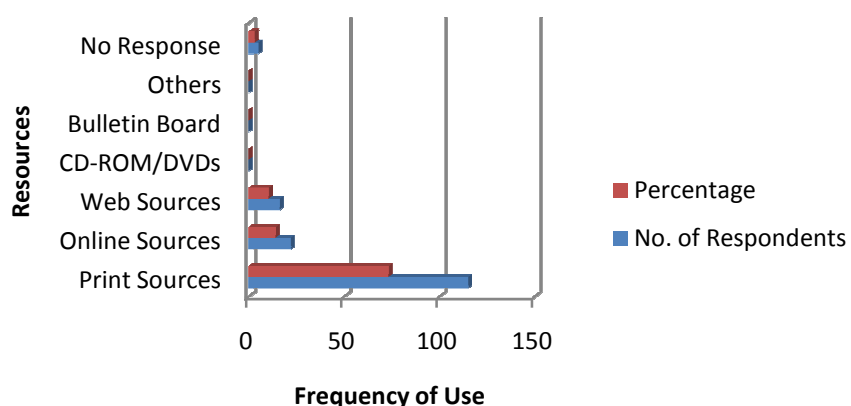


Fig. 4.3.7

The figure (4.3.7) shows the frequently used library resources by the college students. Print resources were used by majority of the (73%) of the respondents whereas online resources were used by only 14% respondents. The web sources specially Internet were used by 10% of the respondents. Other resources were not used by any of the respondents whereas 3% respondents have no answer for the question.

4.3.13 Library Automation Status

Table 4.3.13: Automation of Library (N=157)

Library Automated	No. of Respondents	Percentage
Yes	107	68.15
No	36	22.93
No Response	14	8.92

Whether Library Automated

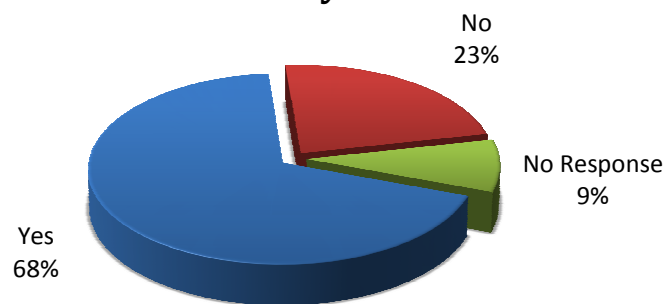


Fig. 4.3.8

The figure 4.3.8 shows the automation status of college libraries in view of college students (respondents). On the analysis, 68% respondents were responded positively to the question whereas 23% respondents were negative to the question. There were 9% respondents have no answer for the question.

Table 4.3.14: Automation Status of Library (N=107)

Automation Status	No. of Respondents	Percentage
Fully	28	26.17
Partially	42	39.25
In Process	27	25.23
No Response	10	9.35

Library Automation Status (N=107)

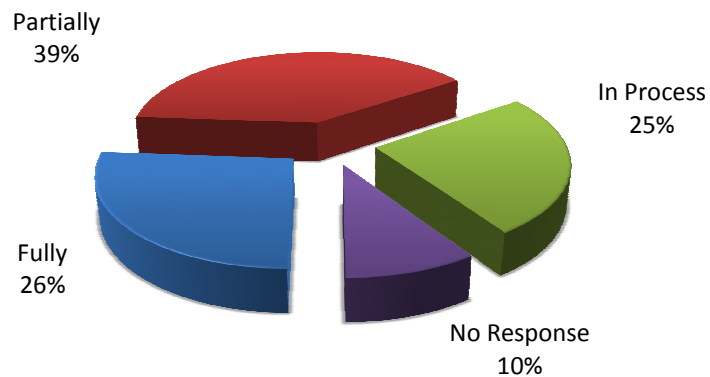


Fig.4.3.9

The table (4.3.14) and figure (4.3.9) have shown the automation status of the college libraries of Aizawl city in view of the respondents. There were 26% respondents who said that library is fully automated while 39% respondents (majority) said that library is partially automated. About 10% respondents had no response to the question while 25% respondents said that library automation work was in process.

4.3.14 Availability of Web OPAC

Table 4.3.15: Availability of Web OPAC (N=157)

Have Web OPAC	No. of Respondents	Percentage
Yes	58	36.94
No	67	42.68
No Response	32	20.38

Availability of Web OPAC (N=157)

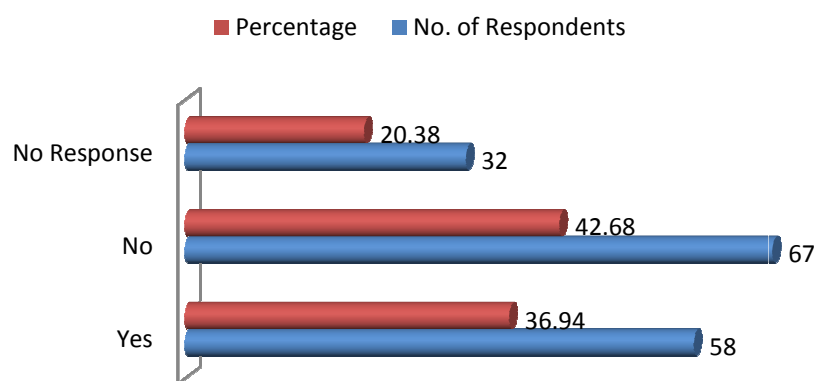


Fig.4.3.10

The figure 4.3.10 shows the availability of Web OPAC / OPAC in college libraries of Aizawl city. There were 37% respondents said that Web OPAC/ OPAC is available in their library whereas 43% respondents said negatively to the question. There were a significant number of respondents that were not given any kind of view to the question.

4.3.15 Availability of RFID

Table 4.3.16: RFID Application in the Library (N=14)

Have RFID	No. of Respondents	Percentage
Yes	8	57.14
No	6	42.86

Table 4.3.16 shows awareness of respondents with regard to RFID application in their college library. In Aizawl city, there was only one college library that had implemented the RFID (i.e. PUC Library). The total no. of responses received from the college was 14 out of 20 (70%). Out of these 14 respondents, 57% were said that library is having RFID whereas 43% respondents were unaware about it and said “No” to the question.

4.3.16 Availability of Internet Facility

Table 4.3.17: Internet Facility in the Library (N=157)

Have Internet Access	No. of Respondents	Percentage
Yes	135	85.99
No	17	10.83
No Response	05	3.18

Internet Facility in Library (N=157)

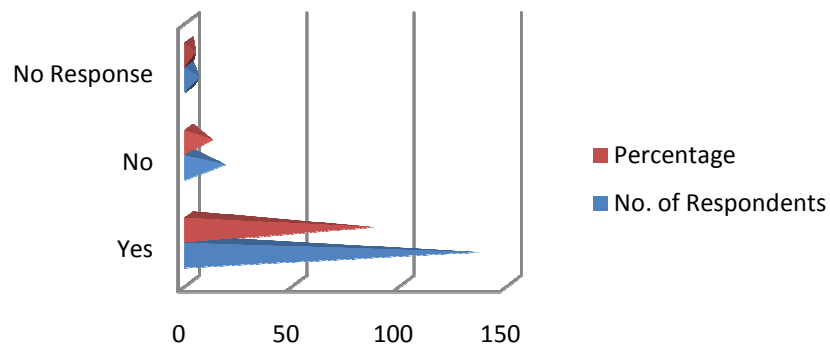


Fig. 4.3.11

On the analysis of table 4.3.17 and figure 4.3.11, it has been found that 86% respondents said that Internet access is available in their college library whereas 11% said that no Internet facility in the library. About 3% respondents had no response for the said query.

Table 4.3.18: Satisfied with Internet Access (N=135)

Satisfied	No. of Respondents	Percentage
Yes	107	79.26
No	25	18.52
No Response	03	2.22

On the analysis of table 4.3.18, out of 135 respondents, 79% were satisfied with Internet facility in the library while 19% were not satisfied, and 2% had no response to the question.

Table 4.3.19: Reason for Dissatisfaction with Internet Access (N=25)

Reasons	No. of Respondents	Percentage
Lack of Computers	03	12.00
Slow Speed/ Poor Signal	11	44.00
Both Above	03	12.00
No Response	08	32.00

Further, on the analysis of dissatisfaction for the Internet access by the respondents (N=25), it has been observed that slow speed/poor signal (44%), and lack of sufficient computers (12%) were the main causes. There were 12% respondents were said both above for their dissatisfaction with the Internet access facility whereas 32% respondents were not mentioned their reason for dissatisfaction.

4.3.17 Availability of E-Resource Service

Table 4.3.20: Availability of E-Resource Service (N=157)

E-Resource Service	No. of Respondents	Percentage
Yes	73	46.50
No	63	40.13
No Response	21	13.38

Availability of E-Resource Service (N=157)

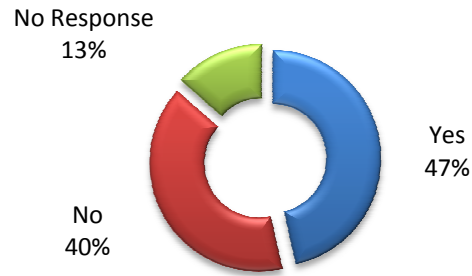


Fig. 4.3.12

On the analysis of figure 4.3.12, there were 47% respondents said that e-resource services had been provided by the library while 40% respondents said “No”. Reasonable number (13%) respondents have no any response to the query.

Table 4.3.21: E-Resource Types (N=73)

Type of E-Resource	No. of Respondents	Percentage
E-Book	25	34.25
E-Journal	11	15.07
E-Encyclopedia	32	43.84
E-Report	05	6.85
Others	0	0.00
No Response	10	13.70

Further, on the analysis of e-resource types available in the college libraries, it has been observed that Encyclopedia (44%), E-Books (34%), E-Journals (15%), and E-reports (7%) were the major e-resource types available in the college libraries as responded by the college student. About 14% respondents have not given any answer.

4.3.18 Availability of Library Consortium

Table 4.3.22: Availability of Consortium Service (N=157)

Having Consortia Service	No. of Respondents	Percentage
Yes	17	10.83
No	102	64.97
No Response	38	24.20

Availability of Consortia Service (N=157)

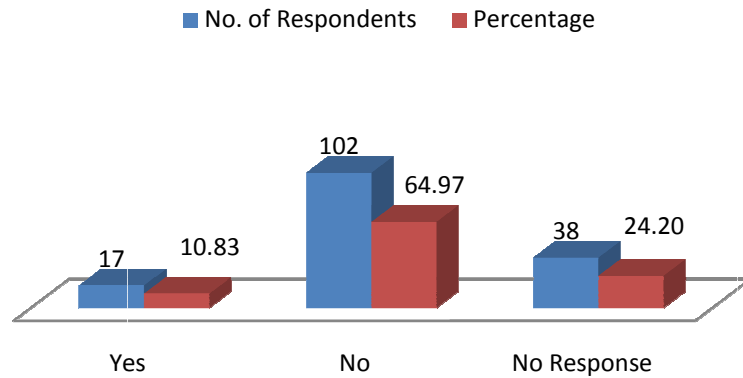


Fig. 4.3.13

In response to the question that does library provide consortia service? Majority of respondents (65%) said “No” to the question while only 11% respondents said “Yes”. There were 24% respondents that have not given any answer to the question.

4.3.19 Facing Problem in Accessing E-Resources

Table 4.3.23: Facing Problem during Access (N=157)

Facing Problem	No. of Respondents	Percentage
Yes	54	34.39
No	81	51.59
No Response	22	14.01

The table 4.2.23 shows whether users were facing problem during access of e-resources or not, majority (52%) respondents said “No” while 34% respondents faced problems during access of e-resources. About 14% respondents were silent on this issue and not responded to the question.

Table 4.3.24: Get Helped by Library Staff (N=54)

Get Helped	No. of Respondents	Percentage
Yes	40	74.07
No	14	25.93

Further, in response to the problem faced during access of e-resources, whether users get helped by the library staff or not, table 4.3.24 displays the result to the question, and after analysis found that 74% respondents were got helped from library staff whereas 26% respondents said they were not helped by anyone in the library.

4.3.20 Orientation Program Attended

Table 4.3.25: Orientation Program for using E-resources (N=157)

Get Oriented	No. of Respondents	Percentage
Yes	50	31.85
No	88	56.05
No Response	19	12.10

Orientation for Use of E-Resources (N=157)

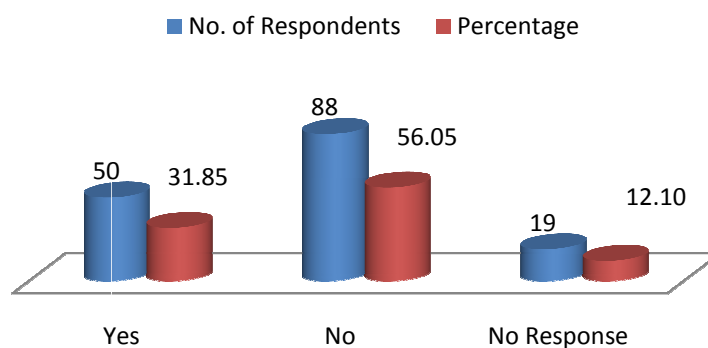


Fig. 4.3.14

The figure 4.3.14 shows the orientation program attended by the respondents for the use of e-resources. Result shows that 32% respondents had attended the said program while majority (56%) of respondents said “No.” About 12% respondents had no answer so they have not responded to the question.

4.3.21 Availability of Adequate ICT Infrastructure

Table 4.3.26: Availability of ICT Infrastructure (N=157)

Having ICT Infrastructure	No. of Respondents	Percentage
Yes	76	48.41
No	65	41.40
No Response	16	10.19

Availability of Adequate ICT Infrastructure (N=157)

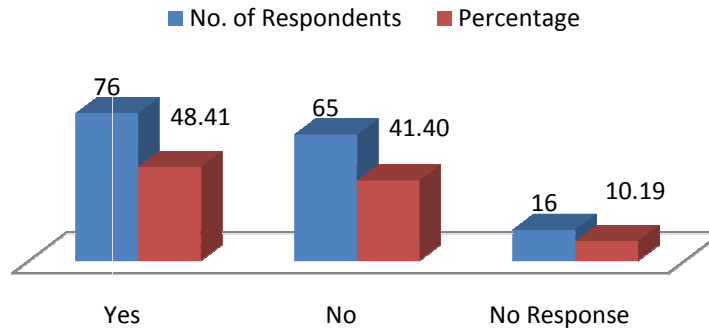


Fig. 4.3.15

To study the availability of adequate ICT infrastructure in college libraries of Aizawl city, data collected from students and tabulated in table 4.3.26. After the analysis of table and figure (4.3.15), it has been observed that 48% respondents replied positively while 41% respondents said “No.” There were 10% respondents who have not responded for the question.

Table 4.3.27: Availability of ICT Services (N=157)

Getting ICT Services	No. of Respondents	Percentage
Yes	74	47.13
No	66	42.04
No Response	17	10.83

Further, to know the availability of sufficient ICT services, data represented in table 4.3.27 and on analysis found that 47% respondents were getting ICT services and 42% respondents were not getting the ICT services from the library. About 11% respondents have no answer for the question.

4.3.22 Preferred Information Source in the Library

Table 4.3.28: Preferred Information Source (N=157)

Information Source	No. of Respondents	Percentage
Journals	10	6.37
Internet Sources	68	43.31
Text Books	88	56.05
Conference Proceedings	5	3.18
Other Sources	4	2.55
No Response	7	4.46

Preferred Information Source (N=157)

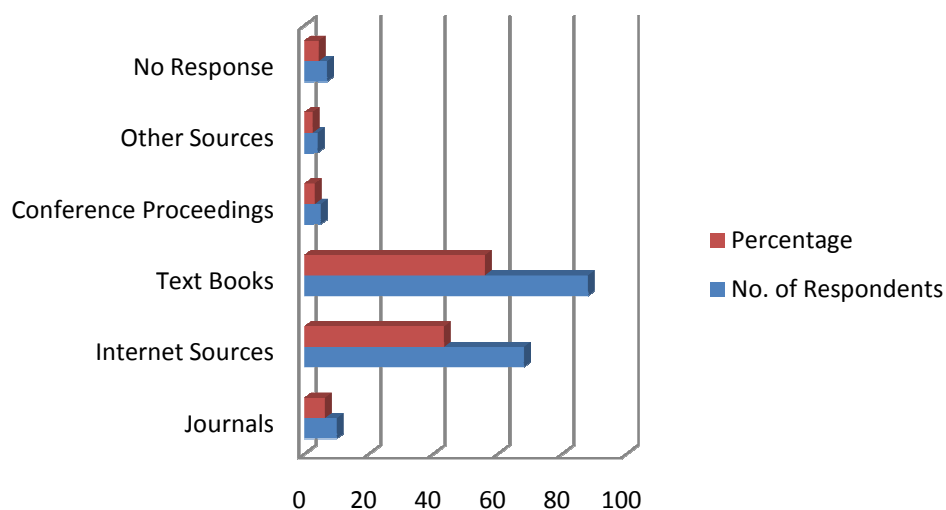


Fig. 4.3.16

The table (4.3.28) and figure (4.3.16) shows the preferred information source used by them from the library. Journals have been preferred by only 6.37% respondents whereas Conference Proceedings have been preferred by 3% respondents only. In ICT environment, Internet sources have been preferred by 43% respondents. The majority of respondents (56%) preferred text books as their reading material from the library.

4.3.23 Level of Awareness of ICT Tools & Techniques

Table 4.3.29: Awareness of Computer Handling (N=157)

Level of Awareness	No. of Respondents	Percentage
Very Good	18	11.46
Good	88	56.05
Poor	30	19.11
Don't Know	13	8.28
No Response	8	5.10

Awareness of Computer Handling (N=157)

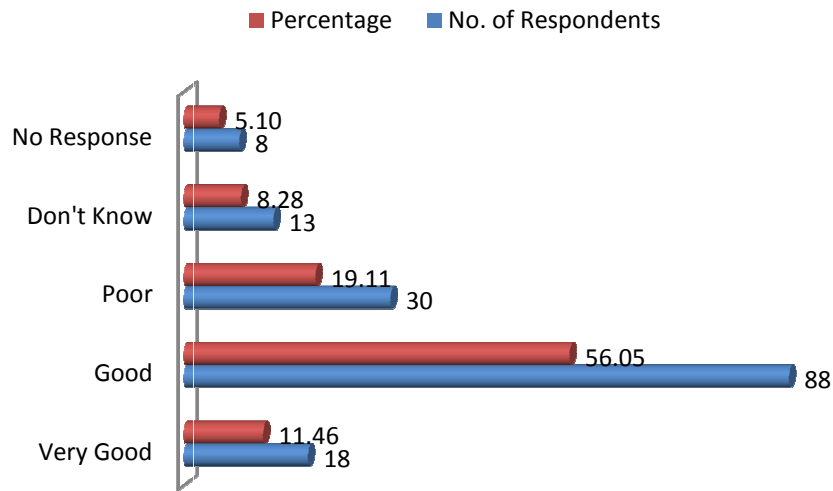


Fig. 4.3.17

Table 4.3.29 shows the respondents level of awareness of handling the computer operation and found that 56% respondents declared themselves as Good in computer handling followed by Poor (19%), Very Good (11.46%), Don't Know (8.28%), and No response (5%).

Table 4.3.30: Awareness of Software Handling (N=157)

Level of Awareness	No. of Respondents	Percentage
Very Good	07	4.46
Good	61	38.85
Poor	46	29.30
Don't Know	35	22.29
No Response	08	5.10

Awareness of Software Handling (N=157)

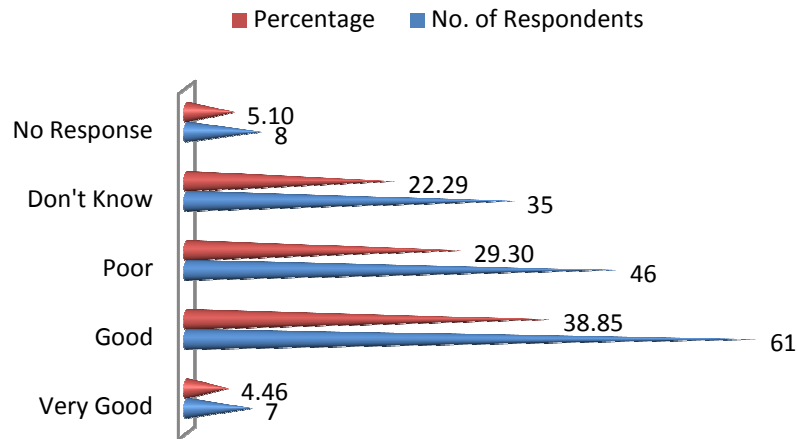


Fig. 4.3.18

Table 4.3.30 shows the respondents level of awareness of handling the software and found that 38.85% respondents declared themselves as Good in software handling followed by Poor (29.30%), Don't Know (22.29%), Very Good (4.46%), and No response (5.10%).

Table 4.3.31: Awareness of Handling Social Networking Sites (N=157)

Level of Awareness	No. of Respondents	Percentage
Very Good	27	17.20
Good	85	54.14
Poor	27	17.20
Don't Know	10	6.37
No Response	8	5.10

Awareness of SNS Handling (N=157)

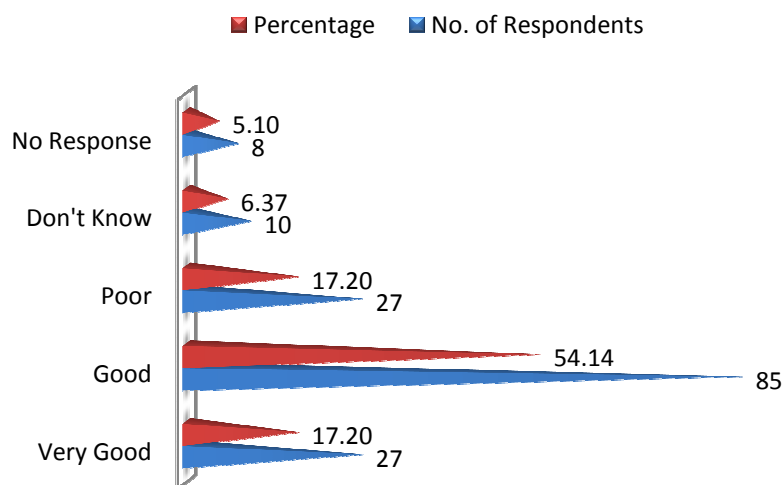


Fig. 4.3.19

The table 4.3.31 and figure (4.3.19) reveals important application in today's environment. It is about the awareness of handling the social networking sites and found the responses from the students. Respondents rated themselves Very Good (17%), Good (54%), Poor (17%), Don't Know (6%), and No response (5%).

4.3.24 Suggestions to Improve ICT Infrastructure of Library

In response to the question, college students (respondents) have some suggestions to improve ICT infrastructure of college libraries as given below:

- Installation of integrated library automation software
- High speed Internet with Wi-Fi accessibility to access the information resources
- Increase in number of computers for Internet access in the library
- Increase in number of sitting capacity of library
- Separate library building required to have library more spacious
- Acquisition of more e-resources (e-books, e-journals, etc.)
- Recruitment of ICT skilled professional staff

4.4 Major Findings of the Study

The findings of the study categorized in to two sections: one from librarians' data and another from users' data.

4.4.1 Findings from Librarians' Data

- Except one college library, other 9 college libraries are funded by the state government. Due to getting insufficient fund from state government, libraries have no proper ICT infrastructure in the college library.
- Majority (60%) of college libraries have separate library website.
- Most of the college libraries (60%) of Aizawl city don't have their own library building which creates problem in growth of library because library is a growing organism.
- Majority of college libraries (80%) are having less sitting capacity i.e. upto 50 readers at a time.
- College libraries of Aizawl city opens for 8 hours in a day which is an ideal situation but it may be increased for the users.
- On the analysis of librarian's highest professional qualifications, majority (60%) of librarians have qualified Masters Degree in Library Science whereas only 20% have Ph. D. in LIS and 10% have M. Phil. in LIS.
- In terms of professional staff in the library, only one college library has 6 professional staff with IT competence and others are facing staff problem.
- No any college library is getting separate library fund/ budget from the authority for the development of ICT infrastructure.
- All the college libraries are lacking with the sufficient electronic resources.
- Due to technological advancements, OPAC search has been found most prevalent in every library than direct search on shelves.
- About 50% college libraries are having computerized service. CAS service is offered by 50% college libraries whereas 10% college libraries offering SDI services to their users. Majority of college libraries (80%) are offering photocopy services to their users.

- Majority (90%) of college libraries is automated but partially and 100% college libraries are using SOUL 2.0 library automation software. Further, majority (78%) of college libraries automated after the year 2010.
- About 90% college libraries have the Internet connection and out of that majority (78%) of the libraries are using it for official work as well as information search for the users. Internet is used for resource sharing by 33% college libraries and 56% college libraries are using Internet for online database searching.
- Majority (60%) of college libraries have computers between 6–10. There are only 10% college libraries which have more than 20 computers in their library.
- In terms of Internet connection, 56% college libraries have Internet connections upto 5 machines whereas 44% college libraries have Internet connections on 6-10 machines.
- About 80% college libraries have professional membership whereas 10% does not have any professional membership. Out of them 62.5% have joined the INFLIBNET & N-LIST membership.
- There are 30% college libraries which have found consortium as useful resource.
- About 70% college librarians have accepted that they have improved their services due to ICT implementation.
- About 90% college libraries do not having RFID system and only 22% have planned to implement RFID in future.
- About 70% college libraries do not have ICT skilled enough staff to manage ICT based resources & services.
- Lack of proper ICT based training to library staff, lack of ICT competent staff, and lack of number of staffs in the college libraries are major problem for lack of ICT trained staff. Further, only 30% college libraries have future plan to train their library staff and majority (67%) of college libraries have plan to organize ICT based training in their college itself whereas only 33% college libraries have plan to send them outside for ICT based training.
- About 60% college librarians are not satisfied with the present ICT infrastructure available in their library.

4.4.2 Findings from Users Data

- In the survey, about 67% user belongs to Arts stream, 20% Science stream and 12% from Law stream. Further, majority (47%) of user belongs to 5th semester, 40% from 3rd semester and 13% from 1st semester.
- There are 52.87% user belongs to the age group of upto 20 years followed by 43.31% from the age group of 21-25 years, and 3% from the age group of 26-30 years. Further, gender wise 54% female and 46% male users responded the survey questionnaire.
- About 31% users are not well aware about their college library opening time/hours.
- Majority (73%) of users are satisfied with the availability of library resources.
- About 41% users visit the library daily and 35% visits weekly whereas 19% visits occasionally.
- There are 60% users who visit the library to borrow the books, and only 21% visits for study purpose.
- Majority (57%) of users feels that library is very useful for them whereas 41% feels it as useful for them.
- Print resources are still very much used by majority of the (73%) of the users whereas online resources are used by only 14% users.
- Only 68% users are aware about their library automation status and among them 26% users said that library is fully automated while 39% users (majority) said that library is partially automated.
- Only 37% users are aware about college library Web OPAC/ OPAC whereas majority (43%) of users are not aware about this.
- About 86% users know that Internet access is available in their college library whereas 11% does not know the fact.
- Out of 86% users, majority (79%) of users are satisfied with Internet facility.
- There are 47% users who are getting e-resource services while 40% users said “No”.
- In a question that does library provide consortia service? Majority of users (65%) are not aware about such service and they said “No” to the question.

- About 52% users are not facing any kind of problem during access of e-resources while 34% users have faced problems. During the problem in accessing e-resources 74% users were helped by library staff.
- Only 32% users have attended the orientation program conducted by library while majority (56%) of users has not attended such kind of programs.
- About 48% users feel that library has adequate ICT infrastructure while 41% users does not feel so. Further, 47% users are getting ICT based services and 42% are deprived from such services.
- Again majority (56%) of users preferred text books (printed source) as major information source used by them from the library followed Internet sources (43%).
- To know the level of awareness of ICT based tools and techniques, survey conducted and found that 67% users are master in normal computer operation, 43% users are master in normal software operation, and 71% users are master in the handling of social networking sites.

CHAPTER – V

CONCLUSION AND SUGGESTIONS

5.1 Conclusion

Libraries play an important role in the academic world by providing access to world-class information resources and services and help to stimulate research among scientists and researchers community. Until 1980's, the libraries virtually had a monopoly on the provision of information through print resources and the users were completely dependent on them for the publications they needed to have. Now, the scene has changed with the emergence of information and communication technologies producing voluminous research information in electronic format accessible by anyone at anytime from anywhere available online. Today's users are more knowledgeable with more technical skills and empowered with wider choices for seeking information.

National developments impact on the functioning of local institutions is impacted upon by information and communication technology developments. Such impacts have become more frequent and almost inevitable due to emerging and converging of ICT and its facilities. The teacher, the researcher, the student, and the practicing professionals must keep themselves updated with the rapidly changing environment, at the local, national, and global levels, lest they become obsolescent and outdated.

In conclusion to that, ICT based sources and services of the majority of libraries were very poor and inadequate, many of librarians and almost all users were not satisfied with application of ICT in their libraries and indicated inadequate ICT infrastructure and lack of electronic resources and lack of ICT trained library staffs as their main reason for dissatisfaction. The findings of this study have provided useful insights for college libraries as well as college librarians of Aizawl city to take appropriate strategies in a rational and systematic manner to increase the use of ICT for library operations and services and make users aware about all of them.

5.2 Suggestions

According to the study and findings of college libraries of Aizawl city, the outcomes of the finding differ from service provider (librarian) to service user (college students). But the

major problem of the improper functioning of the ICT based services in the college libraries of Aizawl city was due to lack of financial resources and lack of ICT skilled staff.

Based on the feedback received from the analysis of the study, the important suggestions to improve the ICT infrastructure of college libraries are:

- For the advancement of ICT based environment in college libraries, separate fund for library should be disbursed regularly to the college librarians by the college authorities.
- Recruitment of library staff should be regularly started and should be appointed ICT skilled library staff to manage the libraries ICT based services for the users.
- College libraries need to have more computers, and state-of-the art ICT infrastructure including hardware, software, and human resources.
- ICT tools must be updated and maintained by the professional staff of the library who is much acquainted with ICT based tools and their operations.
- Library must have Internet connections to access online resources
- Library should organize well structured ICT based orientation programs to the users to make them well aware about the library facilities and services.
- College libraries should be fully automated (computerized) to enhance the library services.
- Information regarding all kind of reading materials should be available on college library's OPAC/ Web OPAC to make users' search more purposeful.
- College libraries must be joining some institutional membership of networks for getting online education resources. Example of such networks is DELNET, INFLIBNET, N-LIST etc.
- College libraries should subscribe e-journals, e-books and other electronic resources to help in the study and teaching of students and teachers of the college.
- There is a need to develop training and professional development attitude among the library staff. Therefore, all library staff should be sent for ICT training/ workshop in definite interval to keep them update.

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Appendix – I

Librarians' Questionnaire

APPLICATION OF ICT IN COLLEGE LIBRARIES OF AIZAWL CITY

Mr./Ms.,

I am pursuing M. Phil. from Department of Library and Information Science, Mizoram University, Aizawl. As a component of the syllabus, I have to submit my dissertation on the above mentioned topic under the guidance of Dr. Akhandanand Shukla. You are requested to kindly fill up this questionnaire, which will be used for only academic purpose.

(Please answer the question or tick mark in the box provided against each question)

S. Sialai
M. Phil. Student
Department of Library and Information Science
Mizoram University, Aizawl

A. General Information:

- Name of the Correspondent.....
- Designation of the Correspondent.....
- Sex: Male () Female ()
- Name of the College:
- Establishment year of College:
- Year of establishment of College Library:
- Which type of institution/organization?
 - (a) State Government ()
 - (b) Central Government ()
 - (c) Semi Government ()
 - (d) Autonomous [State Govt.] ()
 - (e) Autonomous [Central Govt.] ()
 - (f) Private Sector ()
 - (g) Others_____

B. Information about Library:

- Do you have Library Website: Yes () No ()
- Does library have separate library building? Yes () No ()
- Sitting capacity of Library: _____
- Working hours of Library: _____
- Name of the Librarian/In charge: Dr./Mr./Ms./Mrs.:
.....
- Librarian's Qualification:
 - a) Academic Qualifications _____
 - b) Professional/technical Qualifications _____
- No of Staffs in Library:

SN	Category of Staffs	Total No
1.	Professional (Librarian/Asst.Librarian)	
2.	Semi – Professional (PA/SPA/LA.etc)	
3.	Professional with IT Competence (Librarian/Asst. Librarian /PA /SPA /LA /Technical Assistant etc.)	
4.	Non – Professional (LDC/Peon etc.)	

C. Budget (Annual):

- Is your library having a separate budget? Yes () No ()
- If Yes, please give the details:

Year	Total Library Budget (Rs.)	Breakup of Library Budget under various heads (in Rs.)						
		Books	Journals		Non Book Materials Including AV	IT Equipments	Furniture/ Other equipments	Others
			Printed	Electronic				
2013-14								
2012-13								
2012-11								
2011-10								
2010-1999								

D. Status of Library Collection:

- E- documents (put the number only)
 - a) Audio/Video
Cassettes/CDs.....
 - b) E-journals: i) Indian_____ ii) Foreign_____
 - c) Databases
 - i) ACM Digital Library ()
 - ii) ProQuest ()
 - iii) Gale ()
 - iv) EPSCO ()
 - v) ABC-CLIO ()
 - vi) CQ Press ()
 - vii) Sage ()

E. Library Services:

- How users search the books in your library? (please put tick mark):
 - a) Through catalogue card () b) Through OPAC ()
 - b) Direct search on shelves() d) With help of Library staff ()
- Library circulation system (please put tick mark):
 - a) Computerized () b) Manual () c) Both Method ()
- Services offered by your library (please put tick mark):
 - a) CAS: Yes () No()
 - b) SDI: Yes () No()
 - c) Photocopy services: Yes () No()

F. Library Automation and Resource Sharing:

- Is your library automated: Yes () No ()
If yes, which software do you used?_____
Year of automation_____
If no, what are the reasons

- Level of Computerization:
 - a) Fully ()
 - b) Partially ()
 - c) In process of Computerization ()

If your answer is b, then which section is computerized?

 - a) Acquisition () b) Circulation () c) Serial Control ()
 - b) Cataloguing () e) OPAC ()

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- Do you feel that your library services have been improved due to ICT applications? Yes(☐) No(☐)
- Is your library using RFID technology? Yes (☐) No (☐)
If No, is there any plan to adopt RFID technology In future? Yes (☐) No (☐)

G. Human Resource Development

- Do you feel that the library staffs are skilled enough to meet the user's needs in present ICT Environment? Yes (☐) No (☐)
If no, why? a) _____
b) _____
c) _____
- Do you have any program to train the library staff about the latest development in ICT?
Yes (☐) No (☐)

If yes, how?
a) By sending them outside (☐)
b) Organizing a workshop/training inside the Institute (☐)
- Are you satisfied with the application of ICT in your library:
Yes (☐) No (☐)
If no, give any reasons
.....
.....
- Future plan for ICT based application services in your library
.....
.....
- Any suggestion in implicating ICT to improve your library:
.....
.....

Thank you for your kind cooperation.

Signature with date

Appendix – II

Students' Questionnaire

APPLICATION OF ICT IN COLLEGE LIBRARIES OF AIZAWL CITY

Mr./Ms.,

I am pursuing M. Phil. from Department of Library and Information Science, Mizoram University, Aizawl. As a component of the syllabus, I have to submit my dissertation on the above mentioned topic under the guidance of Dr. Akhandanand Shukla. You are requested to kindly fill up this questionnaire, which will be used for only academic purpose.

(Please answer the question or tick mark in the box provided against each question)

S. Sialai

M. Phil. Student

Department of Library and Information Science

Mizoram University, Aizawl

A. GENERAL

- Name of the Respondent.....
- Name of the College.....
- Class.....
- Semester/Year.....
- Age.....
- Sex: Male () Female ()

B. Library and Its Collection:

- How many hours they open the Library.....
- Do you feel the library has adequate resources? Yes () No ()
- How often do you visit the library
a) Daily () b) Weekly () c) Monthly () d) Occasionally ()
- If you do not visited the library at all then please mention the way how you access the resources
a) Intranet () b) Internet () c) Department Library ()
Others (if any) _____

- Purpose of visiting the library:
 - a) To borrow books () b) To Study () c) To read periodicals ()
 - Others (pl. Specify) _____
- How useful do you find the library:
 - a) Very Useful () b) Useful () c) Least Useful ()
- What kind of sources you frequently use from Library:
 - a) Print sources () b) On-line sources () c) Web sources ()
 - d) CD-ROM/DVDs () e) Bulletin Board ()
 - f) Others (pl. Specify) _____

C. ICT Application in Library Services & Collection:

- Is the Library Automated? Yes () No ()
If Yes, Then status-
 - a) Fully () b) Partially () c) In process of computerization ()
- How does the Automation Process help you in getting required information/resources?
 - a) Adequate () b) Not adequate ()

If Not Adequate, specify the reasons.

 - a) _____
 - b) _____
 - c) _____
- Does the library provide OPAC/ Web OPAC services? Yes () No ()
- Do you have Radio Frequency Identification (RFID) in the library?
Yes () No ()
- Does the library provide Internet facilities for the users: Yes () No ()
- Are you satisfied with Internet facilities for the users: Yes () No ()
If No, specify the reasons
 - a) _____
 - b) _____
 - c) _____
- Does the library provide e-resource services? Yes () No ()
If Yes, please mention the type of e-resource.
 - a) e-book () b) e-journal () c) e-encyclopedia ()
 - b) e-report () e) Any other _____

- Does the library provide consortia services? Yes () No ()
If Yes, please mention the name of consortia
 - a) _____
 - b) _____
 - c) _____
- Do you encounter any problem in accessing the e-resources or handling the equipment? Yes () No ()
If Yes, do you get sufficient support from the library staffs
Yes () No ()
- Do you get any orientation regarding the use of e-resource or software etc.? Yes () No ()
- Do you feel that library possess adequate Information and Communication Technology (ICT) infrastructures? Yes () No ()
- Do you get sufficient Information Communication Technology services from the Library? Yes () No ()
- Please indicate the source you prefer to support your educational and information needs?
 - (i) Journals () (ii) Internet sources () (iii) Text books ()
 - (iv) Other sources () (v) Conference proceedings ()
- How would you rate your level of awareness/skill for the use of following technologies?
 - a. Computer Handling
(i) Very Good () (ii) Good () (iii) poor () (iv) Don't know ()
 - b. Softwares
(i) Very Good () (ii) Good () (iii) poor () (iv) Don't know ()
 - c. Social Networking
(i) Very Good () (ii) Good () (iii) poor () (iv) Don't know ()

Any suggestions do you like to improve the ICT service in the library

Thank you for your kind cooperation.

Signature

Abstract
on
APPLICATION OF ICT IN COLLEGE LIBRARIES OF AIZAWL CITY

*A Dissertation submitted in partial fulfillment of the requirement for the Degree of
Master of Philosophy in Library and Information Science*

Submitted by

S. Sialai

MZU Registration No.: 4829 of 2011
M. Phil. Registration No.: MZU/M. Phil./194 of 20.05.2014

Supervisor

Dr. Akhandanand Shukla
Assistant Professor



DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
MIZORAM UNIVERSITY
2014

Introduction

In today's world Information Communication Technology (ICT) plays a very important role in every sphere of life for sharing information and disseminating of knowledge .The traditional tools of ICT include TV, Radio and telephone whereas modern ICT tools are computer, internet and wireless communication technology, it facilitates all our communication systems. ICT provides easy access to information resource and the facilities of technologies have been the driver of knowledge society. ICT infrastructure includes the computer; Xerox machine; Scanner etc. These facilities provided easy ways for the users in academic institutions as well as to the users' community.

The college libraries are generally located on the campuses of colleges and serve primarily the students and faculty of that and other users. The main functions of college libraries are to provide resources and research support for students and faculty of the educational institution. Specific course related resources are usually provided by the library, such as textbooks, journal articles, newspapers, magazines, reference documents etc. The college library provides a quiet study space for students on campus; it may also provide group study space, such as meeting rooms. In North America, Europe, and other parts of the world, college libraries are becoming increasingly digitally oriented. The library provides a "gateway" for students and researchers to access various resources, both print and digital. The college libraries are subscribing to electronic journals databases, providing research and scholarly writing software, and usually provide computer workstations or computer labs for students to access journals, library search databases and portals, institutional electronic resources, Internet access, and course- or task-related software (i.e. word processing and spreadsheet software).

In the past, volume of information was not as large it is today, and the libraries were in the position to organize the information materials through manual operation. But since the 2nd World War, there has been a tremendous output of information, which has been usually referred to as information explosion. The materials of information in both print and non-print media (i.e. manuscripts, books, journals, reports, films, discs, tapes) continue to be produced and used in greater and greater quantities. As Xerox Corporation put it in one of

their promotional brochures in 1984, “recorded knowledge has doubled during the last twelve years. It will double again during the next ten”. This vast amount of information has to be processed, stored and retrieved whenever required. The very complexity and magnitude of the problem makes it an impossible task to process by manual method. Library and information professionals are increasingly being compelled to take the help of semi-automatic and automatic machines for information handling. The revolutionary developments in information technology have two impacts. Firstly, as more and more information is readily available in machine-readable form, there has been a fundamental shift in the concerns of the information profession from “more information” to “accurate, up-to-date and timely information”. Secondly, as computers are used increasingly for provision of information, librarians and other information professionals must familiarize themselves with the latest technological development in this field.

Objectives of the Study

The objectives of the present study are to:

- a. Assess the status of ICT facilities available in college libraries of Aizawl City,
- b. Assess how many information professionals are trained in handling of information and communication technology,
- c. Identify the limitations of the libraries in using ICT based services, and
- d. Suggest best practices for increasing the ICT application in college libraries.

Scope of the Study

The scope of the present study is limited to the College Libraries of Aizawl City. There are 10 college libraries in Aizawl City which are given below:

SN	College Libraries (with abbreviation)
1.	Pachhunga University College Library (PUC)
2.	Government Aizawl College Library (GAC)
3.	Government Hrangbana College Library (HBC)
4.	Government Aizawl West College Library (GAWC)
5.	Government Aizawl North College Library (GANC)
6.	Government T. Romana College Library (TRC)
7.	Government Zirtiri Residential Science College Library (ZRSC)
8.	Government J. Thankima College Library (JTC)
9.	Government Johnson College Library (GJC)
10.	Mizoram Law College Library (MLC)

Methodology

The following research methods were used for data collection and its analysis including interpretation of the study.

- a. Questionnaire Method: Two structured questionnaires have been framed with adequate questions relating to the study out of which, one for users to assess the services being provided by the library and other for the college librarians to ascertain the infrastructures developed by the library to provide the library services. The questionnaire meant for users distributed randomly among 200 users from 10 colleges (20 questionnaire in each college) to elicit the data relating to the study. Further, another set of questionnaire meant for the librarians distributed among 10 college librarians of Aizawl City to obtain the library data covered under study.
- b. Observation Method: To supplement the data, the researcher made a personal visit to the respective library to gather data through observation method to know the status of ICT infrastructure available in the library and to understand their practical problems in utilizing ICT facilities.

Under the study the data collected from both the users and the librarian after receipt have been scrutinized, tabulated and analyzed for inference. Statistical inferences have been drawn by using MS-Excel.

Findings of the Study

The findings of the study categorized in to two sections: one from librarians' data and another from users' data.

Findings from Librarians' Data

- Except one college library, other 9 college libraries are funded by the state government. Due to getting insufficient fund from state government, libraries have no proper ICT infrastructure in the college library.
- Majority (60%) of college libraries have separate library website.
- Most of the college libraries (60%) of Aizawl city don't have their own library building which creates problem in growth of library because library is a growing organism.

- Majority of college libraries (80%) are having less sitting capacity i.e. upto 50 readers at a time.
- College libraries of Aizawl city opens for 8 hours in a day which is an ideal situation but it may be increased for the users.
- On the analysis of librarian's highest professional qualifications, majority (60%) of librarians have qualified Masters Degree in Library Science whereas only 20% have Ph. D. in LIS and 10% have M. Phil. in LIS.
- In terms of professional staff in the library, only one college library has 6 professional staff with IT competence and others are facing staff problem.
- No any college library is getting separate library fund/ budget from the authority for the development of ICT infrastructure.
- All the college libraries are lacking with the sufficient electronic resources.
- Due to technological advancements, OPAC search has been found most prevalent in every library than direct search on shelves.
- About 50% college libraries are having computerized service. CAS service is offered by 50% college libraries whereas 10% college libraries offering SDI services to their users. Majority of college libraries (80%) are offering photocopy services to their users.
- Majority (90%) of college libraries is automated but partially and 100% college libraries are using SOUL 2.0 library automation software. Further, majority (78%) of college libraries automated after the year 2010.
- About 90% college libraries have the Internet connection and out of that majority (78%) of the libraries are using it for official work as well as information search for the users. Internet is used for resource sharing by 33% college libraries and 56% college libraries are using Internet for online database searching.
- Majority (60%) of college libraries have computers between 6–10. There are only 10% college libraries which have more than 20 computers in their library.
- In terms of Internet connection, 56% college libraries have Internet connections upto 5 machines whereas 44% college libraries have Internet connections on 6-10 machines.

- About 80% college libraries have professional membership whereas 10% does not have any professional membership. Out of them 62.5% have joined the INFLIBNET & N-LIST membership.
- There are 30% college libraries which have found consortium as useful resource.
- About 70% college librarians have accepted that they have improved their services due to ICT implementation.
- About 90% college libraries do not having RFID system and only 22% have planned to implement RFID in future.
- About 70% college libraries do not have ICT skilled enough staff to manage ICT based resources & services.
- Lack of proper ICT based training to library staff, lack of ICT competent staff, and lack of number of staffs in the college libraries are major problem for lack of ICT trained staff. Further, only 30% college libraries have future plan to train their library staff and majority (67%) of college libraries have plan to organize ICT based training in their college itself whereas only 33% college libraries have plan to send them outside for ICT based training.
- About 60% college librarians are not satisfied with the present ICT infrastructure available in their library.

Findings from Users' Data

- In the survey, about 67% user belongs to Arts stream, 20% Science stream and 12% from Law stream. Further, majority (47%) of user belongs to 5th semester, 40% from 3rd semester and 13% from 1st semester.
- There are 52.87% user belongs to the age group of upto 20 years followed by 43.31% from the age group of 21-25 years, and 3% from the age group of 26-30 years. Further, gender wise 54% female and 46% male users responded the survey questionnaire.
- About 31% users are not well aware about their college library opening time/hours.
- Majority (73%) of users are satisfied with the availability of library resources.
- About 41% users visit the library daily and 35% visits weekly whereas 19% visits occasionally.

- There are 60% users who visit the library to borrow the books, and only 21% visits for study purpose.
- Majority (57%) of users feels that library is very useful for them whereas 41% feels it as useful for them.
- Print resources are still very much used by majority of the (73%) of the users whereas online resources are used by only 14% users.
- Only 68% users are aware about their library automation status and among them 26% users said that library is fully automated while 39% users (majority) said that library is partially automated.
- Only 37% users are aware about college library Web OPAC/ OPAC whereas majority (43%) of users are not aware about this.
- About 86% users know that Internet access is available in their college library whereas 11% does not know the fact.
- Out of 86% users, majority (79%) of users are satisfied with Internet facility.
- There are 47% users who are getting e-resource services while 40% users said “No”.
- In a question that does library provide consortia service? Majority of users (65%) are not aware about such service and they said “No” to the question.
- About 52% users are not facing any kind of problem during access of e-resources while 34% users have faced problems. During the problem in accessing e-resources 74% users were helped by library staff.
- Only 32% users have attended the orientation program conducted by library while majority (56%) of users has not attended such kind of programs.
- About 48% users feel that library has adequate ICT infrastructure while 41% users does not feel so. Further, 47% users are getting ICT based services and 42% are deprived from such services.
- Again majority (56%) of users preferred text books (printed source) as major information source used by them from the library followed Internet sources (43%).
- To know the level of awareness of ICT based tools and techniques, survey conducted and found that 67% users are master in normal computer operation, 43% users are master in normal software operation, and 71% users are master in the handling of social networking sites.

Organisation of the Study

The study is presented in following chapters:

Chapter 1 – deals with the introduction of ICT, college library, ICT skills for LIS professionals, impact of ICT on library staff attitude, ICT and LIS education. The chapter also includes the review of related studies in the field of ICT and the research design which covers the scope, significance, statement of the problem and research methodology adopted for the study.

Chapter 2 – deals with the concept of ICT for libraries, history of ICT in libraries, library automation, computer infrastructure requirement for the completion of automation, changing role of LIS professionals in ICT application in libraries, digital library, ICT application in libraries, impact of ICT on libraries, functions of ICT applications and Internet facilities for library.

Chapter 3 – deals with the application of ICT in college libraries of Aizawl city and an overview of the college as well as their libraries.

Chapter 4 – presents the analysis of data and findings of the study through tables and figures with suitable interpretation.

Chapter 5 – deals with the conclusion of the whole study and suggestions for the selected college libraries to improve them for future.