A STUDY OF LIBRARY AUTOMATION IN HRANGBANA COLLEGE AND AIZAWL THEOLOGICAL COLLEGE OF MIZORAM

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

Submitted by

Lalsangzeli
MZU Registration No. 159 of 2001-2002
M.Phil. Registration No. MZU/M.Phil./34 of 26.05.2010

Supervisor

Dr. R N Mishra
Asst. Professor (SG)
Department of Library and Information Science
Mizoram University, Tanhril, Aizawl

Department of Library and Information Science
Mizoram University, Tanhril, Aizawl

2011

DECLARATION

I hereby declare that the dissertation entitled **'A STUDY OF LIBRARY AUTOMATION IN HRANGBANA COLLEGE AND AIZAWL THEOLOGICAL COLLEGE OF MIZORAM'** submitted by me has not previously formed the basis for the award of any Degree or Diploma or other similar title of this or to any other University or examining body.

Date:

Aizawl

Lalsangzeli

MIZORAM UNIVERSITY

(A Central University)

Department of Library & Information Science

Tanhril, Aizawl- 796009, Mizoram

Gram- MZU P.O.Box- 190 ☎ 0389-2331607 Fax- 0389-2331608

E-Mail: rabinarayan_mishra@rediffmail.com

Dr. R N Mishra
Asst. Professor (SG)

C E R T I F I C A T E

This is to certify that the dissertation entitled **"A STUDY OF LIBRARY AUTOMATION IN HRANGBANA COLLEGE AND AIZAWL THEOLOGICAL COLLEGE OF MIZORAM'** submitted by Ms. **Lalsangzeli** for the award of the degree of **Master of Philosophy in Library and Information Science** is carried out under my guidance and incorporates the student's bonafide research. This is the candidate's original work and is worthy of examination.

Date:

Aizawl, Mizoram **(Dr. R N Mishra)**

Supervisor

Acknowledgement

First, I would like to thank God for giving me the opportunity to complete my dissertation/project work.

I wish to express my gratitude to my supervisor, Dr. R N Mishra Asst. Professor (SG), Dept. of Library and Information Science, Mizoram University for his advice, guidance, supervision and idea throughout the study. His patience, kindness and understanding have helped me in completing my dissertation. Without him, I would not be able to complete the dissertation/Project work.

I also would like to thank all the lecturers and staffs at the Department of Library and Information Science, Mizoram University.

Finally my utmost thanks to my family for supporting me throughout my studies for their continuing encouragement and also for their practical help while writing the dissertation.

Dated: Lalsangzeli

CONTENT

List of Tables

List of Graphs

List of Figures

List of Appendices

List of Abbreviations

Term	Description	Page No.
AACR-II	Anglo American Cataloguing Rules, Ed 2	61
ACEIT	Author, Compiler, Editor, Illustrator, and Translator	72
ANSER	Academic New Scan Service	84
ANSI	American National Standards	89
ATC	Aizawl Theological College	1
BARDSMIND	Bibliography of Academic Research Dissertation with Supplementary Multi Index	87
BBC	Book Business Circle	68
BD	Bachelor of Divinity	1
BOID	Borrower Identification	82
BSC	Book Selection Committee	68
B. Th	Bachelor of Theology	10
CALIBNET	Calcutta Library Network	46
CAS	Current Awareness Service	53
CASH	Classified Arrangement of Serials Holdings	87
CCF	Common Communication Format	48
CDP	Collection Development Policy	67
CD-ROM	Compact Disc Read Only Memory	5
CDS/ISIS	Computerized Documentation Services/ Integrated Sets of Information System	36
CLIS	Computerized Library Information System	50
CLMS	Computerized Library Management System	50
COBOL	Common Business Oriented Language	51
CSIR	Council of Scientific and Industrial Research	45
CWM	Council of World Mission	11
DBMS	Database Management System	46
DBU	Database Utility	86
DDC	Dewey Decimal Classification	91
DELIMS	Defence Library Management System	40

DELNET	Developing Library Network	51
DELTAS	Publication, Edition, Language, Type of Content, Associate Volume, Series Number	72
DESIDOC	Defence Scientific Information and Documentation Center	40
DOP	Date of Purchase	73
DOS	Disc Operating System	15
DRDO	Defence Research and Development Organization	49
E-Reserves	Electronic Reserves	69
FSP	Free Software Foundation	41
IIT-KLAS	Indian Institute of Technology, Kanpur Library Automation System	45
ILL	Inter Library Loan	63
ILMS	Integrated Library Management Software	51
IMPACT	Integrated Management and Project Accounting	45
INFLIBNET	Information for Library Network	51
INSDOC	Indian National Scientific Documentation Center	40
ISBD	International Standard Bibliographic Description	69
ISBN	International Standard Book Number	68
ISO	International Standards Organization	44
ISSN	International Standard Serial Number	77
IT	Information Technology	31
LAN	Local Area Network	29
LC	Library of Congress	27
LIBSYS	Library System Software	17
L.Th	Licentiate in Theology	10
MAP	Multi Access Points	76
MARC	Machine Readable Catalogue	27
MICRO-CAIRS	Micro-Computer Assisted Information/Library Retrieval System	44
M. Th	Master of Theology	1
MZU	Mizoram University	3
NEHU	North Eastern Hill University	3
NFC	Non Filing Character	72
NICE	Nirmals Institute of Computer Enterprise	15
NIRMALS	Network Information Resource Management of Academic	15

	Library System	
NISSAT	National Information System for Science and Technology	40
OCLC	Online Computer Library Center	27
OCR	Optical Character Recognition	52
OPAC	Online Public Access Catalogue	7
PALMS	Prasad Automated Library Management System	53
PROMPT	Profile Match of Project Topics	84
RAM	Random Access memory	7
RDBMS	Relational Database Management System	46
READ	Recent Addition	83
RFID	Radio Frequency Identification Devices	27
RLIN	Research Library Information Network	27
SALIS	Software and Licensing Information System	41
SCARP	Select Content-page of Advanced Research Periodicals	85
SDI	Selective Dissemination of Information	32
SHARP	Scholars High-end Academic Research Profiles	84
SLIM	System for Library and Information Management Software	53
SLPB	Synod Literature and Publication Board	14
SOUL	Software for University Library	6
SQL	Structured Query Language	7
STD	Subject Term Dictionary	87
TCP/IP	Transfer Control Protocol/Internet Protocol	34
TICs	Technical Information Centers	49
TOC	Table of Contents	79
TQM	Total Quality Management	67
UCAN	Union Catalogue Accession Number	80
UGC	University Grants Commission	3
UNESCO	United Nations Education Scientific and Cultural Organization	40
WAN	Wide Area Network	29
WCC	World Council Churches	11
WILYSIS	Wipro Library Information System	43
WLN	Washington Library Network	27

1.1. Introduction

Education is recognized as an indispensable component for the development of society, which not only alleviates poverty, ignorance, and development barrier but also contributes significantly to growth in national productivity. Mention may be made that there are more than 99.54 lakhs of students spread over 16, 885 colleges with a teacher strength of 4.57 lakhs in India (http:// www. education. nic.in/ higedu. asp). In the higher education sector, Mizoram does not lack behind which can be witnessed from the institution of Degree Colleges affiliated to Mizoram University, the only central university in the state. The initiation of higher education can further be exemplified from the list of degree colleges affiliated under Mizoram University placed under Table-1. Further, the higher education reached to the apex with the establishment of Mizoram University by an Act of Parliament on the 2nd July 2001 and thereby, the long cherished desire for promoting higher education in the State came to a reality. As of now, 25 affiliated colleges under the university are offering the degree courses in various disciplines having a total enrollment of more than approximately 5,200 students.

Degree Colleges affiliated to Mizoram University

1. Aizawl Law College, Aizawl	13. Hnahthial College, Hnahthial.
2. Aizawl North College, Aizawl	14. J. Buana College, Lunglei
3. Aizawl West College, Aizawl	15. J. Thankima College, Aizawl
4. College of Teachers Education, Aizawl	16. Johnson College, Aizawl
5. Govt. Aizawl College, Aizawl	17. Kamalanagar College, Chawngte
6. Govt. Champhai College, Champhai	18. Khawzawl College, Khawzawl
7. Govt. Hrangbana College, Aizawl	19. Lawngtlai College, Lawngtlai
8. Govt. Kolasib College, Kolasib	20. Mamit College, Mamit
9. Govt. Lunglei College, Lunglei	21. Pachhunga University College, Aizawl
10. Govt. Saiha College, Saiha	22. Saitual College, Saitual
11. Govt. Serchhip College, Serchhip	23. T. Romana College, Aizawl
12. Govt. Zirtiri Residential Science College, Aizawl	24 Zawlnuam Colleges, Zawlnuam.
	25. Higher & Technical Institute of Mizoram. Lunglei

Table-1: List of colleges in Mizoram
(Source: Annual Report, Mizoram University, 2009)

Aizawl Theological College, another perspective college of Mizoram started in 1907 used to impart theological teaching to train the native Christians for various Ministries of the Church. The college disseminates teaching and research to the students from both foreign and domestic and offers BD and M.Th courses.

1.2 Higher Education

Higher Education stands at the cross roads of the culture and has entered an unprecedented period of globalization in the knowledge economy (Paul, 1998). Nations are ploughing enormous sums of their capital into the development and expansion of tertiary learning and research. Universities have progressively found themselves as the forefront of new global thinking. The improvement of a skilled and globally attuned workforce has been viewed as a key ingredient to competitiveness and prosperity. Higher education is now seen as the main provider of such labour force, in addition to fulfill the need for constantly developing new ideas, technologies, methods, products and services which are essential for future economic growth. The world economy is changing as knowledge supplants physical capital as the source of present and future wealth. Technology is driving much of this process, with information technology, biotechnology, and other innovations leading to remarkable changes in the way we live and walk. The interdependence of global economist has led to situation where the impact of change in one region or country is increasingly felt all over the world (Thorne, 1999). The categories in to which new knowledge falls are becoming increasingly specialized, and the revolution has occurred in people's ability to access knowledge quickly and from increasingly distant location. Higher education has acted as a powerful mechanism for upward mobility in many countries, allowing the talented to thrive irrespective of their social origins. Higher education institutions as the prime creators and conveyors of knowledge must be at the forefront of efforts to narrow the development gap between industrial and developing countries (Shastree; AIU; p7).

Education, however, can not be stick to the university level which can stem down to the level of colleges where the education in the real sense of the term prevails. Colleges in India have a predominant role in flourishing education. Almost all the states in India have a positive dimension in the establishments of colleges including the North-East States.

To trace a brief history of the prevailing of education in Mizoram, it was started by the two Christian Missionaries, Rev. James Herbert Lorrain (Pu Buanga) and Dr. Frederick W. Savidge (Sap Upa) who have arrived in Mizoram on 11the January 1894 under the Arthington Aborigines Mission from London. They developed Mizo Alphabets in Roman Script and started School in 1894 with two students. Mizoram received tremendous blessings through the services of Missionaries and now became the second highest literacy percentage of Indian States. The first college in Mizoram was established under the initiatives of the Welsh Missionaries in 1958 at Aizawl under the name of Aijal college (now, Pachhunga

University College). The college library started functioning in 1961 with Pu Lalmakthanga, the pioneer library staff in Mizoram as Librarian-cum-College clerk (Ngurtinkhuma; Souvenir; 2006).

1.3 Hrangbana College

Hrangbana College, established in July 1980 is located in the Central part of the city, Chanmari, Aizawl. The College is christened after the name of Mr. Hrangbana (L), an education minded and prominent businessman, who generously donated a sum of Rs. One lakh to start the college from scratch.

The College was given government recognition as a private College on 6th November, 1980 and was upgrade to the deficit grant-in-aid status with effects from 1st September, 1985 and was finally became a government College with effect from 1st April, 2003.

Hrangbana College was affiliated to the NEHU from the establishment of the College till 2002. The college was one of the prominent members of the NEHU family, with two streams – Arts and commerce, and ten (10) departments offering both general and honors, good infra-structure facilities. Students from different ethnic background dedicated to the pursuit of knowledge, carefully offered by devoted academicians, administrators and well endowed faculty, the College has acquired a distinct place of pride in the minds of the people of the state, and also won a prominent position on the academic map of the affiliating University. The college is now affiliated to the Mizoram University (MZU) and enjoys the same position of distinction.

1.4. Hrangbana College Library

Hrangbana College library started its functioning with one small room from the inception of the College. The library at present is located at the 6th and 7th floor of the college building. The present library building is constructed with the grants received from the UGC and proportionate share of the College amounting to Rs. 5, 50,000 and Rs. 4, 82,000 respectively. The lower floor of the library building is 1820 sq.ft. and is used for stack area, administration, circulation, reprographic and UGC Network centre. The upper floor covers a space area of 2282 sq. ft. and is used for reading room having more than 50 seating capacity for students and a separate reading room for the teaching faculties and research scholars who want to use the library resources. The library is maintained and administered by the college authority to meets the academic needs or requirement of students, teachers and non-teaching staffs. The

library is developed and maintained in such a manner that stakeholder of this institution can use it resourcefully.

1.4.1. Library Committee

The Library Committee of Hrangbana College was formed since 24th June, 1993, comprising the following members-

1. Chairman -Principal
2. Secretary -Librarian
3. Faculty member -One representative from each department.
4. Students' representative -Three students' representative members such as vice President, General Secretary and Magazine Editor of Students Union.

Library Committee used to have sitting at least four times in a year or as and when required. The committee formulates Library rules: allocates funds for purchased of books, Journal and periodical for every department.

1.4.2. Library Collection

Hrangbana College Library is one of the biggest and prominent Libraries among the members of affiliated College in Mizoram University. The total collection available in Hrangbana College Library as on 1st September, 2010 is as below-

1. Books - 21843
2. Bound Volumes - 536
3. Journals
   a) Foreign - 8
   b) Indian - 27
   c) Magazines - 34
   d) Local Language- 20
   e) Newspaper
      English - 4
      Local Language- 7
4. Theses/Dissertation - 10
5. Reference Tools - 2
6. CD-ROM - 54
7. E-book on Hard-disc - 148

1.4.3. Total Staffs

There are altogether 4 (four) Library staffs in Hrangbana College Library, which is as follows such as (i) Librarian, (ii) Library Assistant, (iii) First Attendant, and (iv) Second Attendant. The jobs and responsibilities with the different designated posts of the library under discussion are mentioned below.

- **Librarian**

The Librarian is the only professional staff of the Library. He is responsible for overall works in the Library, technical works such as classification, Cataloguing etc including Library automation, UGC network resource centre, all correspondences of library, utilization of UGC funds both plan and non-recurring grants with necessary records and circulations to teaching and non- teaching staff. He is also equally responsible to meet expenses the State Government grants. The librarian being the only technical staff of the library also equally play role in holding committee meetings regarding the development of the library in terms of collection development, organization of resources, induction of training personnel to expedite the library works, collection of e-resources etc.

- **Library Assistant**

The library assistant, a non-technical person, however helps the library with regard to the circulation of books to the students, teachers and all other users coming to the library. Consequent upon his experience gained in the library, the library assistant also is aware of some technical works of the library such as, accessioning the books, issue and recording of identity cards, readers' card including the jobs associated with organizing the newspaper and periodicals. This is only due to the non-availability of sufficient technical hands in the library.

- **First Attendant**

The first attendant also is a non-technical person who is engaged with multifarious works both technical and non-technical of the library. The jobs associated with the first attendant of the library under discussion are responsible for reprographic service, filling of books, periodicals and newspapers. He also maintains the records of the users visiting to the library to consult the periodicals and newspaper including maintaining of back volume periodicals alphabetically so as to retrieve the same conveniently at the time of requirements.

☞ **Second Attendant**

Non-technical by nature, the second attendant of the library under discussion is responsible for gate keeping, filing of books etc. He is also equally has been shouldered with the responsibility of maintaining the records alphabetically through date wise which facilitate the staff to retrieve the records.

1.4.4. Library Automation

The lifestyle, the official works and information seeking behavior is changing rapidly due to information technology. Even in the field of library, it is required to use modern technology in order to provide right information to the right person at the right time. Library automation is using machines and technology in the library. Hrangbana college library took steps to have computerized library since 2004. A proposal was submitted to the UGC through the college Development Council. The UGC expert team accepted the proposal and recommended the amount of Rs. 7 lacks whereas the final allotment made by UGC fell to Rs. 4,86,000/-. From this fund, college Library purchased the following:

- Four sets of Computer Pentium 4
- Two KV UPSC
- One SHARP A3 Printer cum Xerox machine
- SOUL software (College Version)

1.4.5. Use of Software in Hrangbana College Library

Library software is the immediate criteria for library automation. Further, selection of the same is also another important parameter due to cost involvement. The Hrangbana College Library under study uses Software for University Library (SOUL). The SOUL is a state- of-the-art of Library Automation Software designed and developed by the INFLIBNET. To meet the emerging power of information in the service spectrum especially in the universities and colleges in the ensuing period, the University Grants Commission (UGC) started the INFLIBNET programme in 1991 with a mandate to create a nationwide network of College, University libraries and research centre in India. It is a major programme towards modernization of libraries and information centre in the country using computer and communication technology for the establishment of a mechanism for information transfer and access to support scholarship, learning and academic pursuits.

SOUL is an user-friendly software developed to work under client server environment. Looking at the name of the software, one may think that it is meant for University Libraries

only, but in fact it is flexible enough to be used for automating any type or sizes of libraries, hence, Software for Universal Libraries may be matched as its name.

At present, College registered under Sec.2 (f) and 12(B) can apply through UGC NERO, Guwahati to INFLIBNET to receive SOUL 2.0 free of Cost.

■ **Hardware and Software Requirements for SOUL**

The minimum hardware and software configuration required to use SOUL is given below in Table 2:

Server	Client
Pentium @233 MHz with 64 MB RAM	Pentium @233 MHz with 32 MB RAM
1.2 GB HDD	1.2GB HDD with 10MB Free space
32 x CDROM Drive	1.44" Floppy Drive
1.44" Floppy Drive	Colour Monitor (SVGA)
Colour Monitor (SVGA)	Ethernet card 10/100 Mbps
Ethernet card 10/100 Mbps	
Windows-NT Operating System	Windows-95 Operating System
MS-SQL Server 6.5	

Table 2: Requirements of Hardware and Software in SOUL

1.4.6. Circulation of Books

Circulation of books to the library members is one of the major jobs in the library. Library members such as students, teachers and non-teaching staffs are eligible to borrow books as per library rules. To use documents available in the library, three (3) readers cards are issued to students through they can borrow up to three (3) books at a time for seven (7) days. Teaching staff can borrow up to ten (10) books at time for one (1) academic session while non-teaching staff are allowed to borrow up to 3 books for one (1) month. At the time of issuing library readers card, students are given demonstration to know how to use library resourcefully, to become regular users of the library, to know how to use OPAC and the catalogue cards, to consult journal and other reference books and to impart zeal of belonging/ownership.

1.4.7. Reprographic Service

Reprographic service is one of the important functions of any library system to promote reading habits for the students, teachers' etc. including promotion of research and development. The college library under study facilitates the service to its users in a very cost

effective way. To save the time of the users, to prevent from loss of books and tearing off pages, Reprographic Service is very important in the library works. Hrangbana College library provides such facility for making photocopy of documents at nominal charges of Re. 1 per page.

1.4.8. Reading Room for Lecturer and Research Scholars

Hrangbana College Library provides well-furnish reading room especially for faculty members and research scholars. Outside research scholars are also allowed to avail of library facilities of this college free of cost.

1.4.9. UGC Network Resource Centre

Resources are the real wealth of the library and the same needs to be disseminated effectively to all types of users. Traditional resources have its own dimensions which are being used by the users of the library but it is limited to its members. E-resources, however, has no limited boundary of its users and to facilitate multiple dimensions of resources all out measures have been taken by the library under discussion by providing a UGC Network Resource Centre housed in the library so as to facilitate especially the teaching and research communities with a vast array of information resources. Network research centre has been established in the college through the grant received from UGC. The said centre is equipped with three sets of computers P4 which were installed with internet facilities for the students, teaching and non-teaching staffs who can access global information relating to their academic needs.

1.5. Aizawl Theological College (ATC)

1.5.1 Introduction

The Aizawl Theological College, the first and only theological institution in Mizoram for a long time was started as theological school in 1907. It is now becoming hundred years old, and the centenary of the college celebrates in November 2007. It is established, financed and governed by the Presbyterian Church of Mizoram. From a school level, offering diploma courses it upgraded to college level, offering degree course in various disciplines. When it was started by the pioneer missionary, Rev. D.E. Jones there were very few Christians among the Mizos, and it was started with only three students. Within a span of fifty years of the coming of the gospel in Mizoram, most of the Mizos became Christians and there was urgent need to prepare ministers among the Mizo believers.

Aizawl Theological College was established to train people and teach the people theology, biblical subjects, church history, religions, etc. As C. Pazawna, the former Principal of the college pointed out, the objectives of the college are to:

- Train people for the ministry of the Church
- Inculcate the spirit of evangelism and service
- Train the laity in God's services
- Communicate the gospel meaningfully in the regional environment

In trying to fulfill the objectives the college offers theological degree course, diploma course, missionary training course, lay training course, biblical correspondence course, probationary pastor course and special courses in theology (Pazawna; 1979. p 22)

1.5.2 Christianity in Mizoram

Mizoram, formerly known as Lushai hills is located at the North east corner of India. The former name Lushai Hills was officially changed into Mizo District in 1954 after two years of Autonomous Mizo District Council was formed in 1952, under the Government of Assam. This was gain changed into present name Mizoram when it was declared as the Union territory on January 21, 1972. The people, inhabiting Mizoram were known as Mizo. Mizos are Mongolian by race (Ray, A.C; 1979).

Before the arrival of Christianity into Mizoram, Mizos were Animist; their understanding of 'Pathian' was living in the high heaven with a family just like a human family having family members; wife and descendants (lalzawmliana, H., 1981. p. 48). The western missionaries came to Mizoram, namely Rev. D.E. Jones (Zosaphluia as called by Mizos) and arrived at Aizawl on 31st August 1897. Meanwhile the itenary missionaries of the Arthington Mission Rev. J.H. Lorrain and Rev. F.W. Savidge had already landed in Aizawl on 11th January 1894. On the 25th June 1899 the first two Mizo Christian were baptized, namely Khuma and Khara. In 1901 census there were 45 Christians in Mizoram. As the number of Christian was rapidly increasing, missionaries had no time to look after them all. They were in need of help from the Mizo people itself. In 1903 they appointed three evangelists to propagate the gospel among the Mizos.

1.5.3 Theological Education

Theological Education in Mizoram had gone through the following different stages.

1.5.3.1 The First Stage: Theological School

In the year 1906 the first revival in Mizoram occurred which helped for the rapid growth of Christians at the same time the need for the ministers was increasing. Therefore, the former Principal Rev. Lalchhuanliana recorded that (1980, p.6) "In 1907 Rev. D.E. Jones started Aijal Theological School at Aizawl, knowing that the church cannot properly grow and be built up without theological education, for the training leaders and pastors".

In 1914 Rev. F.J. Sandy (Pu Dia as called by Mizos) came to Mizoram as missionary, and he took up theological education. During this time Liangkhaia and Chhuahkhama also served as teachers.

1.5.3.2 The Second Stage: Theological College

In the year 1944 Mizoram Presbyterian church celebrated the Gospel Golden Jubilee and the growth of Christian membership was so much that they had become 80,584 (Laltlani, P.C. 2006. p.16). In 1950 there were 35 pastorates and the total Christians became 100,513 which necessitated theologians to look after them. So, the Assembly of the Presbyterian Church in 1951 appointed Rev. J.M. Lloyd for the Principal. J.M. Lloyd was so much happy to reopen the school and he himself said (1990. p.22-24). 'It was actually for this work that I had prepared as a missionary'

In the year 1964, the Theological education committee made an application to the Senate of Serampore College, which is the highest authority in Theological Education in India, to upgrade the school to be a degree college. In pursuance of the application, the Serampore College granted permission to be a college level from June 1965. The college offered three year degree course of Licentiate in Theology (L. Th).

1.5.3.3 Third Stage: Bachelor of Theology Degree Course

Knowing the need and urgency of higher studies, Theological Education Committee resolved to make a request to upgrade L.Th College to Bachelor of Theology degree course. The Senate Commission came to the college for a spot verification and granted permission to start offering B.Th degree course from July 1971.

1.5.3.4 Fourth Stage: Bachelor of Divinity College

In the year 1983, the Synod meting the highest authority of the Presbyterian Church of Mizoram resolved that, 'efforts should be made to upgrade theological college to B.D College' (Mizoram Synod. 1983. p.28). At the same time Mizoram Presbyterian Church was

preparing to celebrate the gospel centenary in 1994. It was aimed to open the B.D. College as one of the celebrations of centenary. The new college building which was called 'Gospel Centenary Building' was inaugurated o 11th January 1994, by the former missionary Rev. J.M. Lloyd. So as the inauguration of B.D. College was held on 13th October 1994 at Mission Veng Presbyterian Church, Aizawl. Report of the Principal, Rev. Dr. Zaihmingthanga said, (1994; p.4). "From 1998-1999 academic years, beginning from June 1998, our college has been recognized as full-fledged B.D. College by the Senate of Serampore College, the Theological University of India. This has been a landmark in the history of our College" During this time there were 140 students, of which 21 were girls.

1.6. Aizawl Theological College Library

Library is the backbone of every educational institution and it is a source of knowledge and inspiration of education. It is regarded as an essential department in Aizawl Theological College. In 1984 the Librarian reported that (1985. p.30). "Most of the books came to us as gifts from different organizations like World Council of Churches (WCC), Council of World Mission (CWM), Feed the Minds (London), Everyday Publications, Churches and Individuals within the country and abroad"

When it was started with diploma course, there was no library. But when it was trying to upgrade to College level, there was the need to have a library. The library in Aizawl Theological College was started when it became Licentiate in Theology (L.Th) level.

1.6.1 Beginning of the Library

As it was trying to offer L.Th degree, there was a strong demand to have a library. To strengthen the college library authority left no stone untouched. The authority of the college submitted a petition to the World Council of Churches (WCC) requesting for a Theological Education Fund for the purchase of books for ATC library. In 1962, the college library received $ 1500. In 1963 again received $ 500 and $ 1000 in the next year. With all this amounts, the college started collection development by procuring books for the library. All these grants were received with the kind initiative of the then principal Rev. J.M. Lloyd. Also they received grants from Theological Education Fund for further study of the working faculty members. The library started with the establishment of L. Th College in July 1965.

In 1966, when Mizoram was declared as disturbed area, and there was a great famine affecting the whole country, there was hardly any contribution for the development of the college as well as the library. The only source was foreign grant.

1.6.2 Growth of the Library

The Evaluation Commission, who visited the College to evaluate the condition of the college for the opening of B.Th degree course, suggested that a trained librarian should be placed in the library as there was no one trained in library science. As suggested by the Commission, c. Biakmawia, Lecturer in charge of the library was sent to United Theological College, Bangalore to be trained librarianship in April-July 1971. When he came back from Bangalore the Aizawl Theological College was beginning to have a trained librarian. C. Biakmawia started classifying books using Dewey Decimal Classification Scheme and with this there was proper arrangement of books.

Consequent upon the leaving of Western missionaries Mizoram since 1968, the Aizawl Theological College was shouldered on by the Mizoram Presbyterian Church. All the responsibilities and budgets were controlled by the Mizos. From the total budget of the college a good amount of money was allocated for library. Before 1981 there was no separate budget for the library, only after that year there was a separation. The budget allocated for the library has shown below in Table 3.

Year	Total Budget of the College	Library Budget	Percentage Allocated to Library
1990	38,43,400	68,000	1.76
1995	78,97,000	2,00,000	2.53
2000	1,80,13,000	8,00,000	4.44
2005	2,22,85,000	8,00,000	3.58
2006	2,48,00,000	8,00,000	3.22
2007	2,55,44,000	8,00,000	3.13
2008	2,63,10,000	8,00,000	3.04
2009	2,70,89,000	9,00,000	3.32
2010	3,18,00,000	10,00,000	3.14

Table-3: Growth of Library Budget in ATC

From the above budget, it is revealed that before 1990 few amounts were allotted for the library. During the up-gradation of the college to the Bachelor Degree College, there was an urgency to procure more books in each field of subjects taught in the college and there was the dearth necessity to subscribe good number of journals and newspapers. Therefore, the budget allocation was increased from 1990 onward. Fortunately the Senate of Serampore

College, Theological education Department granted Rs. 25,000/- every year for 4 (four) years starting from 1990, the library development. Feed the Mind, London also gifted books worth of £ 2,000. The Presbyterian Church of Wales donated different kinds of books which cost more than £ 5,000. Consequently upon the grants and the budget from the mother church itself, along with donation of books from various sources the library could develop.

To compete with B.D. syllabus, collection development became healthier with the additions of books from different parts of the country and also outside the country. Added to this, rare and valuable books were Xerox from wherever it was possible. Since 1990's a good number of books and journals were added for the development of this library.

1.6.3. Library Building

In the new college main building, which is called 'Centenary Building', individual and spacious rooms were ear marked for library with the provision of Librarian's room, Asst. librarian's room, Transaction counter, Reading room and Stack rooms. The library was shifted to the new building in 1995. During this period the library had 18,137 books and 119 Journals. Though the library was held in the Centenary building, the construction work of the library building, known as Chapel Library Complex was in full swing.

The new Chapel-Library Building housed in three floors was inaugurated on April 2004. While the archives department occupied ground floor, First floor was meant for stack room and second floor functioned as Reading Room and office with transaction counter.

1.6.4. Library Collections

The College Library presently holds more than 53,932 books and 237 periodicals both national and international. As of now, the college library acquires 148 national periodicals and 95 international periodicals including a subscription of 2 (two) national dailies available both in English and Mizo languages. Further to for the relaxation of the students of the said college, the college library also subscribes 5 weeklies.

1.6.5. Total Staffs

Staffs are the constituents of a library system where the service of the library flows. The library staffs available in the college under discussion are eleven 11 in total such as, 1 (One) Librarian, 1 (One) Asst. Librarian, 1 (One) Archivist, 2 (Two) Library Assistants, 1 (One) IVth grade, 1 (One) Book binder, 1 (One) Security Staff, 1 (One) Computer Technician, 1 (One) Documentation Technician and 1 (One) Sweeper. The library staffs are engaged with different capacities and responsibilities. However, the Principal of the college acts as the ex-

officio Chairman of the college library who is responsible to administrative works involved including library development.

1.6.6. The Archives

The Archives Department of ATC is maintained in this library for the preservation old and rare documents concerning the Church and her ministry in Mizoram. A good number of records and books have been collected. In the year 1995, when the college was shifted to the new campus in Durtlang, there was a separate room for the Archives within the library premises. The first Archivist was appointed with effect from 1st February 2000 as reported by the Principal to the Library Committee (Report No. 1 of 9.8.2000). As already mentioned the Archives Department occupies the ground floor in the new library complex.

The Archives Department is meant for the preservation of important documents relating to the Mizoram Church history as well as for the depository of book published in Mizo language. A copy of every book in Mizo language procured for the library is being deposited in this department for preservation and future use. Old documents and church related records are kept for research purpose. It has a good number of thesis collections, especially in the field of theological education. Every publication of Mizo Synod, in other words called Synod Literature Publication Board (SLPB) are collected and preserved. It also preserves the resolutions and decision made by the church in different committees. The resolutions made in the Synod Meeting, which held every year kept from the beginning till date. The Archives has practically a valuable resource centre for research scholars and historians.

1.6.7. Used of Software in Aizawl Theological College Library

Another milestone in library development was established when the Library Committee in its 49th meeting held on 19.1.2000 initiated the computerization of library. In the 50th meeting held on 18.2.2000, the Principal took keen interest and deputed Rev. Vanlalchhuanawma to Serampore College; Serampore to enquire about the computerization in their library and subsequently the Principal submitted a proposal for computerization for Rs. 1, 15,300/- for initial installation of computers and computerization programme and Mr. S. Venugopal, library software expertise, Tiruchirapalli, South India was approached for computerization of the library. Simultaneously, the proposal for purchase of computer systems was also resolved. From the above developments, it is visualized that computerization of Aizawl Theological College library was basically started from 25.2.2000 with library software called NIRMALS.

While discussing the organizational aspects of Nirmals Institute of Computer Enterprise (NICE), initially it was established as Freelance Software House in 1992, and incorporated as unit of Regina InfoTech Private Limited, in 2003. The first release of the DOS version of NIRMALS (developed in clipper language) in 1992 was reported and received in many computer magazines. During the course of more than a decade, it has brought out several software products, the flagship being NIRMALS Pro 2.2.0 a client/server library management package widely used in more than a hundred requested library across the country.

Nirmals had never been received as yet another run-of-the-mill software product for library management. A comprehensive search tool capable of tapping the hitherto elusive or otherwise undermined library resources in what the library world has ever been striving to devise. An ideal software package cannot lose sight of the clear perspective of the transitional library world. Sophisticated software need not established its pomp and glory with a retrieve of complex operations. Such as uncanny information retrieval tool at the instance of simple operation controls would be a great boon to the library/user community. The creator of Nirmals said: " I was rather obsessed, to be a bit frank, with designing and developing such productive software by bestowing it upon with the best that has been known and thought in the world". In the beginning I possessed such idea, and run the idea has possessed me. That's all my personal statement about Nirmals journey from conception to concretization (Venugopal, S.).

Library, as vital information resource centre of organization or community has to be insured for and ensured with the latest information handling tools to excel in performance. The emerging information technology has brought about perceptible changes in the information storage, transmission and retrieval processes. The advent of microcomputers and massive media has opened the new vista for introducing the library database management system quite contrast to the traditional library resource management.

Requirements of System

Running of Nirmals software requires the following hardware in the system:

- An IBM PC AT (Compatible)
- 16 MB or more of RAM
- A SVGA monitor (monogram) or color preferred
- DOS 6.X version or above for network application and
- A computer that has ANSI terminal support

The demo pack is designed for colour monitor and it is strongly recommended. If the system is running on the Windows ’95/Windows ’98, choose the command prompt mode by pressing the function key F8 at the time of booting itself. Choosing the DOS mode from start menu is bound to give some problems as Confih.sys files and Autotex.bat may not have been initiated for setting up Application Running Environment.

1.7. Significance and Scope of the Study

Library Software packages are imperative for library automation. It, however, depends upon the type of library and services provided by the library. It further depends upon the allocation of amount for the library to build up the infrastructure for the library along with collection development of resources. As of now many software packages are available for library automation out of which some of them are open software and some priced. Open software, however, does not provide all types of modules for different functions of the library whereas, the priced software facilitate with multiple modules for various library operations. The significance of the study is that, as multiple library software packages are available for automation purpose and determination of the cost effective, user friendly and right choice of library software is necessary in view of the proper management of library resources due to proliferation of literature and bibliographical control with the help of different modules therein. Further to carryout different functions and services of the library, it is essential to put proper emphasis while procuring the software. Moreover, selection of right package will enhance the efficiency of the library services through automation which is the need of the hour especially in the service segment of the library as the users need authentic, multifaceted, multidimensional information from a vast array of information. The college libraries under study have adopted different library software for their library automation. Modules attached to these two softwares happen to be user friendly for taking up different library operations including management of resources. The study will encourage other college libraries to espouse automation for better organization and utilization of resources.

The scope of the study, however, is limited to the library software being used by the Government Hrangbana College, Aizawl and Aizawl Theological College who use SOUL1.0 and NIRMALS Pro 2.2.0 respectively for library automation. The study could explore various performances undertaken by both the college libraries under study using various modules of both the software. No other library software, however, has been included under the purview of the study.

1.8. Review of Literature

Considerable lengths of literature are available in the field of library automation and various library software packages both print and electronic form. The scholar has made an exhaustive study of the existing literature available in the form of books, journals, conference proceedings, reports, research paper etc. including electronic sources of information. The scholar also has taken due care of revealing information on the concerned area by browsing multiple URL sites on Internet. Relevant studies in the specific area available in print form both from journals and books have been placed by the scholar for a clear understanding of the published literature.

- Bryson, (T O) (2002). Effective Library and Information Center Management. 2nd. Burlington: Ashgate Publishing Company.

Bryson has mentioned that, the modern management techniques are required so as to provide new ideas to be used for stimulation entrepreneurial and effective solution to management concern. Special attention is paid by the author to the concept of managing in times of economic restraint, changing words, attitudes, environments and management styles and to the influence of technology corporate culture and commercialization.

- Goswami, (Anjana). (1995). Application of information technology in library services. *Library Herald*. Vol. 33, pp.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 internet on storing, processing and dissemination of information.

- Husain, (Shabahat) and Ansari (Mehtab Alam). (2007). Library automation software packages in India: A study of Alice for Windows, Libsys and Virtua. *Annals of Library and Information Studies.* Vol.54 (3) ; pp. 146-151

Introduction of computer in libraries has immensely enhanced the effectiveness of library services including efficient organization and retrieval of information activities. Since the application information technology in libraries, one of the greatest challenges before the library managers is the selection of a good library automation software package which can

cater to the needs of particular library. In India, library automation started in the last decade of the previous century. Many Indian as well as foreign software companied had enter in to the market. Nevertheless only a couple of library automation software packages gained success in making their presence felt into Indian market. The present article discusses the salient features of cataloguing module of three such packages, namely Alice for Windows, Libsys and Virtua and their acceptability in a developing nation.

- Kaur, (Amritpal). (2000). Five laws: their relevance in information technology of automated environment. *ILA Bulletin*. Vol. 36, pp.24-27.

Advances in information technology have vastly enhanced the automated libraries capable of collecting, storing, processing and transmitting information. Libraries have embraced various technologies such as computer, CD-ROM, telecommunication, micrographic, reprography to enhance their efficiency, provide better and improved services to the clientele. The article is an attempt to see how Ranganathan Laws serve as guiding principle to assess the usefulness of information technology in the automated libraries and information services.

- Krishna Kumar. (1980). Application of computer: a challenge or change. *ILA Bulletin*. Vol. 16, pp.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 exist in 2000 A.D. He enumerated the issues for discussion relating to application of computers in India and mentioned the reasons for slow adoption of computer. He pleaded for greater involvement of librarian in the application of information technology.

- Kumbar, (Mallinath). (1995). Use of information technology in library service. *Herald of library Science*, vol. 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, (Raman R). (1992). Computer applications to libraries and information science. New Delhi; Ess Ess. Pp.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.

- Rajashekar, (T B). Computer software for library and information work. *In.* Handbook for libraries: Archives and information centers in India. *Ed.* Gupta & others. Vol.5.New Delhi. pp. 147-149.

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

- Satyanarayana, N.R. (2003) A manual of Library automation and networking. Lucknow: New Royal Book Co.

In this short manual an attempt has been made to appraise the librarians, information workers, students of library and information science and others who have no mathematical background and no computer knowledge, to become aware about the basics of new technologies and their applications to various activities in libraries and information centers, so that they can adopt the use of new technologies to their day to day work. The basic concepts of library automation and computerization have been explains in simple language with a number of illustrations and examples.

- Seghal, R L and Behi, D K (1996). Manual on computer applications training in library science. New Delhi; Ess Ess. pp.143-145

The authors discussed the benefits of computer application in the libraries and it is a hands-on-practice book meant for the library professionals for taking up various operations in the library. It also discusses various services that can be imparted to the users through the computer.

- Vasantha, N and Mudhol, Mahesh V. (2000). Software packages for library automation. New Delhi: Ess Ess Publication

The book exhaustively discusses about the different software packages which can be applied in library services. The book specifically deals with computer configurations, development of software packages etc.

1.9. Statement of the Problem

Library, the centre of learning in every level of education, occupies as a core entity in providing both formal and non-formal education systems. Fast growth in research and development in every field of studies requires technological competencies for the library personnel, to grasp and implement latest technologies in the form of automation and digitization for information storage and retrieval. The main objective of a library is to provide best services to the library users in the fullest manner within a least span of time. It is, therefore, necessary to adopt latest technologies in the library services. In an academic library, Principal being the head of the institution also acts as head for the library attached to the college and shoulders all responsibilities of the library. Few college libraries, however, constitute library committee with separate library buildings. The state government hardly puts any special provision for allocation of amount for library budget and therefore, the library has no other option than to depend on primarily the fee obtained from the students which forms one of the major sources of finance for the library. However, the UGC allocates major financial assistance to some of the college libraries for special purpose such as, collection development, development of infrastructures, equipments, building etc. Further, the library staffs in different colleges of Mizoram are not adequate with respect to the professional strengths. Some of the college libraries are being managed by one library staff whereas some have 2 (two) or 3 (three). Out of 25 college libraries only 10 (ten) are look after by a librarian whereas some are being managed by the Library Assistant or a clerk. Besides, library staffs are engaged for other official works in the college office which hamper the services of the library as a whole. However, the libraries under study are having librarian with professional qualification. To develop automation in the college libraries and adoption of technologies, it is very problematic for a single handed library staff in college library. Computerization and automation of the library was started in 1990's. There are many software packages and library automation packages as noted above developed by software vendors, learned organizations, private and government. To quote a few Libsys (Library system), SOUL (Software for university Libraries), NIRMALS, Alice for windows etc. are some of the library software used in the library for library automation and operations. It has become a problem for the librarian to choose the right automation i.e., library software package which will suit to the needs of their libraries where finance plays a pivotal role. For this purpose there is a need to study these packages and choose the best for their library needs. It is necessary to study the library automation package with regard to its modules, operations,

compatibility with hardware; server etc. in detail so that various multitask can be carried smoothly in the libraries. Another problem lies with the study is that whether the library staffs are well versed with the modules of the software packages and whether it is compatible to the networked environments.

1.10. Objectives of the study

The present study has the following objectives:

- To ascertain proper application and functioning of library software packages in the college libraries under study.
- To identify the problems of associated with the library software packages i.e., SOUL 1.0 and NIRMALS.
- To discuss in detail the scope and modules of the library software packages applied in Govt. Hrangbana College and Aizawl Theological College.
- To determine the usefulness of both the software packages with regard to their compatibility, users friendliness, network support etc.

1.11. Methodology

The present study is based on the literature and records available with regard to the modules and operations of both the software packages of the libraries under study. However, to obtain the right information about the benefits of library automation the scholar adopted the following methodologies for primary data collection. After the data relating to the study were collected, the same were tabulated for analysis and interpretation to derive appropriate findings, suggestion and conclusion. The population size for the study constitutes more than 1700 users comprising 1500 and 200 of the Govt. Hrangbana College and Aizawl Theological College respectively who are the beneficiaries of the library automation. To study of the above research problem, a stratified sampling technique was used to obtain a representative sample as the samples constitute a heterogeneous group. The scholar divided the total population in to several sub-population groups which are individually homogenous and the scholar selected the items from each stratum to constitute a sample. Hence, the total population size for the study has, however, limited to 300 constituting both the college libraries under study and authentic results were derived. The scholar adopted both questionnaires and observation techniques to obtain primary data related to the study.

- **Questionnaire**

The scholar prepared two structured questionnaires for distribution to the librarian and users. The data required for proposed study were collected through structured questionnaire covering various facets relating to research topic and will be submitted to the Librarian or the Library in-charge of the respective libraries. After collection, the filled in questionnaire from the Librarian were scrutinized, analyzed, tabulated for analysis and interpretation of data to draw a conclusion which helped the scholar to find out the problems associated with the application of library software. Further another set of questionnaire was also prepared relating to the study for distribution among the users for obtaining data for analysis.

- **Observation**

Observation technique was also applied for getting information on physical development with the adoption of automation in the libraries under study. Further, this technique helped the scholar to find the user friendliness of the software, network support, benefits to the users, use of databases, accessibility to information, circulation, serials etc. Data collections through this were verified with the records of the library to make the study more authentic.

1.12. Chapterization

The present work has been chapterised into 6 (six) chapters. Chapter-1 of the work concerns to introduction which, apart from the research methodology such as, significance and scope of the study, review of literature, statement of the problem, objectives of the study also include Higher Education, Hrangbana College and Aizawl Theological College of Mizoram, Library buildings, staff, collection developments and automation software used in the library are discussed. Chapter-2 of the study focuses on the history of library automation, areas of library automation, needs and purpose, perspectives of library automation, etc. Chapter- 3 of the study deals with the development of software packages of the library and discussed some of the library software packages available for the use of automation, etc. Chapter-4 of the study is concerned with the components associated with Soul 1.0, Soul 2.0, Soul and Nirmal features along with different modules of Soul and Nirmals. Further, comparison of both Soul and Nirmals are discussed etc. in the same chapter. While, data analysis and findings derived out of the filled-in questionnaires have been discussed in Chapter 5, Chapter-6 deals with suggestions and conclusions.

1.13. Conclusion

There are many library software packages available for automation purpose. Determination of the accurate choice, cost of library software for proper management has become a major issue which however, can be determined on the basis of requirement. The primary aim must be focused with imparting effective services which has become imminent in view of the proliferation of literature and bibliographical control and the same can be managed through various modules included therein along with carrying out different functions of the library. Further, cost-effective with optimum out put is the essential parameter due to financial constraints. In view of the changing scenario automation being the prime criteria for the library, the librarian needs to be equipped with all technological parameters to satisfy the present day requirements of the users and this is evident from the continuous demand, availability of multiple types of resources, changing dimensions of user requirements. This has become imminent as the users require to get authentic, multifaceted information from a vast array of information. The college libraries under study have adopted different library software in their library automation. Modules attached to these two softwares i.e., SOUL and NIRMAL seem to be user friendly for taking up different library operations including management of resources.

References

- Aizawl Theological College (http://www.atcmizoram.org/index.php) (Accessed on 2/12/2010)
- Bryson, (T O) (2002). Effective Library and Information Center Management. 2nd. Burlington: Ashgate Publishing Company.
- Chandel, Sunil Singh (2003). Information service in Academic Libraries. New Delhi: Rawat Publication.
- Goswami, (Anjana). (1995). Application of information technology in library services. *Library Herald*. Vol. 33, pp.1-2
- Hari, Narayan N.S. (1991). Concepts of library automation. *Herald of Library Science,* vol. 30 (3-4)
- Harvana, L.J. (2001). Experience in Library automation and possible lesson for the future: a case study. *Herald of Library Science,* vol. 40
- Husain, (Shabahat) and Ansari (Mehtab Alam). (2007). Library automation software packages in India: A study of Alice for Windows, Libsys and Virtua. *Annals of Library and Information Studies.* Vol. 54; September; pp. 146-151
- Kaur, (Amritpal). (2000). Five laws: their relevance in information technology of automated environment. *ILA Bulletin*. Vol. 36, pp.24-27.
- Krishna Kumar. (1980). Application of computer: a challenge or change. *ILA Bulletin*. Vol. 16, pp.122-129.
- Kumar, Sunil (1999). Library automation: an immediate need. *Library Herald,* vol. 36
- Kumbar, (Mallinath). (1995). Use of information technology in library service. *Herald of library Science*, vol. 35.
- Lalchhuanliana. Missionaryte hnuhma. *Didakhe*. Vol. 18(2), 1980
- Laltlani, P.C. (2006). Aizawl Theological College Chanchin. Aizawl: Synod Press
- Lalzawmliana, H. (1981). The Strucuture of the Mizo Presbyterian Church (Unpublished) B.D. Thesis
- Librarian. ATC Library. ATC Annual Magazine 1984-1985. Aizawl: Tlangveng Printing Press
- Library Committee Resolutions
- Library Monthly Reports, 1994 onwards
- Lloyd, J.M. Principal Thukhawchang. ATC *Silver Jubilee Souvenir*. 1965-1990.
- Mishra, R.K. (1999). Library software selection: an analysis. *IASLIC Bulletin,* vol. *44*
- Mizoram Synod. Synod Bu 1983. Aizawl: Synod Press
- Nair, (Raman R). (1992). Computer applications to libraries and information science. New Delhi; Ess Ess. Pp.143-145
- Pazawna, C. (1979). Principal's Report. *ATC Annual Magazine* 1978-1979. Aizawl: Tlangveng Printing Press
- Rajendra, P. (2007). Automated Bibliographic record capturing from Web OPAC and Online Bibliographic Database for Library and Information studies. *Annals of Library and Information Studies,* vol. 54

- Rajashekar, (T B). Computer software for library and information work. *In.* Handbook for libraries: Archives and information centers in India. *Ed.* Gupta & others. Vol.5.New Delhi. pp. 147-149.
- Ray, A.C. (1979). Mizoram. New Delhi: Publication Division, Ministry of Information and Broadcasting
- Satyanarayana, (N.R.) (2003). A manual of Library automation and networking. Lucknow: New Royal Book Co.
- Sharma, R.K. (2001). A modular library automation solution for next millennium. *Herald of Library Science,* vol. 40
- Seghal (R L) and Behi, (D K) (1996). Manual on computer applications training in library science. New Delhi; Ess Ess. pp.143-145
- Vanlalchhuanawma. Inauguration of M.Th Programme in Aizawl Theological College. Presbyterian Review, vol. VIII (30), 2002
- Vasantha, N and Mudhol, Mahesh V. (2000). Software packages for library automation. New Delhi: Ess Ess Publication.
- Weatherby et.al. (1990). Guidelines for establishing automated libraries in developing countries. *Computer in libraries*, Vol. 21, pp 21
- Zaihmingthanga. Principal's Report. *ATC Annual Magazine* 1998-1999. Aizawl: Synod Press
- http:// www. education. nic.in/ higedu. asp

2.1. Introduction

Library automation refers to use of computers, associated peripheral media such as magnetic tapes, disks, optical media etc. and utilization of computer based products and services in the performance of all type of library functions and operations. Computers are capable of introducing a great degree of automation in operations, functions since they are electronic, programmable and are capable to control over the processes being performed.

The utilization of computer and related techniques make the provision to provide the right information to right reader at the right time in a right form in a right personal way. Automation of library activities provides the services very efficiently, rapidly, effectively, adequately and economically. The modern libraries and information center facilitates free communication because access to information has become a fundamental right of the clientele.

The automation is economically feasible and technologically required in modern libraries to keep up with the requirements of new knowledge, the enormous increase in the collection of materials, problems of their acquisition, storage, processing, dissemination and transmission of information. The capabilities of computer associated peripheral media and its application in library activities and services led to a highly significant quantitative and qualitative improvement especially in online technology.

Information / knowledge itself is of no value. It is the use of information that makes it valuable. This is our and users key to a more success, more happiness in our mission. Put this information to work for user by automation of library functions. The role of computers and their associated peripheral media are being increasingly used in library and information services for acquisition, storage, manipulating, processing and repackaging, dissemination, transmission, an improving the quality of products and services of library and information centers.

2.2. History of Library Automation

In 1930s the efforts of library automation system was started by Herman Hollerith of the US Census Bureau who invented punched card technology, with the help of Dr. Jolul Shaw Billings, the then Director of Surgeon-General's Library (now the National Library of medicine). In 1935, Dr. Ralph H. Parker created a circulation control system at the University of Texas at Austin using the Hollerith Punched Card or IBM Punched card equipments.

However due to slow progress in the development of computer systems the efforts was put into experimental project of library automation system.

In 1960s the first trend of library automation was developed in US, using computers for creating bibliographic databases as library catalogues. Library of congress developed a machine-readable catalogue of its holdings records using the MARC input format. In 1967 the OCLC (Online Computer Library Center) was started the first computer-based library network.

During the 1970s the development of the integrated computer chip and storage devices led to an explosion of library automation. RLIN (Research Libraries Information Network) and WLN (Washington Library Network) was started the online library networks. In this decade, a number of libraries started automation using the microcomputers of their organizations.

During 1980s, when the rapid development of lower cost microcomputers and it is easily available in libraries, the automation became a possible proposition for all types and sizes of libraries. Many library automation packages also came into the market. The introduction of CD-ROMs in the late 1980 has changed the way libraries operate, CD-ROMs containing databases, software and information previously only available through print, became available making the information more accessible.

The 1990s have seen the rise of computer networking. By linking computers together to form a network, access can be provided both locally and from a distance, and the different resources held on the networked computers can be shared. Libraries also stared Internet and the World Wide Web on a large-scale providing quick library and information services to their users. Also hardware-specific automation packages, packages with web-interface, came into the market.

In the new millennium, every library, small, medium or large are now was using the computers and plans or implements automation of its activities and services. Computerized catalogues or OPACs largely replace traditional library catalogues. Technological advances will continue to open new opportunities for libraries to provide efficient and exhaustive information services and to link to computer networks worldwide. The latest technology penetration in library automation system is barcode technology, digital library and RFID security system. The library automation, which started in the 1970s in a few special libraries, has now reached most of the special and universities libraries.

Libraries are always at the forefront of the latest technologies to find new ways to optimize the management of libraries and resources, and to provide improved services. Automated library systems, apart from supporting housekeeping operations and management of information services also act as document management systems. It stores documents in digital form and provide appropriate retrieval mechanisms so that individual documents, or sets of documents can be retrieved against specific query or on any given topic. In some systems, the document may be held in print form or microfiche and only the index is in electronic form. Automated system also monitors the whereabouts of documents so that library staff and customers can be aware of the availability and status of the documents in collection. The range of services offered by automated library systems can be placed into three broad groups – user services, MIS support services and digital media archiving. (IGNOU; 1995).

In an automated environment multiple services are extended to the user communities which apart from other include OPAC and Web OPAC which are the focal points and can be accessed through computers.

OPAC services facilitate the following benefits to the users. Users can search various information with regards to,

- ⇨ Locate resources in a file or database as the result of a search using attributes or relationships of the resources;
- ⇨ Identify a resource (i.e. to confirm that the entity described in a record corresponds to the entity sought or to distinguish between two or more entities with similar characteristics);
- ⇨ Select specific item that is appropriate to the user's needs (i.e. to choose a resource that meets the user's requirements with respect to content, physical format, and so on or to reject a resource as being inappropriate to the user's needs);
- ⇨ Acquire or obtain access to an item described (that is to acquire an item through purchase, loan, and so on or to access an item electronically through an online connection to a remote source);
- ⇨ Navigate a bibliographic database (that is through the logical arrangement of bibliographic information and presentation of clear ways to move around, including presentation of relationships among attributes).

Further, in automated setup access to library collection is provided through Online Public Access Catalogue or OPAC. OPAC of any modern LMS is fully integrated with other modules, accessible through LAN and WAN and allows users to,

- ⇨ Search, either combined or specific for all formats (books, journals, computer files, maps, sound recording, musical scores, visual materials, manuscripts and archival materials);
- ⇨ Find a range or levels of records (from full bibliographic records to brief, minimal level records);
- ⇨ See standard and customized display of records in all status categories (fully catalogued, provisional records, confined copy, on order, in process, lost, withdrawn);
- ⇨ Know item-level circulation status information in real-time and note of items have special locations (in transit, reserve etc.) or status (recalled, on hold etc.);
- ⇨ Search multiple words or phrases in one, more than one, or all fields;
- ⇨ Apply various search operations within and across all fields such as Boolean operators (OR, XOR, NOT, AND), Positional operators (SAME, WITH, NEAR, ADJ) and Relational operators ('less than', 'greater than', 'equal to' etc.);
- ⇨ Indicate which fields are to be displayed for a retrieved record at the time of display, printing and downloading.

2.3. Areas of Library Automation

The application of the computer to library operation has two aspects namely housekeeping routines and information storage and retrieval. The housekeeping routines include acquisition and ordering work, cataloguing, circulation control, serial control and keeping of records, statistics for overall management purpose. The application of computer to information service comprises generation and collection of information, information retrieval, current awareness services, selective dissemination of information, computerized databases, information transfer and distribution, etc. Automation to different areas of library services has been discussed threadbare.

2.3.1. Housekeeping Operation

In libraries, the house keeping operations play a major role in providing the reading materials including electronic materials with the help of technology and thereby, the primary objectives of the library are fulfilled including imparting satisfaction among the users. More over, the technology applications have a far reaching effect in the house keeping operations which how

ever, is not limited to only circulation, serials etc rather it has extended its boundary to provide services like Web OPAC, down loading of information through hyper linking etc. Various house keeping operations of the libraries include acquisition, cataloguing, circulation control, serial control etc. The basic functions related to house keeping operations in a library irrespective of type or size may be grouped which has been discussed in Fig.1 as under:

.

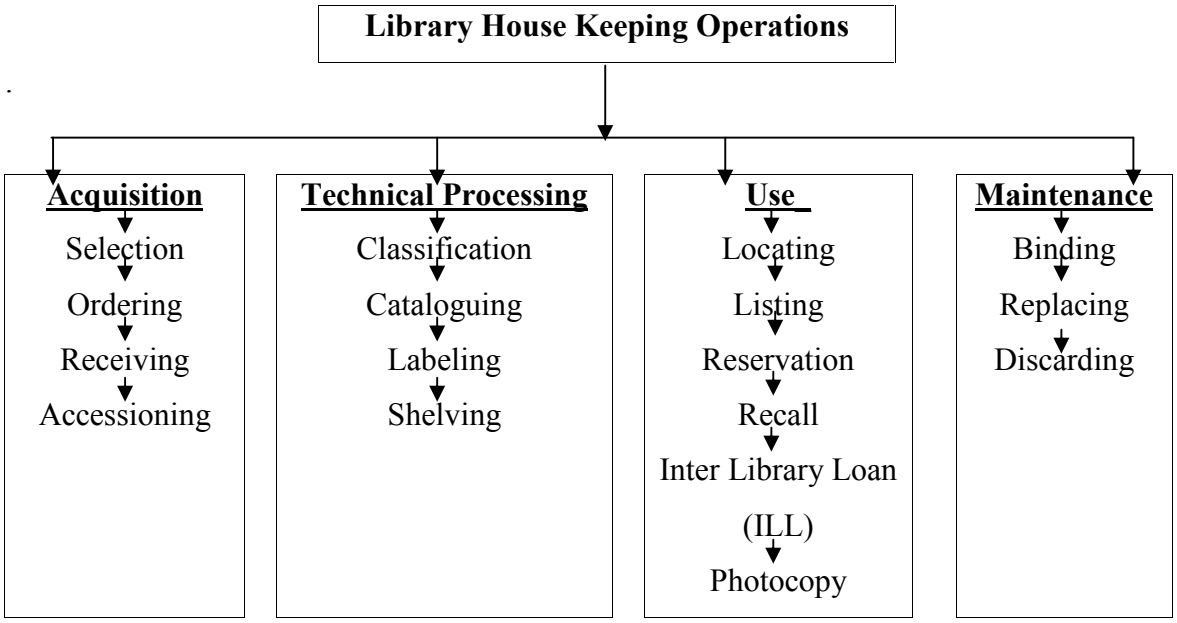


Fig. 1: Divisions of Library Housekeeping Operations

- **Acquisition**

Acquisition is the process of purchasing of books and other documents including serials for a library collection. Acquisition encompasses all aspects of the procurement of all types of library materials, whether by purchase, gift or exchange, from the request stage through transfer of materials to cataloguing. These work procedures are usually both manual and offline. The acquisition process involves the process of selection of the documents followed by ordering to the supplier to supply the documents which after receiving requires accessioning in the accession register. All operations relating to acquisition can be computerized. The computer can perform better file creation, updating and maintenance of files, financial management and monitoring of the receipt and passing of the documents through various stages very easily. In an automated environment, the library can make an order through online through Internet and the vendors offer data online immediately. More over, it is very much convenient to place the orders to supply the books on line to any part of the globe where the authorized agents in the concerned country supply the books immediately after receiving order from their respective head office and in this way the procedure is

simplified and library can acquire the books immediately. As compared to traditional method, this mechanism saves on cost, time, labour intensive jobs and shortens the time of receiving documents.

- **Cataloguing**

Cataloguing includes the function of describing, recording, and displaying details of holding of the library. The automation of cataloguing process includes the retrospective conversation of existing catalogue records into machine-readable form. With the help of high speed printers library has provide the computer generated printed catalogue and also perform their timely updating. Catalogues can be produced in various physical forms including microfilm catalogues and Online Public Access Catalogue (OPAC). OPAC is more ideal as it permits several access points through terminals, but they are costly.

- **Circulation Control**

Circulation control is one of the important functions of library management. It keeps track of members' registration, issue, renewal, return and reservation of documents. The circulation system involves a grate deal of record keeping activities such as charging and discharging of books, overdue collection, maintaining statistics and enrolling new members to the library. Automated support for circulation control vastly improve library's ability to rapidly and accurate record the loan transactions, to monitor these transactions, to record return of lend items and to support other related circulation functions.

- **Serial Control**

It is the process of acquiring periodicals/journals. Serial management, an integral part of library operation, has become increasingly complex over the years. The emergence of e-journals has made it further complicated. Automated serial control serial systems can handle receipts of periodicals; send timely reminders, subscription information, claims for missing issues, binding information etc. in a more effective and economic way. There are three files which are needed for serial control-an order file, a holding file and a fund file. It makes easy to prepare a list of holdings. From the programmers point of view this module poses much problems due to changing nature of serial publications like frequently occurring changes in title, frequency, publishers, etc. Serial control is one of the most complex procedures in libraries. The complexities of the procedure of procurement, claiming and entering of issues, follow-ups to be taken in case of missing issues-it occurs very frequently in case of journals,

article, indexing, routing, selective dissemination of information etc. makes it a much complex activity compared to other house-keeping works in the library.

The functions of the serials control section are as follows:

- Inputting serials data;
- Ordering new serials;
- Renewing presently subscribed serials;
- Accessioning of individual issues as and when the issues are received;
- Sending reminders;
- Selective follow up of missing issues;
- Keeping track of the amount spent on subscription, bindings.
- Estimation of the budget for the next academic/financial year;
- Binding control.

2.3.2. Information Storage and Retrieval

Information retrieval is the process of finding some desired information in a store of information or database. The enormous increasing of published information and rapidly increasing specialized nature if the literature have resulted in serious problems in accessing information, i.e. retrieving information on a given topic or subject and in becoming aware of new pieces of information. Information retrieval systems for bibliographic applications are generally characterized by the fact that they permit very large record size, Boolean search capabilities and flexible output formatting. On-line SDI services from CAS, MEDLINE, DIALOG and several other databases can provide a pinpointed, expeditions, and exhaustive information service.

- **Resource Sharing**

The resource sharing helps one library to access resources of other libraries. With the applications of automation to libraries, concept of resource sharing and networking has gained wide popularity. Those libraries that have already computerized their library services can be listed with each other through a suitable telecommunication network system. The system enables the participating libraries to obtain and access information of each other by using computer terminals attached to network system.

❖ **Office Automation**

Computers can be utilized effectively for office automation. The application of IT in the libraries also enables to reduce time wasted on non-production routine work and to improve the quality of work. Financial and personal management can be done effectively and accurate using computers.

2.4. Need and Purpose of Library Automation

The motto of library automation is to provide the write information, to write person, in write manner, in write time. While justifying need for library automation more than cost-effectiveness the benefits derived by the library users become the major consideration. Since library does not happen to be an economic entity such benefits need to be looked at in a different perspective. To appreciate the advantages it becomes necessary to highlight the different levels of library automation. For convenience it can be visualized at following levels:

2.4.1. Library Cataloguing

The automated library catalogue system means creation of bibliographical information in MARC standard format for most of the library activities and services such as acquisition, reference, bibliographic service, inter-library loan, cooperating cataloguing, etc. For user point of view, users can search any fields, fast retrieval and printing the required information. User can also use to access the same database, e-mail services, and make their request/reserve and other internet services, if the same system is available in network environment.

Machine Readable Cataloging records are the standard method of storing and transmitting bibliographic records. The Library of Congress, OCLC and RLG create most bibliographic records in MARC standard. Each utility offers MARC record distribution services. Records that come from Library of Congress and OCLC are usually of high quality. Other sources may not supply records that are as complete.

2.4.2 Staff Diminishing

Library automation means minimize intervenes of human activities and maximizes the uses of latest technology. It's eliminating the repetitive work and cumbersome job of printing the card catalogue. It saves the stationary and space. It reduces the activities of human being in all the housekeeping operation and makes the process simple.

2.4.3. Increase of Productivity

It increases the efficiency and productivity of library staffs by using copy cataloguing, sharing of bibliographical records, making union catalogue, use of other external databases. It makes the consistency of the record and the standard quality.

2.4.4. Housekeeping Operations

Housekeeping operations covers acquisition, circulation and serial control, cataloguing. These features should be required in the library software. The Circulation Data Migration facilities should be required to reflect the required it reflects the collections use and is valuable resource for library managers. Charge and hold transactions offer a timely picture of what items are popular and in use while other data (fines paid, items declared lost, etc.) gives the library long-term management tools to control library resources.

2.4.5. Advanced in Technology

Library should follow the new advance technology i.e. RFID. A new and innovative replacement for barcode technology is RFID (Radio Frequency Identification Devices). RFID is used in retail environments, theft detection and is in progress for installation in libraries. RFID brings many of the same advantages of barcodes, but uses a different type of reader to collect data. When this technology is used in libraries it allows books to be checked out and returned without the need to physically handle every item. In addition, it makes library inventory projects much more efficient. Instead of pulling each book off shelf to scan a barcode, an RFID labels are read and decoded.

2.4.6. System hardware and software

A computer operating system is the underlying software that is usually provided by the hardware manufacturer from whom we purchased our system. Arguments outlining advantages and disadvantages of operating systems are beyond the scope of this document. Most library system vendors offer software that runs on more than one operating system platform.

2.4.7. Access to external information through Internet

If the library does not yet have an installed TCP-IP based telecommunications network it should immediately take step to plan for one and have it installed. Network planning is beyond the scope of this document. However, every library system on the market today uses TCP-IP as its basic telecommunications structure so without such a network no library

software can operate. If the library has a TCP-IP network, the cabling connecting workstations to routers in each branch is Level 5 or above (Cat 5, Cat5E, or Cat6). Any cabling under Cat5 is susceptible to electronic interference and to data corruption.

2.4.8. Specific needs of Library and Information Users

The library system contains personal information about the patrons and transactions, as well as invaluable information about the library holdings and the status of each item. Without this information the library would not be able to operate. All networks are potentially vulnerable to intrusion from hackers. At a minimum network should be protected by a firewall that shields telecommunications equipment and servers from external attacks by closing down access to all ports except those necessary system operations

2.5. Essential for Library Automation

Library automation is the computerization of house keeping operations of the library to operate a computerized library management system. It offers new services based on the technologies and also integrate the traditional library operations in the era. The following are the essential things for the library automation:-

2.5.1. Healthy Collection

Computerization is not just for the sake of computerization. Computerization of the library collection and other library services is to serve the users better and it provide access to information. For this purpose, first of all the collection of the library should be good and comprehensive. If the collection is not good what is the use of automation.

The library should have a book acquisition policy and norms for the building up of a good collection. Collection building is much more difficult task than purchasing a computer system. Computer can supplement and enhance the quality of the library collection but it cannot altogether replace the library collection.

2.5.2. Finance

Finance is the backbone of any venture. UGC norms stipulate that the university library be allocated 10% of the university budget. Finances are required in the university library for;

- The collection building
- Computer System
- Recurring Expenditure

For collection building every university in view of the rising cost of reading materials and the declining purchasing value of rupee, should provide at least 15% of the university budget annually. Then only it can be felt that the university administration is really interested in the university library. Secondly, the university library would require a minimum non-recurring amount of Rs 10-12 lakhs for establishing a computer system. Thirdly, the university library would need an amount of the Rs 3-5 lakhs for annually for the maintenance of the computer system and its updating and uninterrupted power supply etc.

2.5.3. Computer Hardware

Selection and purchase of a computer is a complex procedure. The library should decide first what type of computer is suitable for its work. There are variety of computers and computer makers. There are mini-frame computers to main frame computers.

There are different types of firms and organizations to supply computer hardware and parts, such as;

- Computer manufacturers
- Independent terminal and peripheral manufacturers
- Selling companies
- Brokers
- Leasing companies
- Retail shops

2.5.4. User Friendly Computer Software

Computer software are generally expensive, software includes,

- Utilities format, conversion programmes
- Application Software
- Database management system and data dictionary software
- Dated communication software
- Programming aids, testing aids etc.
- Additional system software.

Software is generally a package. It is invisible and unverifiable till it is acquired. There are many library need-based software packages today in the market. Some of these are CDS/ISIS, WHIZKID, TULIPS, LIBSYS, LIBRIS, OASIS, BASIS PLUS, TECHLIB plus, etc. Though it is not possible to evaluate exhaustively all these software packages.

2.6. Perspectives of Library Automation

As the use of computers and other technologies continue to be used to enhance services provided by a variety of industries, information providers, like libraries, are also automating in-house collections and resources. There are many benefits to automating the information available in libraries, both for the staff and users alike.

2.6.1. Improved Customer Service

Automation of the library helps take some of the workload off of librarians and other staff members in the areas of acquisitions, cataloging and circulation, which in turn allows them to better serve their patrons. This extra time can lead to more programs being facilitated in the library and make library staff available to answer reference questions and help people who having trouble researching or finding the right information.

2.6.2. Cataloguing Improvements

Automated cataloging standards, such as MARC (Machine Readable Cataloging), allow for quicker cataloging of library items. Not only does this allow the librarian more time to dedicate to improving customer service, but it also makes the sharing of materials from location to location much easier and much more affordable.

2.6.3. Easier Access

Not only does automation of library materials make it easier to find books, buy it also makes it easier to access journals and some books online from a home computer or elsewhere. The automation of library collections also allows the library to be more flexible when it comes to any increases in demand.

2.6.4. Collections

Automation of the library allows for an improvement in the variety, amount and quality of materials that are available in the library's collection. It can also help make weeding out old, outdated and irrelevant books and materials from the collection, which helps keep the library's collection more streamlined and easier to find the right item.

2.6.5. Lasting Effects

Automation is also a way of preparing the collection to become sustainable with the ever-increasing shift to a technology-based society in terms of information dissemination, paired with the ever-decreasing amount of funding for libraries. Automation will help libraries who begin to struggle and are forced to lay off staff. Switching to an automated system allows

libraries to add on features when they become available in the future, in stead of having to do a complete overall of their collections and cataloguing methods.

2.7. Conclusion

The wide range of technology/products is available, it is necessary for librarians to keep a watch on the developments and to choose appropriate technology depending on the needs. Also, it is very important for librarians to interact with computer professionals as the library automation at all levels needs good co-ordination among both these professionals. Library automation encompasses mechanization of housekeeping operations, sophisticated information retrieval, integrated access interface and MIS activities. The process of library automation centers on automation package or library management software. Modern packages are integrated in nature and offer all the facilities essential for day-to-day library management. Automation packages available in India are basically of three types – packages of foreign origin, packages developed over foreign LMSs and packages developed in India. These packages are modular in structure and most of them supports all the housekeeping operations, OPAC, Web-OPAC, digital media archiving, Z39.50 copy cataloguing and modern data capture devices like RFID, smart card, etc. The process of selection of LMS should be based on some well- defined criteria because implementation of LMS is a big investment in terms of money, time and manpower.

Reference:

- Aswal, R.S. (2006). Library automation for 21st century. New Delhi: Ess Ess Publications.
- Boss, R.W. (1984). Library Manager's guide to automation. New York: Knowledge Industry.
- Gilliman, P. and Peniston, Silvinia. (1984). Library automation: a current review. London: ASLIB
- Ravichandra Rao, I.K. (1992). Library automation. New Delhi: Wiley Eastern.
- Hari, Narayan N.S. (1991). Concepts of library automation. *Herald of Library Science,* vol. 30 (3-4)
- Harvana, L.J. (2001). Experience in Library automation and possible lesson for the future: a case study. *Herald of Library Science,* vol. 40
- IGNOU
- Kumar, Sunil (1999). Library automation: an immediate need. *Library Herald,* vol. 36
- Nanda, Manohar. (2006). Library automation. New Delhi: Anmol Publications Pvt Ltd.
- Kumar, P.S.G. (2004). Information Technology Applications (Theory & Practice). New Delhi: B.R. Publishing Corporation
- Satyanarayana, (N.R.) (2003). A manual of Library automation and networking. Lucknow: New Royal Book Co.
- Sharma, R.K. (2001). A modular library automation solution for next millennium. H*erald of Library Science,* vol. 40

3.1. Introduction

Software is a set of pre-programming written in various languages and it is also a set of instructions so as to enable the computers to do desired operations in the libraries. These can be broadly categorized into two types i.e. System software and Application software. The System Software are otherwise known as operating systems, which are set of programmed inbuilt in computers to run the computer whereas application software are used in the computer to perform specific applications. Application software also covers the utility software and is used to automate housekeeping operations of the libraries, such as acquisition, technical processing circulation, serial controls, etc. Today quiet a number of library software packages are available for librarians for housekeeping operations and information storage and retrieval purposes. The automation of library activities in India started in full swing with the introduction of CDS/ISIS. CDS/ISIS is a menu-driven generalized information storage and retrieval system designed by a team of experts under UNESCO/ PGI programme. It is specifically meant for the structured non-numerical databases. In India, erstwhile NISSAT (ceased existence since 2004) with the help of other professional bodies organised a number of training courses on application of CDS/ISIS (DOS and Windows version) in information organisation activities. As a result, a large pool of trained manpower developed all over the country. Some organisations from the experience of use of CDS/ ISIS, MINISIS etc. developed their own LMSs e.g. DESIDOC developed DLMS (Defence Library Management System), INSDOC (now NISCAIR) came with CATMAN (Catalogue Management) and SANJAY was developed by DESIDOC under NISSAT project by augmenting CDS/ISIS (Version 2.3) for library management activities. The LMSs presently available in India may be ranked in 2nd, 3rd and in between 3rd and 4th generations on the basis of their features as listed in the table 1.1. As far as the origin and application domain is concerned, the LMSs available in India may be grouped into three fundamental groups – LMSs of foreign origin, LMSs developed over LMSs or textual database management systems of foreign origin and LMSs of Indian origin. This grouping may again be sharpened by dividing the packages on the basis of size of library systems i.e. large library system, medium range library system and small range library system. The grouping of LMSs is given in table 1.2. As it is not possible to discuss every LMS listed in the table, only a few LMSs are selected from each group for discussion on the basis of their popularity and features (IGNOU; 1995; 13).

3.2. Free software

Free software, software 'Liber' or 'Libre' software is software that can be used, studied, and modified without restriction, and which can be copied and redistributed in modified or unmodified form either without restriction, or with minimal restrictions only to ensure that further recipients can also do these things and that manufacturers of consumer-facing hardware allow user modifications to their hardware. Free software is generally available without charge, but can have a fee, such as in the form of charging for CDs or other distribution medium among other ways.

The first formal definition of free software was published by FSF (Free Software Foundation) in February 1986. That definition, written by Richard Stallman, is still maintained today and states that software is free software if people who receive a copy of the software have the following four freedoms:

Freedom 0: The freedom to run the program for any purpose.
Freedom 1: The freedom to study how the program works, and change it to make it do what you wish.
Freedom 2: The freedom to redistribute copies so you can help your neighbor.
Freedom 3: The freedom to improve the program, and release your improvements (and modified versions in general) to the public, so that the whole community benefits.
Freedoms 1 and 3 require source code to be available because studying and modifying software without its source code is highly impractical.

The modern definition has four points, which it numbers zero to three in compliance with zero-based numbering common to computer systems. Free software, which may or may not be distributed free of charge, is distinct from freeware which, by definition, does not require payment for use. The word "free" does not refer to price; it refers to freedom

3.3. Commercial software

Some commercial packages are included in software and licensing information system (SALIS). Usually the source code and technical information is not freely available for most of the commercial software. Hence it is not possible to give extensive technical and IP reviews for software.

A commercial or proprietary software product is, by its nature, legally protected from being used by anyone without permission of its owner. Proprietary software is any computer software with restrictions on use or private modification, or with restrictions judged to be

excessive on copying or publishing of modified or unmodified versions. The term proprietary software is thus the opposite of free software. These restrictions are enforced by either legal or technical means, or both. The most common form of technical restriction is by releasing programs that are only computer readable, and withholding the human readable source code.

3.4. Commercially Available Library Software

All the software systems are basically to suit the needs of individual libraries. But every library cannot make such an effort to develop their own software for the obvious reasons such as lack of programmers in their organization for library applications; long development time and high cost involved in such an experiment. So libraries are going in for commercially available software systems. Each of this software has its own strengths and weakness. So before selecting the software, the library should assess the software to see whether it suits their working environment. Before purchasing software, it is always a good idea to scan through the literature about that software, to request the supplier to provide a detailed demonstration of the software and to make a comprehensive pre-installation evaluation of that software.

3.5. Development of Library Software Packages

Library management systems have developed in response to technical advances and user requirements, mainly in developing electronic interfaces, refining standards and access protocols, purchasing and acquisition processes and cataloguing systems. An integrated library system usually comprises a relational database, software to interact with that database, and two graphical user interfaces (one for patrons and one for staff). Most integrated library systems separate software functions into discrete programs called modules, each of them integrated with a unified interface. Modules may include acquisition (ordering, receiving and invoicing materials), cataloguing (lending materials to patrons and receiving them back), serials (tracking magazine and newspaper holdings), and OPAC (Public interface for users). The software is capable of inter-relating two or more databases for a single application like acquisition or circulation.

Some of the most significant commercially available packages are being mentioned. The basic objective is to make the library professional aware about some of the available software packages. A number of library software both foreign and Indian are now available to librarians to use in the automation of their libraries. Some of the foreign packages like OASIS/ALICE packages, CDS/ISIS, Minisis, Citation 7, TLC-2, The Library program, etc

are available. There are number of indigenous library packages developed by library professionals or computer experts for in-house use of library automation for specific functions. Some agencies have developed library software on commercial basis for general application in libraries. A brief account of some commercial available library software packages in India are given under. At present, there are more than twenty-five software are now available in India. List of Library software packages in India has been placed below in Table 4:

Software	Produced by	Place of Product
Archives	Manifax Electronic Systems	Mumbai
Aquas	Ober Information System	Kolkota
Integrated Library Management Software	Pragati Computers Pvt. Ltd.	Chennai
LIBMAN	DataPro Consultancy Services	Pune
LIBMAN	Kasbah systems software	Madras
LIBRA	IVU systems Ltd	New Delhi
Golden LIBRA	INSDOC	New Delhi
Librarian (2.1 & 3.1)	Soft-Aid	Pune
Library Management	Datamics Consultants Pvt. Ltd.	Mumbai
Library Management	Indo-Informatics	Kolkata
Library Management	Raychan Systematics	Bangalore
Library Management System	U&I software Pvt. Ltd	Bangalore
Library Manager	System Data Control Pvt. Ltd.	Mumbai
Lib-Soft	ET&T Corporation	New Delhi
Libsys	Libsys Corporation	New Delhi
Listplus	Computer Systems	Bangalore
MAITRAYEE	CMC	Kolkata
MECSYS	Mecon Ranch	Chennai
NLIS	Asmita Consultants	Mumbai
NIRMAL	Nirmal Institute of Computer Enterprise	Nagpur
SALIM	UPTRON India Ltd.	New Delhi
SANJAY	DESIDOC	New Delhi
SLIM 1.1	Algorythms	Mumbai
Tulip	Tata Unisys Ltd.	Mumbai
ULISYS	Wipro Information Technology	Secunderabad
WILISYS	Wipro India	Bangalore

Table 4: List of Library Software packages in India

However, following are some of the other library software packages which are now available for library automation.

3.5.1. CDS/ISIS (Computerized Documentation Services/Integrated Sets of Information System)

CDS/ISIS was developed by International Labour organization. In 1964 ILO developed the software 'Integrated Set of Information Systems known as Micro ISIS to run on a mainframe computer (IBM 360). In 1975 it was rewritten by UNESCO as CDS/ISIS to develop a database of UNESCO publications and to impart regular training on computerized information retrieval to librarians. CDS/ISIS is a mini/micro computerized documentation system that can handle any alpha numeric data of fixed or variable lengths. The file structure permits the users to add, modify and delete the records, gain access to master file via any element in the corresponding database, built indexes from any keywords and to create a variety of print formats like reports, catalogues, indexes, etc. The package also supports ISO standard format to facilitate exchange of information among different systems.

3.5.2. MICRO-CAIRS (Micro-Computer Assisted Information/ Library Retrieval System)

Micro-Cairs was developed in 1982 it is a micro descendent of Cairs for micro computers, with the Intel 8088/8086 chip running on CP/M86 or MP/M86 operating systems. It can also run on MSDOS based micro computers. The package is well known and its features include source module for controlled index and searching and the report generator. It also offers the library house keeping functions.

3.5.3. ADLIB-2

It began as prime mini computer system but later was released on UNIX or XENIX multi-user micro computers. It is menu driven and has four modules such as cataloguing, circulation, acquisition and serial control.

3.5.4. ISROVISION

ISRO has developed by ISROVISION unique and optical stand alone low cost digital image analysis system with a resolution image display processor. It is the only PC/AT based system with option of using either 80286 or processor with the 80287 coprocessor.

3.5.5. IIT-KLAS (Indian institute of Technology, Kanpur Library Automation System)

Indian institute of Technology, Kanpur Library Automation System (IIT-KLAS) is a comprehensive set of programs to automate the various functions of a large academic library. The package supports the function like acquisition, circulation, users services, CAS, retrospective conversion of catalogue, etc.

3.5.6. IMPACT (Integrated Management and Project Accounting)

CSIR has developed a software package called Integrated Management and Project accounting (IMPACT) for computerized financial accounting of science and technology projects, which has been introduced in all the CSIR labs from 1994. Introduction of IMPACT is an important milestone in the modernization of office management in CSIR

3.5.7. OASIS (Integrated Library and Information management system)

OASIS is the comprehensive library automation software package. It is complete integrated library and information management system which brings powerful automatic document and resource control within the reach of all organizations. It can be used to manage a wide variety of materials like books, slides, videos, cassettes, paper clippings, magazines, maps, charts and even equipments. OASIS is divided into 3 broad activities: 1) Recording of items 2) Finding items 3) Controlling the use of items.

3.5.8. WILISYS (Wipro library Information System)

It is an integrated software package for library computerization. It contains two major components:

a) WILIMAX (Wipro Library Management System):

WILIMAX package used for computerization of house keeping activities such as acquisition, circulation, maintenance, serial control and information retrieval. Package contains 5 modules:

- Acquisition
- Circulation
- Maintenance
- Search and Query
- Periodicals

b) WILITRAX (Wipro Library Abstracts System: Bibliographic Search):WILITRAX package is used for storing and retrieving. Main functions of the package are the exchange of information (abstracts) with different sources and databases, maintenance of a user profile, selective dissemination of information, retrospective search, report generation, etc. WILISYS also provides different levels of security for users and the library staff.

WILISYS is developed in portable 'C' language. It uses UNIFYRDBMS for management. WILISYS can be implemented on WIPRO S-6820 VWL, WIPRO PC-AT/386 (Under UNIX system V O/S).

3.5.9. MAITRAYEE (Library Computerization and Networking Software)

CMC limited has developed MAITRAYEE for CALIBNET project. The project of developing the library computerization package for participating libraries of CALIBNET was commissioned by NISSAT, a government agency. The other goals of developing MAITRAYEE are to achieve

- Library computerization
- Standardization
- Resource sharing among the participating libraries

This software packages has been developed using a customizable RDBMS package called INGRES. It has six different modules. Each module is designed to perform one particular function.

3.5.10. LIBERATOR (Comprehensive Library Management Software)

Liberator is comprehensive library management software brought out by CMC. It is prepared by eminent library scientists and computer specialists and includes all activities of a library. It helps the librarians in entering networks for resource sharing. It is designed according to international standards for data security and data management. It is fully automated and is suited for both small as well as large libraries. It performs functions like acquisition, catalogue, queries and reports, inter-library loan, e-mail, etc. It also supports UNIMARC.

3.5.11. UNLIB (Library Management Software)

It is a library management software package developed by M/S Hindustan Computers Limited, Bangalore, for medium/large size libraries. Its feature includes:

- It is menu driven package
- It runs under UNIX/XENIX environment
- It ensures maximum productivity minimum data entry requirements, efficient search query facilities

3.5.12. LIBRARIAN

This library management software is developed by M/S Mudra Electronics, New Delhi. This package may be utilized in the following areas, viz.

- Receipt and issue of books
- Check the availability and quantity of books
- Search the books (Author, Title)
- List the overdue books
- Trace the borrower, etc.
- Its feature include
- Capacity to handle 5000 transactions per day
- Accommodate 10000 members and 150000 books data
- Operates under LAN

3.5.13. MECSYS

This is information management software developed by MECON. It has the following features:

It provides tools for storing and rapidly retrieving information

- ❖ It can handle all the activities of modem technical information centre relating to areas of information storage, information retrieval, information processing, information management, etc.
- ❖ Retrieval of current and accurate information from many different data bases is possible.
- ❖ It is able to deliver the speed, capacity, flexibility and case of database loading which enables the information to be up to date and immediately accessible.
- ❖ It can locate the relevant document, out of millions of record instantly.
- ❖ It can handle memos, correspondence, reminders, reports, etc.
- ❖ It is user friendly and is fully menu driven.

3.5.14. DELMS (Defence Library Management System)

Defence Library Management System (DELMS) is a COBOL based software package developed by Defence Scientific Information and Documentation Centre (DESIDOC) for automating acquisition, circulation, serials and online catalogue. It is supported on UNIX operating system.

3.5.15. TECHLIB PLUS:

TECHLIB plus is a comprehensive library automation package based on BASIS plus, the world leading documents DBMS and text retrieval system. It also provides direct access to information in current contents.

3.5.16. GRANTHALAYA

It is complete library automation package designed and developed in Foxpro by the Indian National Scientific Documentation Centre (INSDOC), New Delhi. This package is available in MSDOS. Salient features of the package are as follows:

- **Modularity:** The package comprises 7 modules (data administration, query, circulation), acquisition, serials control, technical processing and library administration) designed to handle all functions of a library and information centre. Since the package has different modules, the library can implement complete package or acquire stand-alone modules depending upon the needs of library to implement and remaining modules can be implemented and integrated with the existing modules as when need arises.
- **Object Oriented Design:** The package has been developed based on object-oriented design which offers qualitative superior end product.
- **CCF Compatibilit**y: The package adopts common communication format (CCF). It incorporates all mandatory fields of CCF which facilitate import/export of data from/to Granthalaya to/from various flat forms. Export and import of data to and from ISO: 2709 and ASCII format is possible.
- **Dictionary Concept:** Dictionary facility is provide in the package for data elements like publishers, keywords, accompanying materials, etc.
- **Powerful Query and Search Facilities:** The package is provided with sophisticated tools for retrieval of information by different search parameters. Search can be

conducted by using Boolean logic operators. Search terms can be typed or selected through dictionaries.

- **Ease of the Use:** The package is easy to learn and use. It provides on screen messages to help users.

INSDOC is marketing and promoting this package for library automation in India. The package has already been implemented at National Scientific Library, INSDOC New Delhi. Its UNIX version has been implemented at the Nuclear Centre Library, New Delhi.

3.5.17. SUCHIKA

SUCHIKA is an integrated software package for library automation, designed and developed during 1996 by the Defence Scientific Information and Documentation Centre (DESIDOC), New Delhi for its Defence Science Library and other libraries/Technical Information Centres (TICs) or Defence Research and Development Organization (DRDO), scattered all over India. The purpose of developing this software is to automate all the DRDO libraries and TICs to create and maintain a DRDO libraries holdings database and help the libraries to follow uniform standards practices. The package has been developed in C++ language in MSDOS and UNIX versions keeping in view the requirements of big and small libraries of DRDO. The package is menu driven and user friendly. The packages conform to international standard like CCF, ISO-2709, and AACR II and allow data conversion from CDS/ISIS, etc.

SUCHIKA has powerful search facilities. Search can be conducted on any field by specifying the fields or through the various indexes like author, subject, keywords, report no., patent no., etc. Query may be typed or selected by using the concerned index. Boolean search operations can be used. SUCHIKA also provides facility for free text searching. Search results can be displayed according to desired formats, and after selecting the relevant records, print outs can also validation and data duplication checking. This package has been developed in modular form, such as acquisition, circulation, OPAC, serial control modules. Therefore, its implementation is quite easy. Either all the modules may be implemented at one time or module-wise implementation can also be made depending upon the needs of library. The package (both DOS and UNIX versions) has been implemented at Defence Science Library and it is under implementation in other DRDO libraries/TICs. DESIDOC being a government agency has decided to offer this software package to non-DRDO libraries also at nominal price to help them in their automation.

3.5.18. ALICE

ALICE is a complete and integrated package developed in Australia by M/s Softlink International and is used in over 7000 libraries in 19 countries all over the world including India. In India, it is marketed by M/s Soft Link Asia Private Limited. Alice is a windows based package. It can operate as a stand based package as well as in network environment using Novell Netware or Windows NT. This package is available in three modules, viz. standard module, advanced modules and special modules. The first module contains management, circulation and OPAC facilities. The second module named advanced module covers acquisition, periodicals control, communications, journal indexing, etc. The third one called special modules is meant for libraries which have specialized requirements. For running this package one needs an IBM compatible computer with at least 4MB RAM and 150 MB hard disk. The striking feature of this software is that it allows web inquiry and 3 hour support, i.e, one can get response to complaints electronically within 3 hours. Another feature is that the software can be got up graded free of cost. Through enquiry module, users can use eight search options to search the database. Boolean searching is also possible. As many as 800 different reports can be generated and even customized reports are possible. Alice offers Selective Dissemination of Information facility also. The DOS version of it is called OASIS.

3.5.19. CLIS (Computerized Library Information System)

Computerized Library Information System (CLIS) is a fully integrated package developed by the Tata Unisys Limited. It is a multi-user, multilingual package that supports MARC export/import and has barcode facility. In addition to other usual facilities, it helps in storage of images and supports multi-type items.

3.5.20. CLMS (Computerized Library Management System)

Computerized Library Management System (CLMS) was developed by R.C. Prasad it is a fully menu driven user friendly and single as multi-user package suitable for all libraries. It is claimed than CLMS 1.0 version has more than thousand successful installation all over the world now the 2.0 version has been launched with additional facilities/utilities like report generation, spine label printing, catalogue printing, online calculator, library statistics, abstracts database management and automatic book number system. Provision of data conversion from CLMS 1.0 is also available in the new versions. Other features of the

package include report generation, elimination of Y2K problem, compatibility with other packages, high speed, data protection, Prasad automatic book number system, etc.

3.5.21. DELSIS (Delhi Library Information System)

DELSIS is a fully menu driven package developed by the Delhi Library Network (DELNET). This software is basically networking software developed on Basis Plus. The features of this software are OPAC facility, provision to search by full or part of name of author, corporate body, editor, joint author, title series, etc., duplicate checking and allowing Boolean search. DELSIS is having a powerful indexing technique. All DELNET databases, online Inter-Library Loan facility, etc. are based on the DELSIS. Index is generated automatically and there is online help for every operation.

3.5.22. GOLDEN LIBRA

This is a DOS based package for library management and it runs on IBM PC's. It provides facilities for handling subscription, storage and retrieval of bibliographic details of books and periodicals. It also helps in generating various kinds of reports namely overdue notices, list of magazines and books, non-receipt of documents, etc. Golden Libra is also provided with a stock module to give the status of stock at a given periodicity including the valuation of books. The system has been field tested at the British Council and American Libraries.

3.5.23. ILMS (Integrated Library Management System)

Integrated Library Management Software (ILMS) is an automated library management system developed by the INFLIBNET in collaboration with DESIDOC for university libraries. The package is developed in COBOL to work on DOS/UNIX platforms. The DOS version of the package consists of six main modules namely circulation, catalogue, acquisition, OPAC, reports and serial control. All these modules have further sub-modules covering most of the options and functions dealt with in the respective areas. This requires DOS Ver 5.0 or higher. ISO 2709 is taken as the base for data exchange and efforts are on to make the OPAC module Z39.50 compatible. This package is specifically suited for University Library environment. Its Windows version is called SOUL.

3.5.24. LIBRA

This library automation package was developed by M/s. Ivy System Limited, Pune, provides the house keeping operation namely acquisition, circulation and cataloguing and handles

online retrieval also. This can be linked with Dialog and similar services. The package has multi-user and multilingual facilities.

3.5.25. LIBRARY MANAGER

This is a library automation package developed by the System Data Control Private Limited, Bombay. The package runs in DOS environment. This package supports circulation control, catalogue generation, card printing, serial control, etc. Library Manager is a user friendly menu driven package.

3.5.26. LIBRIS

LIBRIS is a library package from Frontier Information Technology Private Limited, Secundarabad. One with title knowledge of computer can easily use this package. LIBRIS covers acquisition, circulation, serial control and help in library administration. This package supports bar coding facility as well.

3.5.27. LIBSOFT

LIBSOFT is an integrated library package designed by C.O. Alex and colleagues in Thiruvananthapuram. The software runs in Windows platform. It is menu driven and provides online help at every point and therefore is very much user friendly. The package uses Microsoft Access for database design and RDBMS to avoid duplication in data entry. Data protection is ensured through passwords. Databases already prepared in CDS/ISIS can be directly imported in Libsoft. The software takes care of all routine house keeping operations and information retrieval functions of a library or information centre. Different types of reports can be generated as per the requirements of the library. The search facility is very powerful and has a number of options including Boolean search and use of wild cards. The authors claims that it can handle more than 10, 00,000 records without any problems. Y2K problem has been solved. The package is sold at a fairly reasonable cost.

3.5.28. ODYSSEY

ODYSSEY is a general purpose package developed by SRA Systems Limited, Madras. This is a document management system that takes into account of the requirement of hospital patient's record management, student's record management, personnel record management and much more. This package support OCR. It has a comprehensive text search facility to provide support for contents based search. It requires a PC/AT 486 or above with 8 MB RAM and works in Windows environment.

3.5.29. PALMS (Prasad Automated Library Management System)

Prasad Automated Library Management System (PALM) is new software for library automation. This is a fully menu driven, user friendly and single/multi user package which run under DOS environment. This package provides facilities for appending, editing, browsing, removing, reviewing, searching and printing of records from the database. Its features include compatibility with other databases, data conversion, data protection, report generation and no Y2K problems. It provides facilities of selective dissemination of information (SDI) service, current awareness service (CAS) and bibliographical services. The package will be useful for all types of libraries big or small. The relational database management is also included in the package to avoid duplication in data entry.

3.5.30. SLIM (System for Library and Information Management)

System for Library and Information Management Software (SLIM) is a single user as well as multi user library software developed by M/s. Algorithms, Pune, India. It is a user friendly menu driven software which helps to catalogue books, films, audio-video materials, etc. It has five modules namely acquisition, circulation, serial control, cataloguing and OPAC. Acquisition module supports the entire range of activities from the time of proposal or recommendation to acquire an item until it is finally paid and accessioned. Serial control system helps to achieve an efficient utilization of periodicals budget. OPAC offers powerful online search facilities. The scope of SLIM is very exhaustive and a lot of attention is paid to the details of library management function and its design. Different kinds of reports can be generated using the software.

3.5.31. THRISHNA

THRISHNA is developed by NISTADS under the contract from NISSAT. This is a CDS/ISIS version that supports data creations, storage and retrieval in major Indian languages.

3.5.32. TROODON

Troodon is integrated software for library automation. It was developed by Comtek Services Private Limited, New Delhi. This is fully integrated multi user software designed to run on a variety of platforms. Troodon 1.0 was developed on DOS and UNIX platforms and Troodon 2.0 is ported and developed on Windows 95 under client server architecture. Based on the feed back from users, many few features have been incorporated. It uses CCF to facilitate resource sharing among libraries. There are five modules in this package. They are OPAC modules in this package. Database maintenance modules like Circulation module,

Acquisition control and Serial control modules are available in this software. The OPAC module allows searching by word, phrase with right truncation, previous search set or by Boolean statement. The database maintenance uses CCF to store bibliographic data and is based on ISO 2709. The report generation facility is also there. The package has an extremely user friendly interface with very good search facilities and has online help and validation during data input. The hardware requirement for a single user system is an Intel based Pentium/486 DX with 16 MB RAM, 256 KB Cache, I GB HDD and for a multi user system LAN with Ethernet, Novel Network or Windows/NT server having minimum Pentium/486 DX with 32 MB RAM, 512 KB Cache, ‘/z GB HDD 32 bit Ethernet card, etc.

3.5.33. SOUL (Software for University Library)

The SOUL is a state of the art of Library Automation Software designed and developed by the INFLIBNET. To prepare Universities as well as College facing the emerging information society in future, the University Grants Commission (UGC) started the INFLIBNET programme in 1991 with a mandate to create a nationwide network of College, University libraries and research centre in India. It is a major programme towards modernization of libraries and information centre in the country using computer and communication technology for the establishment of a mechanism for information transfer and access to support scholarship, learning and academic pursuits.

SOUL is user-friendly software developed to work under client server environment. Looking at the name of the software, one may think that it is meant for University Libraries only, but in fact it is flexible enough to be used for automating any type or sizes of libraries, hence, Software for Universal Libraries may be matched as its name.

3.5.34. LIBSYS (Library and Information System)

LIBSYS is developed and marketed by Libsys Corporation, New Delhi. It is an integrated multi-user library information management system. A multi-user system refers to the capability of the system to allow more than one user to have simultaneous access to the same database and to allow them to carry out the work of their choice in any module. It consists of six main modules namely Acquisition, Cataloguing, Circulation, Serials control, Online Public Access Catalogue (OPAC), Administration.

3.5.35. NIRMALS (Library Management Software)

While discussing the organizational aspects of Nirmal Institute of computer enterprise (NICE), initially it was established as a Freelance software house in 1992, and incorporated as a unit of Regina Info Tech Private Limited in 2003. The first release of the DOS version of NIRMALS (developed in clipper language) in 1992 was reported and reviewed in many computer magazines. During the course of more than a decade, it has brought out several software products, the flagship being NIRMALS Pro 2.2.0 a client/server library management package widely used in more than a hundred reputed libraries across the country. NIRMALS – Network Information Resources Management of Academic Library System is a functionally rich, web-centric application built around open systems concepts. As well as automating traditional library functions such as circulation, cataloguing, public access, acquisitions, and serials control, NIRMALS includes facilities for inter-library loans, selection, stock rotation, newspaper indexes, homebound borrowers, archives, self-service and data loading. In addition to managing bibliographic data, NIRMALS caters for multimedia collections, community information, historical archives and artifacts, and abstracts or full text management. State-of-the-art technology: A high performance library management system, with modern capabilities built from long experience, NICE provides an end-to-end solution that is easy to deploy, manage and use. NICE's culture of ongoing innovation ensures that NICE remains at the forefront of library services, extending far beyond the scope of traditional library management systems. Customers can focus around a complete set of capabilities that equal the very best today and in the future, delivered by a "single source" provider, whether for affordable Self Service solutions, electronic payments, resource bookings, collection development or RFID solutions (http://nicesoft.co.in/).

3.6 Conclusion

The work for automation of any library, the most important decision to be taken is about the choice of suitable software. The 1980s and 1990s have witnessed the development of several library application packages and many of them have got established in the Indian market. This has made the choice rather difficult as each one claims superiority over others in some respect. The library professionals and managers therefore have to be aware of the features of the various packages available in the market, so as to be able to make a judicious choice.

The selection of the software suitable for the requirement of the library is a complex process. The evaluation process should be done with the help of some checklist depending on the need

of the library in confederating the system features; functions performance, hardware requirement, cost, etc. have to be considered.

In India, library software is not commonly available as in developed countries. Most of the libraries have their own software developed in-house. This is the right and ripe time for adoption of computers in various areas of libraries. If action is not taken and planning is not carried out, the gap between the developed and developing countries will continue to widen. While in the past library automation was mainly concentrated on traditional house keeping function of acquisition, cataloguing, serial control and circulation, today it has expanded on the library management systems to incorporate OPAC, CD-ROM's networks, Desk top publishing, office automation, etc. There is hypermedia, multimedia, virtual reality, etc. In developing countries the computerization of house keeping functions are just beginning to take place and in most cases signifies the first experience to automation.

Information exposition together with the consequent ever increasing demands placed on library has forced libraries and librarians to adopt new technology to make their services and functions efficient, effective and easy. Librarians have always been in the forefront in using new technologies whether it is the type write, telephone, photocopies or computer. A new technology have and continues to have a fundamental and revolutionary impact on libraries and information systems as a consequence of the industrial, technical and scientific revolution, modern communication and information technologies have been invented and are still developing. The new technology especially electronic technology has contributed in library and information science and practice.

All the software packages are very easy to maintain and more beneficial to the libraries. The complete process of library software packages selection is quite complex and time consuming. In addition to the thorough knowledge of present library system and trends it also requires the knowledge of available software packages, basics of computers and business tricks to deal with hardware and software vendor. We have to keep in mind the cost and unavailability of competent programmers/software developers. It must be more time and cost consuming and will not be tested therefore it is better to go for a tested software package developed by reputed agency rather than experimenting to develop in house software packages.

References:

- Cybulsk, Jacob L. (1992). Introduction to software reuse. Parville: The University of Melbourne
- Goswami, (Anjana). (1995). Application of information technology in library services. *Library Herald*. Vol. 33, pp.1-2
- Husain, (Shabahat) and Ansari (Mehtab Alam). (2007). Library automation software packages in India: A study of Alice for Windows, Libsys and Virtua. *Annals of Library and Information Studies.* Vol. 54; September; pp. 146-151
- Inflibnet. (2003). Software for University Libraries – user manuals. Ahmedabad
- Kaur, (Amritpal). (2000). Five laws: their relevance in information technology of automated environment. *ILA Bulletin*. Vol. 36, pp.24-27.
- Krishna Kumar. (1980). Application of computer: a challenge or change. *ILA Bulletin*. Vol. 16, pp.122-129.
- Kumbar, (Mallinath). (1995). Use of information technology in library service. *Herald of library Science*, vol. 35.
- Mishra, R.K. (1999). Library software selection: an analysis. *IASLIC Bulletin,* vol. *44*
- Nair, (Raman R). (1992). Computer applications to libraries and information services. New Delhi; Ess Ess. Pp.143-145
- NIRMALS. (http://nicesoft.co.in/) (Accessed on 8.3.11)
- Rajashekar, (T B). Computer software for library and information work. *In.* Handbook for libraries: Archives and information centers in India. *Ed.* Gupta & others. Vol.5.New Delhi. pp. 147-149.
- Rao, C.R. (1995). Evaluation of library software: its implication on library services. New Delhi: Ess Ess Publication
- Seghal (R L) and Behi, (D K) (1996). Manual on computer applications training in library science. New Delhi; Ess Ess. pp.143-145
- Singh, Mahendar Pratap. (2004). Use of Information technology in library and information science. New Delhi: Abhijeet Publication
- UNESCO (1989). Division of Software development and applications: Mini-micro CDS/ISIS reference manual. Paris: UNESCO
- Unesco (1999). Advanced course in CDS/ISIS and Winisis. UNESCO
- Vasantha, N and Mudhol, Mahesh V. (2000). Software packages for library automation. New Delhi: Ess Ess Publication.

4.1. Introduction

A large number of software's packages both foreign and Indian is available today to automate the libraries. There are also a number of indigenous library packages developed by library professionals or computer experts for in-house use of library automation for specific functions. Some agencies have developed library software on a commercial basis for general application in libraries. The software developed through in-house and that available from market has their own merits and demerits. In the case of software developed by in-house experts, they are not usually developed scientifically and tested by time in its use. The present study deals with a comparative study between commercial library software i.e. SOUL and NIRMALS because in Mizoram College, there are only two library software i.e. SOUL and NIRMALS, used for library automation. Hrangbana College used SOUL software and NIRMALS software is used by Aizawl Theological College.

4.2. SOUL-1.0

University libraries are complex entities, having large collections and serving a huge clientele. To carry out various operations in a library effectively, there is a need for automation. Computer and communication Technologies have brought revolutionary changes in the information acquisition, processing, storage, retrieval and dissemination. Keeping in view the latest trends in Information Technology (IT), INFLIBNET Center has developed a Windows based Library Management Software **"SOUL"**, the first version of software that is SOUL 1.0 was released during CALIBER 2003. There are two types of SOUL 1.0 such as NETWOK Version, which is mainly for University Library and College Version. Both these two have facilities of hardware lock to protect the duplicity. which provides total solution for Library Automation. SOUL is designed using Client-Server Architecture which imparts extra strength to storage capacity, multiple access to single database, various levels of security, back up and storage facilities etc. This software has been designed after a comprehensive study of different library related functions practiced in university libraries. It has MS-SQL Server 7.0 or higher as the back ends. This user friendly software is quite easy to work with. SOUL handles Indian languages/scripts using ISM Publisher of C-DAC. There is an effort going on to develop a new version of software based on MARC21 and Unicode standards and RFID protocols for electronic surveillance.

4.3. SOUL-2.0

The 2nd version of SOUL software named "SOUL 2.0" was released by Prof. S.K. Thorat, Chairman, UGC during National Seminar of Open Access to Textual and Multimedia Content held at India Habitat Centre, New Delhi on 29th January 2009. The Unicode based and MARC21 compliant SOUL 2.0 has six integrated modules, i.e. Acquisition, Cataloguing, Circulation, Serials Control, OPAC and Administration. SOUL 2.0 is windows-based software working on client-server architecture. The software is compliant to international standards such as MARC21 to facilitate data transfer and exchange, Unicode to facilitate handling of multilingual content, SIP and NCIP for RFID compliance; FRBR to support functional requirement for bibliographic records, etc. The new version was received very well on which hardware lock is not requires. As a gesture of goodwill, the Centre has offered free copy of the software to all its existing users. Rates of SOUL 2.0 version, AMC and other charges are shown below in Table 5

SOUL VERSION	PRICE IN RUPEES
SOUL 2.0 – Full Edition (First copy)	80,000.00
Additional Copies (only for institutions who have already purchased one copy of SOUL 2.0)	50,000.00
SOUL 2.0 – Limited Edition (Restriction: 50,000 records)	30,000.00
Rates for Annual Maintenance and Others	
SOUL (Network / College Version)	10,000.00
Training charges per person	5,000.00
On-site Installation of Software	1,000.00
Data Conversion Charges (first 10,000 records)	10,000.00
Data Conversion Charges (next10,000 records and multiple)	5,000.00

Table 5: Rates of SOUL 2.0 Version

4.4. SOUL Features

Govt. Hrangbana College Library in which SOUL 1.0 is using for its in-house records and Circulation since 2005. Hence screens of different modules will be displayed from the particular College. The main page of SOUL 1.0 are shown below in Fig. 2

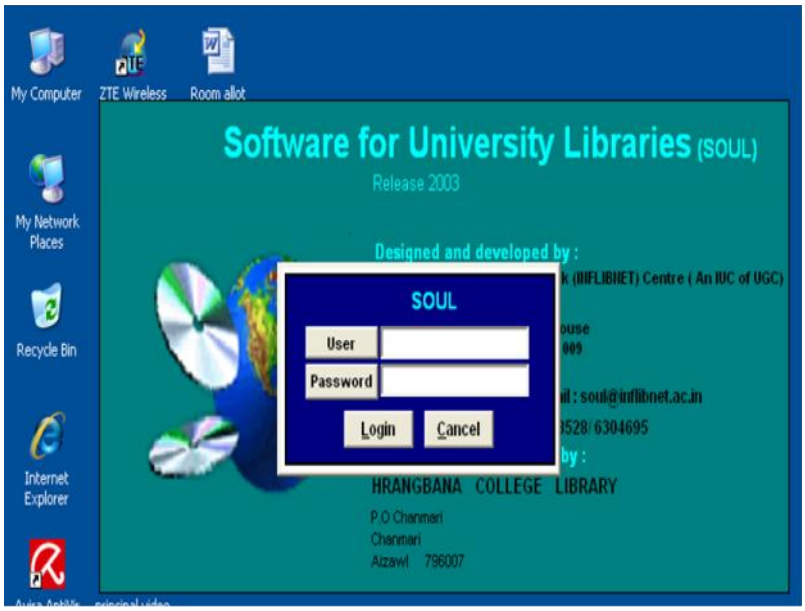


Fig. 2: Main page of SOUL

4.5. Modules: The SOUL has been divided into following six broad modules as shown in the Fig. 3

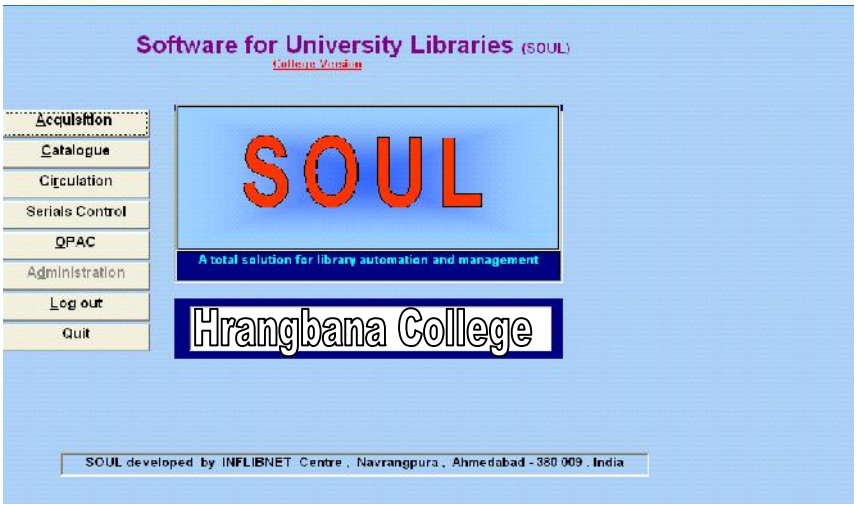


Fig. 3: Modules of SOUL

These modules have further been divided into sub-modules looking at the nature of functions handled by various functional divisions in University libraries. Brief descriptions of the same along with first screens have been given in the following pages:

4.5.1. Acquisition Module

This particular module provides facilities to handle work relating to acquisition of reading materials of all types except serials, starting from suggestion / recommendation by faculty till

accessioning, invoice processing. Acquisition module comprises following six broad sub-modules as given in Fig. 4

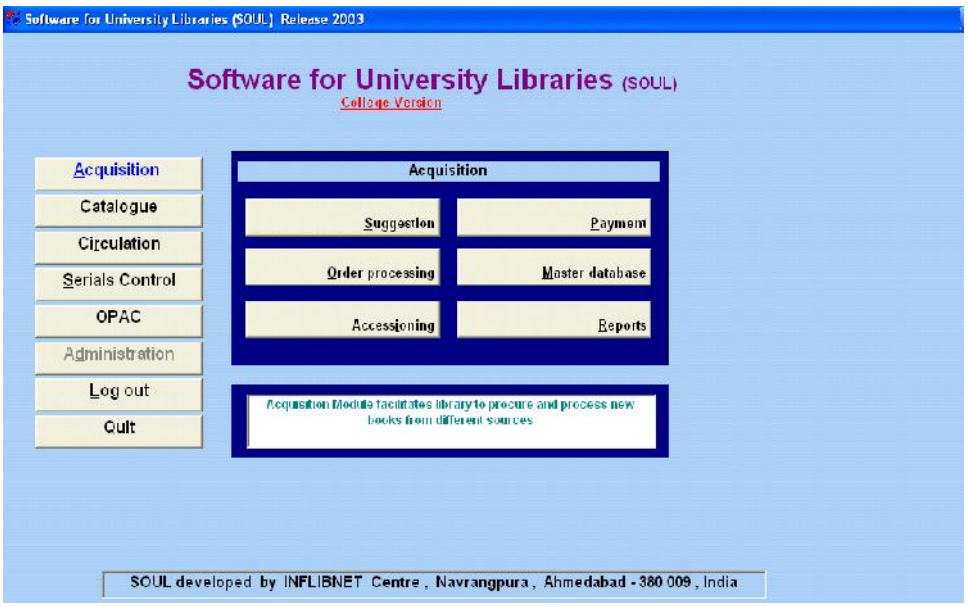


Fig. 4: Acquisition Module

4.5.2. Cataloguing Module

Catalogue module function begins with selecting the items that have already been accessioned in the previous module and furnishing rest of the information as per AACR-II rules. Cataloguing module are shown below in Fig. 5

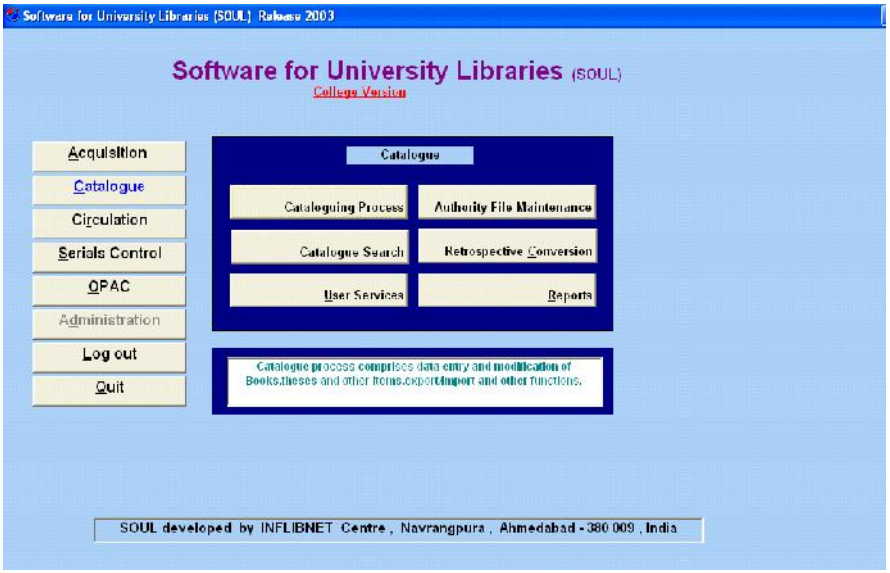


Fig. 5: Cataloguing Module

✓ **Catalogue Process** function allows to pick-up the accessioned item, under process, for the cataloguing purpose. Here one can add remaining information as per specified

standards, such as additional bibliographical information, subject headings, classification number etc. Editing of existing records for maintaining consistency can also be done here.

✓ **Catalogue Search** enables search of the existing items, its status, identifying duplication etc. for the purpose of day-to-day cataloguing. This is similar to OPAC.

✓ **User Services** sub module has three major functions viz., generating current awareness list (by date, subject etc), compiling of bibliographies with various combinations and alert services to individual users.

✓ **Authority File Maintenance** includes creation, updation and use of major authority files for names such as publisher, languages, corporate bodies, meetings, authors, physical media, and types of material and also for subject descriptors.

✓ **Retrospective Conversion** has two major functions viz. data entry of old collection with minimum information without going to first sub-module and import and export of data from and to external sources

✓ **Reports** module allows generation of catalogue cards as per AACR-II, generation of recent editions reports subject and class number wise and other related reports.

4.5.3. Circulation Module

Circulation being vital front-end function of any library, sufficient care has been taken in designing this module to achieve transactions within minimum possible time. This module has provision for all possible function handled in a typical academic library, i.e. membership, issues, returns, ILL, reminders, over dues, reservations, recall etc. All these functions have been organized into following eight logical sub-modules as given below in Fig. 6

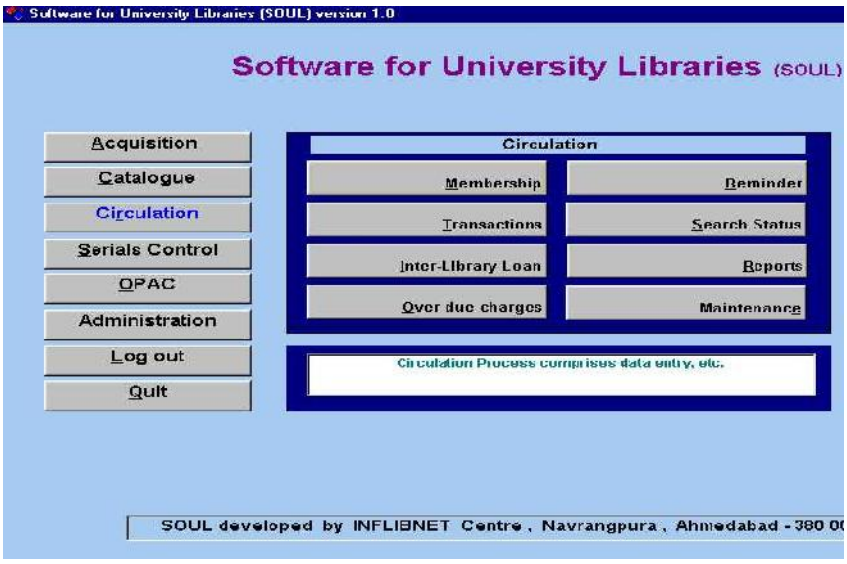


Fig. 6: Circulation Module

- **Membership** sub-module provides the facility to create all types of member records, assigning unique membership code, borrowing privileges, renewal, issue of no-due certificates, master databases for codes etc, searching the status of membership or an item, suspending the membership and generating related reports.
- **Transactions** handle all major functions such as issue, return, renewal, reservation, recall or reminder of an item etc. Transaction is based on Accession number and Member code.
- **Inter Library Loan** allows lending of items to specified member library and also borrowing items from other libraries, issues, reminders etc. This sub-module has been developed comprehensively to take care of all the details of user libraries, individuals and items loaned.
- **Over due collection** facilitates collection of overdue charges in full or in part, providing receipts, keeping up-to-date accounting and tallying totals, etc. Using this function one can generate daily, weekly, monthly reports to find out as to how much overdue charges have been collected.
- **Reminder** module handles individual and group reminder generation for all overdue materials. Comprehensive listing of materials that are overdue can also be generated within a specific period giving from and to dates.
- **Search** status enables the library circulation desk staff to check the status of a member or items borrowed by a user and overdue items.
- **Maintenance** is yet another comprehensive sub-module, which covers binding, lost and cost recovery of books, damaged books, withdrawn books etc.
- **Reports** sub-module allows the generation of as many as 16 major reports and with many combinations. All possible reports that a large library expects are provided for.

4.5.4. Serials Control Module

This module allows one to create an exclusive database for different serials. All functions starting from suggestions, master databases, subscriptions, checking, payment, reminder, binding title history export/import etc have been covered. For the convenience of users, these functions have been grouped under following logical sub-modules as given below in Fig. 7.

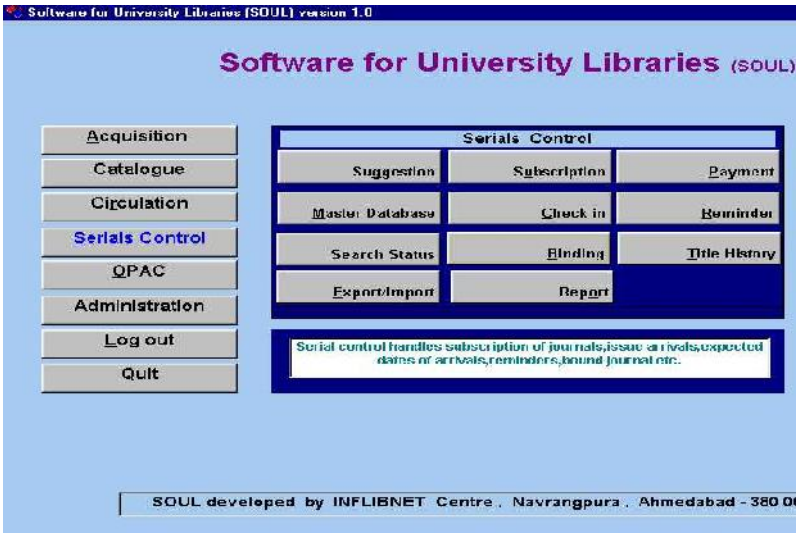


Fig. 7: Serials Control Module

- **Suggestion** Sub-module enables one to record and keep a track of all the suggestions received for subscribing to a serials
- **Subscriptions** module takes care of ordering/renewal of serials, follow-up relating to the same, sending reminder, if invoices are not received, generating orders by supplier or publisher are included under this option.
- **Payment** function supports processing and recording of all details relating to each invoice, including supplementary invoice such as invoice processing, credit notes processing, reports generation etc.
- **Master Databases** option allows creation of large number of frequently used master databases viz. title entry, language, class number, publisher, binder, country, department, currency, frequency, budget heads, binding type, delivery modes, reports etc. Of these, title entry is main. It is here that the creation of database for each title with bibliographic information begins in the serial module.
- **Check-in** are crucial function to record the receipt of each issue of serial and its accompanying material.
- **Sending reminders** for non-receipt of issues or issues that are overdue etc for single or all titles by supplier, publisher etc can be done using this sub-module.
- **Binding** supports making sets, generating order, payments, accessioning bound volumes etc.
- **Status search** option facilitates one to find out the status of every thing starting from subscription to check-in of issues.

- **Title history** are provided to keep record of ceased, suspended, discontinued titles and also title change, splits, mergers along with holdings information for each and every title in the database.
- **Export/Import** of data in ISO2709 format is also provided to enable library to transfer the existing records in to SOUL and also contribute data to INFLIBNET union database.
- **Reports** are a comprehensive function which has more than 15 built-in reports of all types with different combinations. This adds to the strength of serial module. Serial module is designed to handle large number of titles, with many options giving maximum flexibility to user libraries.

4.5.5. Online Public Access Catalogue Module (OPAC)

One of the major attractions of SOUL is that it has a powerful Online Public Access Catalogue with a choice of search options and variety of display formats. This powerful, yet easy-to-use and user friendly searching tool allows user to quickly find the materials in the library. From the OPAC platform, it can be searched books by author, title, publisher etc. It can display the status of particular book whether available or issued. It is possible to know bibliographic detail of a book from OPAC. OPAC module are shown below in Fig. 8

.

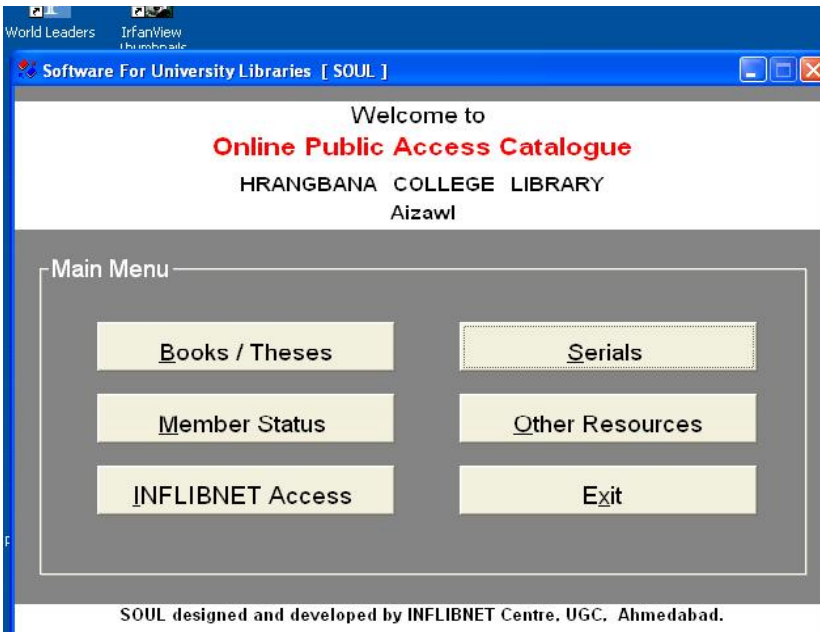


Fig. 8: Online Public Access Catalogue (OPAC) Module

4.5.6. Administration Module

Administration module has been to authorize users i.e., the library staff to use various modules. Assigning login and password to use each module of the system is done by the system administrator. The security function, backups, recovery of data and other utility functions are some of the features added under this module. Users have been categorized into three levels looking into nature of functions handled by the staff at different levels. Administration module are shown below in Fig. 9

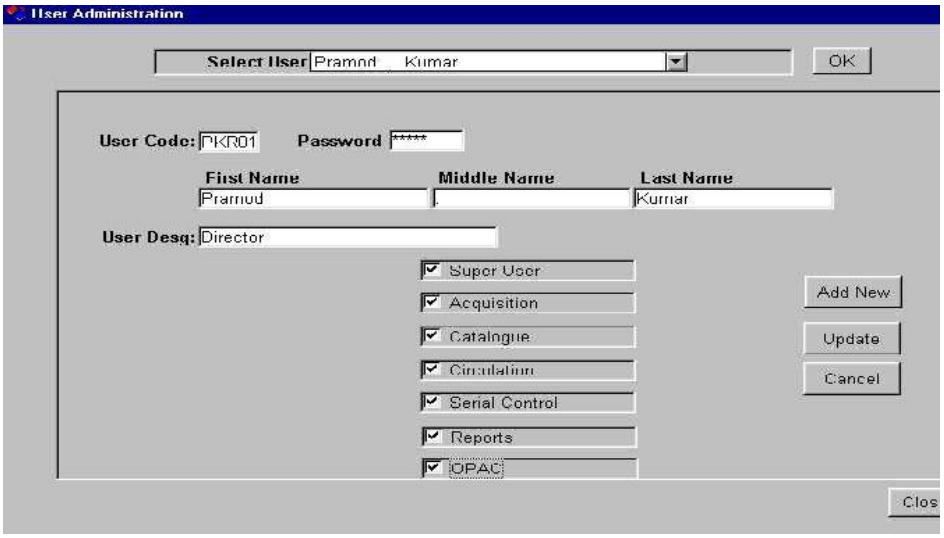


Fig. 9: Administration Module

4.6. NIRMALS

While discussing the organizational aspects of Nirmals Institute of Computer Enterprise (NICE), initially it was established as Freelance Software House in 1992, and incorporated as unit of Regina InfoTech Private Limited, in 2003. The first release of the DOS version of NIRMALS (developed in Clipper language) in 1992 was reported and reviewed in many computer magazines. During the course of more than a decade, it has brought out several software products, the flagship being NIRMALS Pro 2.2.0 a client/server library management package widely used in more than a hundred requested library across the country.

Nirmals had never been received as yet another run-of-the-mill software product for library management. A comprehensive search tool capable of tapping the hitherto elusive or otherwise undermined library resources in what the library world has ever been striving to devise. An ideal software package cannot lose sight of the clear perspective of the transitional library world. Sophisticated software need not established its pomp and glory with a retrieve of complex operations. Such as uncanny information retrieval tool at the instance of simple operation controls would be a great boon to the library user community. The creator of

Nirmals said: “I was rather obsessed, to be a bit frank, with designing and developing such productive software by bestowing it upon with the best that has been known and thought in the world”. In the beginning I possessed such idea, and run the idea has possessed me. That’s all my personal statement about Nirmals journey from conception to concretization (Venugopal, S.).

Library, as vital information resource centre of organization or community has to be insured for and ensured with the latest information handling tools to excel in performance. The emerging information technology has brought about perceptible changes in the information storage, transmission and retrieval processes. The advent of microcomputers and massive media has opened the new vista for introducing the library database management system quite contrast to the traditional library resource management. The software comprises the following modules.

4.7. Acquisition Control System

4.7.1. Nirmal-A: An overview

Collection Development Policy (CDP) determines the qualitative factors of the Library and is subject to periodical evaluation for effectively controlling contents and media. With minimum resources, we have to maximize our returns. Library acquisition calls for high managerial skill of the library personnel to regulate the right flow of right materials. NirmalA has considered several factors at the design stage itself and incorporated some of the existing practices and added new features in line with Total Quality Management (TQM) techniques. It follows a set of procedures that are normally adopted while making purchase of new books. Facts and figures are made available at the press of a Hotkey. Decision-making process is made delightful and not derisive. It would be a great relief to the Acquisition Division. Effective Fiscal control tones up the Library Administration. Periodical reports present the true state of affairs. If this Module is properly used, manual labor could be saved and intellectual work could be contemplated.

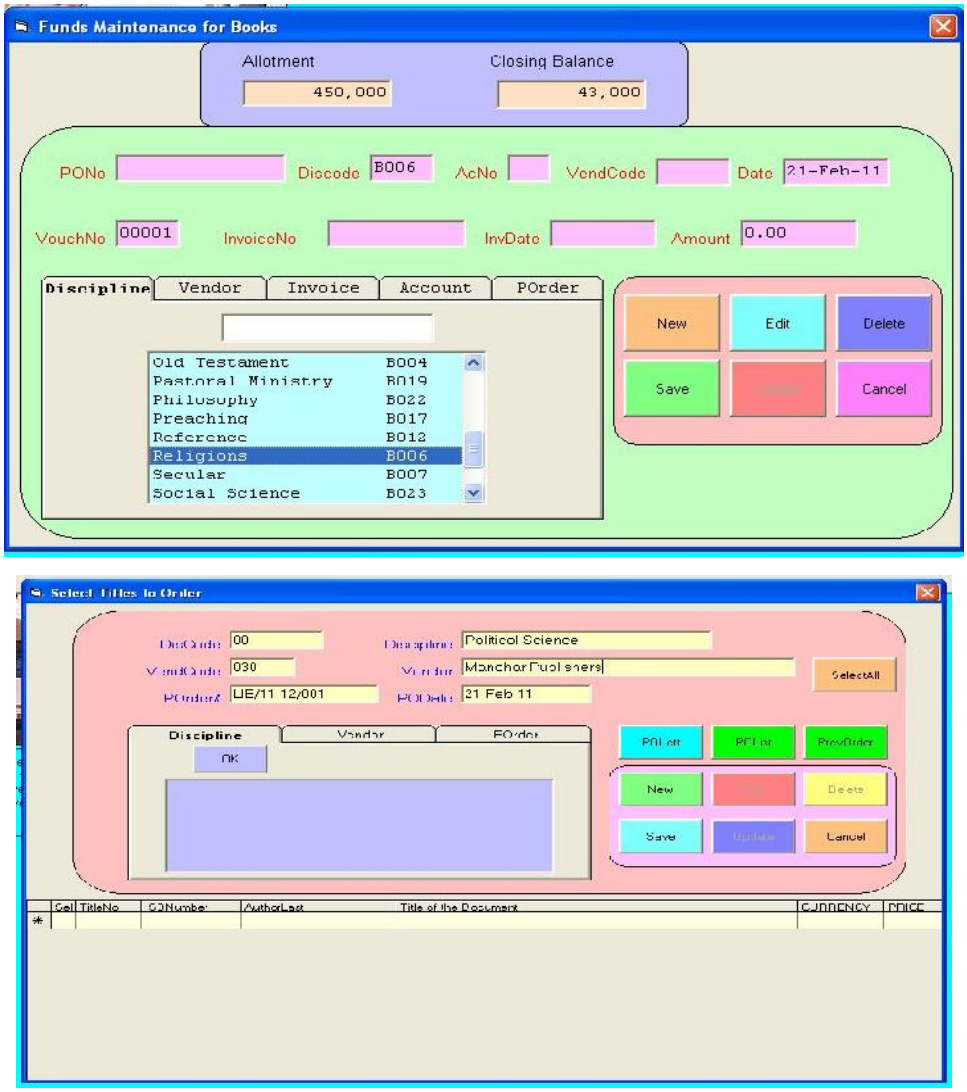


Fig. 10: Funds Maintenance for Books

4.7.2. Functions of the module:

The following are the functions of the module:-

- Builds the database of Titles (subject-wise) recommended by the Book Selection Committee (BSC) on an approval basis
- Adds to the original commitment the current commitment in each subject so as to restrict the placement of orders well within the allotted amount.
- Does duplicate checking through ISBN and Author /Title before appending the records to the Transaction File. This automatic duplicate checking not only eliminates the avoidable items, but also saves much of the Technical Assistants time.
- Keeps the Vendor file as a sort of directory of the Book Business Circle (BBC).
- Places Orders subject-wise with the selected vendor.

- Prepares Purchase orders department-wise for checking the amount spent against the allotted.
- Maintains the Fund file by updating the opening balance and closing balance as and when bills are forwarded along with the voucher for payment
- Rechecks orders received for tallying the price with the cost and the number ordered with the received.
- Generates customized reports - PO date-wise, Titles order-wise, Department-wise books purchased, Vendor-wise voucher payment register and Department-wise fund position as and when required.

4.8. Bibliographic Control System

4.8.1. Nirmal B: An overview

The creation of Bibliographic Database is the first and foremost task that any Library Automation System should address itself. Library reading material-resources are broadly divided into Monographs, Non-book materials and E-reserves. Here the Module concerns itself with creating database for non-serial publications (monographs, non-book materials and articles from multi-authored/edited composite volumes, dissertations and non-book materials and journals). The database has been designed in such a way that it incorporates all essential data elements (fields) described in ISBD (International Standard Bibliographic Description) and transforms/renders them according to the AACR2 format. So `data elements' and `bibliographic format' conform to the international standard without giving room for any parochialism. It is worth mentioning here that bibliographic data are so structured and codified that they can easily be exported to ISO 2709 exchange format either using the universally accepted MARC21 format. A clear distinction has to be made between `processing format' and `exchange format'. `Processing format' is the prerogative of the software package being used in a particular library. It has inbuilt phenomena of processing data even if the data is not in the exchange format. There's a lot of muddle thinking about the characteristically distinct formats even among the library professionals. Poor design, inadequate data elements and substandard format would cost much to the organization in terms of labour, material and time. Sometimes, it would be better to start from the `scratch` than to set right the whole lot. The creator of this software had taken advantage of the state—of-the-art Relational Database Management System (RDBMS) to avoid data redundancy by normalization. The main/lead database is made so compact and well linked with auxiliary databases. Too technical is not warranted in User Guide but maintain certain authority files

repetitive and rarely occurring data such as publishers, series, language and keywords. A model of Bibliography Control System has been depicted below in Fig. 11

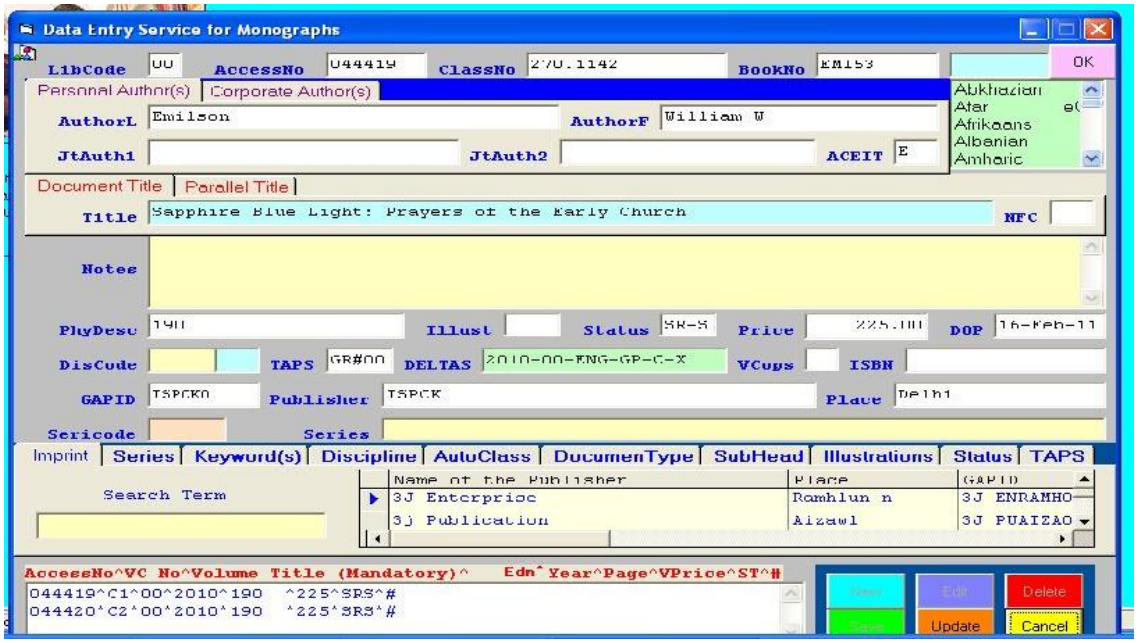


Fig. 11: Bibliographic Control System

4.8.2. Functions of the module

The Bibliography Module of *Nirmals* software performs the following activities:

- It maintains Bibliographic Database for monographs;
- Dissertations, articles from multi-authored books (composite volumes) and non-book materials;
- Transfer data from the Acquisition Control System;
- Bridges database from other sources prepares Union Catalogue for Resource sharing

4.8.3. Addition of Monographs

Pressing Monograph leads you to a predefined data-entry screen format designed to optimize the output. If some reason or other pre-defined screen format is not acceptable, it has the provision of customization. Aesthetic orientation finds place in *Nirmals*. Data entry can be done in the following ways:

☞ **Libcode:** Library code is sometimes referred to as Source of records. The Central Library is always assigned "00". Other Branch/Department Libraries may be assigned from "11" to "99". This is primarily done to avoid clashes of same Accession Numbers assignable to books from two different sources. And moreover, Union Catalogue preparation calls for

source code. Even in big libraries, if the collection exceeds more than 100,000, Divisional code like "01" may be assigned.

☞ **Accession Number:** Accession Number should be assigned to each book in the Library (except Serial publications like Year Books/Annuals having no permanent value). It is a unique number assigned as and when a new book is brought into Stock Register (or Accession Register). There should not be any two books in the Library with the same accession number. If there is any discrepancy, it must be regularized forthwith. Accession number is used as a primary key for identifying the record in the database. Gratis or Departmental Accession numbers need not find an entry in the database.

☞ **Class Number:** Enter Class Number (Dewey decimal classification) assigned to the book by the Library. The number should not start with any alphabetical letter even for local variation. A full stop should follow after the first three digits. Other punctuation marks (dot or apostrophe) may be ignored for the sake of keeping maximum digits to 15.

☞ **Book Number:** Book number or Cutter's Number or Author Code is one that the Library also assigns to individualize the books falling under the same class number. Here includes the dot after the first three letters (from author's last name). If the Library follows some other system, it should ensure unique call numbers for all the volumes in the Library. Online Cutter-Number Table can also be invoked if needed.

☞ **Author Last/Author First :** As per AACR2 (Anglo-American Cataloguing Rules, Ed 2), if a book is written / edited / translated by more than three persons, only the first three are considered for bibliographical entry. The principal author is the first among the three. For the principal author alone, his last name and first name are separately given. E.g. *Management Information system* by Kenneth C. Laudon, Jane Price Laudon, and Frank Smiles.

Here the Principal Author is, Kenneth C. Laudon.

Authorlast: Laudon.

AuthorFirst: Kenneth C.

If AuthorFirst exceeds 30 characters, abbreviate it as K C for Kenneth C.

No full stop is to be given in between the initials.

☞ **Joint Author1/Joint Author2:** Here Jane Price Laudon and Frank Smiles are JointAuthor1 and JointAuthor2 respectively. Render these authors as follows:

Laudon, J P Smiles, Frank

For each joint author, 30 characters are given. If you cannot accommodate the author within the space, abbreviate the middle/fore names as above. Again no full stop in between the initials is to be given.

☞ **Corporate Author:** If the book is published by an organization like UNESCO, or by an association, Indian Philosophical Society or by a Department like Department of Library and Information Science, Mizoram University, Aizawl. Corporate Author should be entered in the hierarchical order: CorpAuthor1: Mizoram University (Aizawl). CorpAuthor2: Department of Library and Information Science. If there is no personal author, it must have an organization which is responsible for the intellectual content or publication of the book.

☞ **ACEIT:** It stands for Author, Compiler, Editor, Illustrator and Translator. Enter the appropriate letter for the role played by each author in the respective order. The Role Code should tally with the number of authors given. In the case of corporate body, role is ignored. Don't fill in the field ACIET. Note that the role should NEVER be given immediately after the author like, Johnson, Samuel, ed. (for editor).

☞ **Title:** Full Title of the Book should be entered here. Articles like 'A' 'An' and 'The' requires to be truncated and put NFC (Non-Filing Character) column automatically if they occur at the beginning of the title. Title followed by a subtitle should be separated with a colon. If the title (including subtitle) exceeds 150 characters, no period (.) should be placed at the end of the title. Examples: Management Information Systems: A Contemporary Perspective. *Nirmals* knows where to put full stop (Grammatically alert).

☞ **DELTAS:** It stands for Date of Publication, Edition, Language, Type of Content, Associate Volume, and Series Number. If date of publication is not available for a book, then we simply enter "0000" in the first segment of DELTAS. Choose the content type only from the list given below. Language has to be chosen from the List.

☞ **4.8.4. Content type (DR B C JOY LMP):**

- D – Dictionary / Encyclopedia
- R – Directory / Handbook
- B – Bibliography
- C – Catalogue
- J – Patents
- O– Official standards
- Y – Yearbook / Almanac
- L – Legislation
- M – Theses / Dissertations
- P – Programmed Texts

➢ Types of Non-book material (LORDSAVME)

- L – LP Records
- – OHP Slides
- R – Roll films
- D – Disks (Data)
- S – Software (Programs)
- A – Audiocassettes
- V – Videocassettes
- M – Microforms/fiche
- E – Exhibits

➢ **DisCode:** Discipline for which the book is purchased should be entered here. New discipline may be created by invoking Authority-Patron in *NIRMALA* module.

➢ **Grant:** Different grants could be defined in *NIRMALS.ini* file. If no specific grant is received, enter 'GENER'.

➢ **DOP:** Date of purchase is entered as per the Invoice no. in the case of newly purchased books. For the old ones, you had better ascertain the date from the date-stamp.

➢ **Status:** Status consists of Location and Logical Status. In a big library, location of books has to be shown for the users to pick up the title without any assistance. OPAC is supposed to display the location along with Status of the book. Physical location has to be decided by the individual library. But all of them should follow the following code for logical status.

Logical Status (MRS A B CID)

- M - Missing
- R - Reference/Rare
- S - Stack/Shelf
- A - Archive
- B - Bindery
- C - Circulation
- I – Inter-Library loan
- D – De accessioned

➢ **ISBN:** It stands for International Standard Book Number. It should be entered as hyphenated segments: 0-671-49926-2. In some books the ISBN may be found printed without hyphen but with space. Here you should enter them with hyphen for internal processing. No matter if there is no number, don't bother, and leave the column blank.

➢ **Publisher/Place:** Enter Publisher uniformly. Omit trivial terms like & Co, Pvt. Ltd, Inc. If there is more than one city then the first city reflected in the book is to be entered in Place of Publication.

➢ **Series:** If the book has any series, it must be entered here without the series number. Series Number should be given in the DELTAS column.

➢ **Multivolume/Copies:** In the case of Multivolume books, volume title along with accession number should be given. Accession number of the main entry volume should be repeated here first. If the edition differs, such copies cannot be treated as identical copies. Only identical copies should be entered here. Copies of different editions should be treated as individual volumes.

➢ **Keywords:** Maximum five keywords can be given for a book. It does not necessarily warrant that all the five keywords would be entered. It may be limited to one or two. Keyword should be followed by Key number with parentheses. Care should be given to see that each keyword represents a distinct concept. Here homonyms and/or vague (ambiguous) terms should be avoided. Authority Files for Publisher, Series and Keywords are created separately so as to avoid repetition.

4.9. Authority File Maintenance

4.9.1 An Overview

No Database Management System (DBMS) could dispense with maintaining certain authority files. Authority files can not be affiliated to a particular module, but are common to all unlike other modules this does not keep a high profile. Whatever it does behind the curtain counts. Authority files mainly include Keywords, Publisher, Series, Language, Country code and DDC Scheme. Pruning and tanning of the files called for the expertise of the database administrators. Indiscrimate manipulation of Authority files will cause ripples of action in other main databases. It is always advisable that all other modules are shut down while working with this module.

4.9.2. Purview of Module:

This module like other modules performs the following tasks. It

- Prepare Keyword Dictionary
- Edit Publishers/Series with simultaneous correction in main databases
- Adds and updates databases like language, country code and Dewey class

- Prints preference list of keyword dictionary, publishers and series
- Creates all the pruning and tanning of the databases

➢ **File**

Here details about the Authority Database files are displayed along with number of records and last dates of updating.

➢ **Add**

Here mainly keywords are added. It can be started by the stretching the keyword falling under ten divisions of DDC. It is difficult to give clear distinctions. Precautions should be taken to avoid over lapping. Here few following new criterion can be involved to build keyword dictionary, controlled vocabulary.

- Only concrete terms (neither technical nor jargon) chosen as subject descriptors
- Keyword should denote a single concept
- No two keywords describing the same concept
- When keywords are given as two words, the broader term should be followed by the particular term

➢ **Edit**

All the above said files can be edited here. While editing publishers/series, their corresponding Gapid and Sericode are modified. These modified values are updated in the relevant main database records.

➢ **Delete**

Generally duplicate records alone are deleted. Rarely do you require this service.

➢ **View**

All records can be viewed for global inspection. Mistakes also can be spotted out while browsing them slowly. Sometimes, this may also help to detect otherwise there may be intractable mistakes.

➢ **Utilities**

Here custom indexing can be done and directory of publishers and keywords be created. Using file manager one can view and print the directories in the standard form.

4.10. Online Public Access Catalogue

4.10.1. OPAC: An overview

OPAC spells the magic as the golden master key to the treasure of knowledge. It makes a clean break with the inflexible traditional way of searching resources in the library. The user is at liberty to frame ones own search strategies. OPAC is so design to as accommodate a wide spectrum of user's bibliographical approaches. Its conceptual model is reconciled to the user's mental model through an intuitive interface. OPAC flexibility and presentation bewitch even the lukewarm users to rediscover the library again and again. Well what's the secret of OPAC amazing power? It is the MAP-Multi Access Point at its heart. OPAC is so responsive as to sensitize even the novice novel queries and so quick witted as to snap out the context-sensitive message from its photographic memory. Even the freshwater need not hesitate to jump onto the OPAC springboard to the Launch Pad. He'll never get lost so long as he keeps the map. Off-line guidance given here is meant for the OPAC users to dispense with two intermediaries-technical (computer) and managerial (library) personnel. "User friendly" is too inadequate a term to denote its array of exciting feature; it discards the old practice to 'remember' and 'type' the search term. It offers the new technique to 'see' and 'point' the pop-up menus with pull down choices. OPAC not only occupies the pride of place in any computerized modern library system, but also plays the crucial role between the user's requirement and the libraries resources.

While giving a close looks to the OPAC's constituent elements and its functional features, OPAC operates chiefly on three types of literature – monographs, articles and serials - accessible to the users in many libraries. As discussed earlier, its Instant Access Engine is triggered off as soon as the user chooses his search term. There is no illusion about its nature of functioning almost like a kaleidoscope. A different view of the object focused upon once, the instrument is tilted. Here one can move from one access point to the other, and with the panoramic view of the logical array of document in the respective intellectual chamber the user will be attracted. Any literature survey would be incomplete without making a serious bibliographical search on them. As we know, "A true research begins with, and ends with a bibliography". Keeping in view the importance of thread-bare literature survey, on the one hand, and the 'literary' and 'bibliographic' descriptive elements of documents on the other, OPAC sets out its quest for documents matching with user's search options via Multi Access Points.

4.10.2. Multi Access Point (MAP)

There are many access points for searching an element enlisted in the catalogue. The user can access to the document to ascertain its availability through this. A model of *Nirmals* Search Spectrum is placed below in Fig. 12

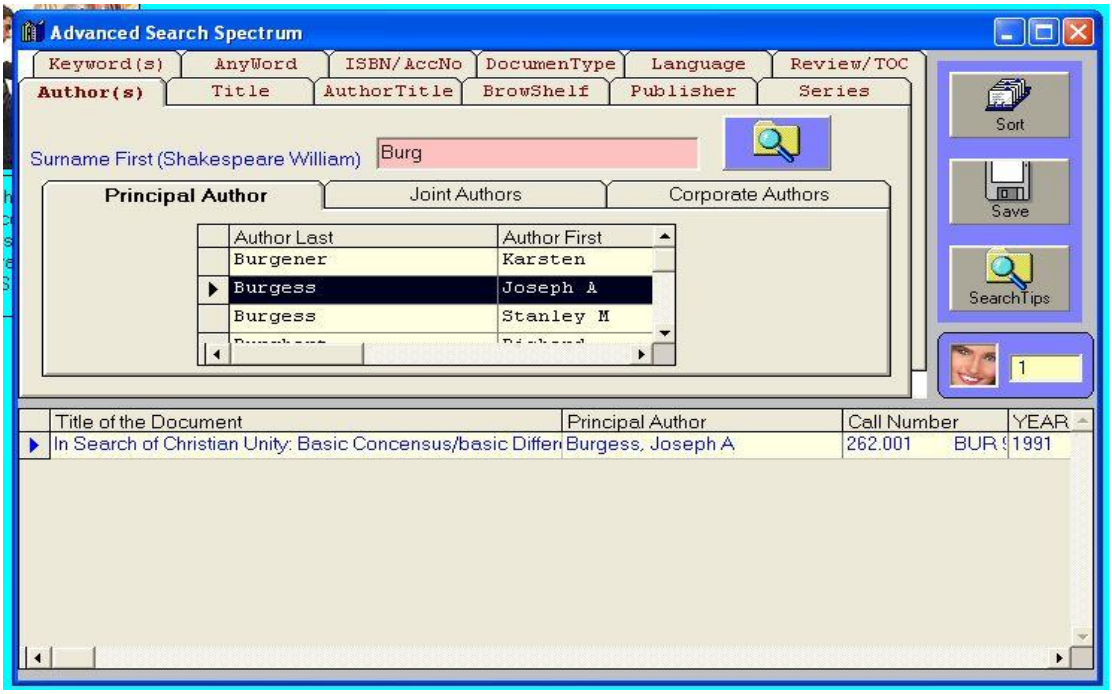


Fig. 12: Search Spectrum

➢ **Monographs:**

- Author(s) – compiler, editor, illustrator, translator
- Title of work
- Author + Title
- Class Number
- Publisher(s)
- Series
- Keyword Plus (subject/Title/Notes term)
- Any word
- Document (Content type wise)
- Language
- ISBN/ISSN

➢ **Articles:**

- Author name
- Title of Article
- Keyword plus

➢ **Serials:**

- Current Title
- Holdings
- Discipline
- Country
- Language

4.10.3 Search

4.10.3.1 Monographs/Articles

☞ **Author(s)**: Here authors include compiler, editor, illustrator and translator. Searching of a document can be done through main author as well as on joint authors. As soon as author is invoked, three columns displayed such as Author Main, Joint Author 1 and Joint Author 2 respectively. If we are not quite sure of the author that we are looking for and he is not found in the Main Author, we have to try the other two. We can select as many authors as we want so that we need not revisit the selection screen.

☞ **Title of Work/Article:** Titles of the available documents are displayed alphabetically. But putting the key in the first few letters the database will display the titles, starting with the letter. OPAC Plus never imposes any condition to limit the choice.

☞ **Author + Title:** One can restrict the search to a particular document. This is a scholarly approach. From the display list, the user can ascertain the available of title as well as other titles by the same author grouped in one place.

☞ **Class Number:** Here the DDC scheme is presented. From the thousand subdivisions, one can go to the subject of interest. This is a most natural way of seeking documents.

☞ **Publisher/Series:** It is also an interesting point of search in the sense that the database can be searched through the known publisher or series which is very handy. Sometimes under the series possible related volumes can be accessed.

☞ **Keyword Plus:** Subject-Term approach is particularly essential for research scholars. Most of the edited documents will contain assorted articles. Boolean operators 'AND' 'OR' and 'NOT' can be used to amplify or minimize the relevant document.

☞ **Any Word:** Any word in the title could be used as a point of access. Here truncation is possible. Boolean operators can be used depending upon the relevancy. It is a powerful general purpose access point for users with a vague memory about the title needed.

☞ **Document Type:** In the case of reference collection, this is an ideal access point. From here we can browse all the directories.

☞ **Language:** Books other than English can be browsed if the user wants to scan some works in fiction. This access point will be highly appreciated if the library has got considerable collections in various languages.

☞ **Accession Number:** To find out the location or other detail about a book, whose accession number have secured, we can opt for this point.

4.10.3.2 Books/Journals Articles

Libraries, irrespective of their nature spend some portion of their annual budgets on current literature-journals and magazine. Valuable journals are preserved as bound volumes for posterior reference. Unless and until selected articles are indexed and given access, they will remain unutilized and defeat the very purpose of preserving them, in some libraries articles from edited works like conference proceedings and memorial volumes included so that contributed articles could be brought into limelight. In the Bibliographic entry-format for monographs, there is a provision for entering the whole Table of Content (TOC) selectively. If entered, there is no need for entering articles from the same work. But the only search option available via Article-Search is Review/TOC. While selecting the journals and the articles from them, the enduring value of the articles in terms of intellectual thought content should be the primary criterion for inclusion.

Nowadays, e-journal/e-books dominate the e-resources, which no modern library could afford to ignore. If full-text articles are available online for a journal, you had better desist from entering articles from them, and give access to them through the Internet facility. *Nirmals* have provided the same input screen for entering both the article with a variation in the composition of the Article Code.

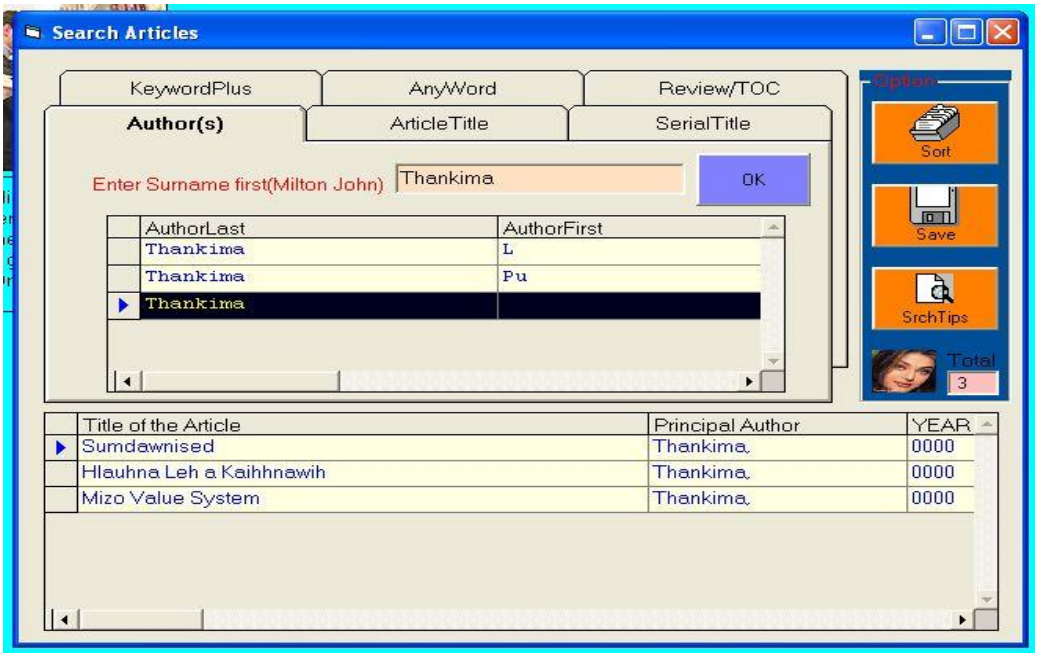


Fig. 13: Search Articles

☞ **J Art Code:** Each article from a journal is assigned a unique JArt Code**,** which consist of 12 digits--9999-9999-99-99 where the first four digits stands for the Journal code, the second four digits for the year, the next two digits for Issue no and the last two digits being for the Article number. So 99 articles could be entered from a particular issue of a journal, which is more than sufficient. Journal Code is displayed when a journal is selected from the list and thereafter entering of year and issue number is done manually. When 'New' button is pressed the article number will be assigned. After entering the first article, the article code is incremented by the article number.

☞ **B Art Code:** Each contributed article from a book is assigned a unique B Art Code which consist of 11 digits-99999999-999 where the first eight digits stands for Union Catalogue Accession Number (UCAN) and the second three digits for the Article Number. So 999 articles could be entered from a particular book, which is more than sufficient. You have to manually enter UCAN Number. When you press the button new, article number will be assigned automatically. After entering the first article, the article code is incremented by the article number. In the case of Multivolume or Multi-copies of a book only the first volume or copy UCAN Number (which is the main record number) should be used.

☞ **Artype (CLEAR):** Article type should be entered as a single letter from CLEAR which stands for contributed article from a book, letters to the editor, editorial, article proper or feature and Review/Reports.

4.11. Circulation Control System

4.11.1. Nirmal C: An overview

Circulation keeps the library collection dynamic and vibrant. It is one of the Modules that come into direct contact with the users. In an integrated library system, the real time transactions are reflected in OPAC Plus. Library's lending policy has to be spelled out in an unambiguous terms so that the Module could incorporate it. Some libraries unreasonably demand that this Module is made very so flexible for all sorts of manipulation. They have to attune themselves to the new system and cast off the old traditional garb. Providing for options is different from overruling the accepted terms of lending frequently. In view of the changing demands of the library, it provides a lot of options at the Super user control. Here the transactions are so transparent that all details about the documents in circulation are faithfully recorded. The transaction view of the circulation has been given below in Fig. 16

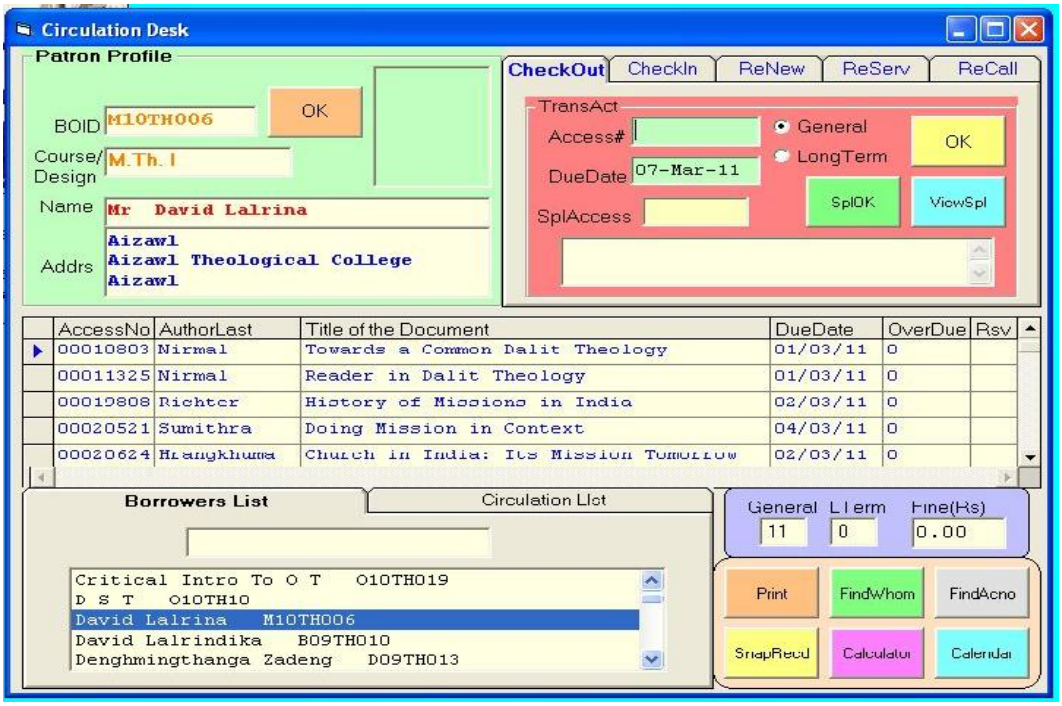


Fig. 14: Circulation Module

4.11.2. Characteristics of the Module

The circulation module controls the entire circulation unit. The module is associated with the following functions. It

- ✓ Maintains the Transaction File
- ✓ Identifies the delinquent members
- ✓ Alerts staff to lost or stolen ID cards when presented

- ✓ Checks out, checks in, renews and reserves books
- ✓ Indicates reserved/recalled materials
- ✓ Keeps track of and recall overdue titles
- ✓ Does in house check in of a special material
- ✓ Displays all items checked out to a patron
- ✓ Calculates fines and fees for overdue items
- ✓ Automatically prints recall notice/fee statements
- ✓ Registers members and automatically assigns ID's and
- ✓ Generates report- Daily and occasional

4.11.3. Circulation Desk

☞ **Transaction**

On pressing Transaction the system displays five options. Such as Checkout, Check-in, Reserves, Renewals, Recall. The mode of transaction is displayed at the right top corner. In case of any confusion with one transaction or the other, the warning message is displayed. You cannot switch from one mode of transaction to the other within the transaction. You have to come out of it, and change the mode. Outwitting the module is not possible.

☞ **Checkout**

Two types check out are possible: General and Special. General is meant for all library documents that bear accession number, and the Special for those without accession numbers like magazines, pamphlet and new books normally are check out overnight. Enter BOID (Borrower Identification). In case of doubt, you may pick out from the displayed list by pressing F2 key. As soon as we have entered BOID you will find name and address, message if any and all books checked out on that card (both special and general) are highlighted by displaying the Accession number, Title, due date, Overdue, Books reserve, recalled and overdue. You could accordingly remind the patron. When you enter accession number the full bibliographical details about the books are displayed. No reference book could be checked out. You may enter the due date. If it falls on weekends or holidays, monthly calendar is popped up for choosing another date. All the checked out material gets updated immediately in the displayed list. When special materials are checked out, the system automatically generates item number and all that you have to do is to enter the brief title.

As in Checkout, there are two types of Check-in: General and Special choose whichever applicable. At one stroke you could check in all the books. Just use the key to select (unselect) items and press. By doing so, the selected items go off from the displayed list one by one and then the book can be reserved in circulation except the one that stands in clientele's name. The due of return of the book can also be known. In case of urgency, the Librarian on request shall call back the book. However, the Librarian cannot be insisted upon knowing the name of the person who has taken the book. This is because that this piece of information is not available, but for maintaining certain confidentiality. Reservation is not allowed for special materials. Non members cannot make use of this privilege. Nobody could infringe upon the right to renew the book unless and until someone else has already reserved. The system restricts from doing any transaction until the return of books, which are both overdue and reserved. Normally not more than three renewals are permissible. Nobody can monopolize the library materials. The man who has reserved the book will lose faith if some tries to hoodwink the system. However, the book can be renewed and the next due date can be known without violating the basic norms. The library reserves the right to recall any book from any person with or without giving specific reason. Recalled books need not be overdue books. The system will automatically generate recall notices to individual members. OPAC-Plus shows the details of that a particular book which is in circulation. The librarian may be requested to get back the book in case of urgency. There is an option in the software known as 'Find Whom', which can display the identity of the person to whom book has been issued.

4.12. Desktop Information System (DIS)

4.12.1. Nirmal D: An overview

Desktop Information System acts as a direct communication channel between the users and the library resources. Its uses may be appreciated more by the Research Scholars in the sense that Articles Alert Service, Academic New Scan Service, Selective Dissemination of Information (SDI) is introduced to keep up the academic temper. The library could project its image by presenting Recent Addition (READ) list to its immediate counterparts. It is an intelligent module meant to act as an Electronic Reference Dictionary.

4.12.2. Features of the Module

This module has different features. It acts like a source of information. It acts like a source of information. It is primarily associated with:

- Maintaining scholar profile
- Introducing articles alert service
- Embarking on Selective Dissemination of Information (SDI)
- Answering from Ready-Reference Information Desk
- Running Academic New Scan Service (ANSER) and
- Generating Recent Addition (READ) List

4.12.3. Scholar's High-end Academic Research Profiles (SHARP)

This is a standard profile for scholars/faculty members who need PROMPT service to file their research profile. It is very comprehensive in coverage but sharp in culling out the details. PROMPT service is purely based on SHARP information only. Preciseness of input would enhance relevance of the output. Every scholar would benefit to the extent to which their feedback works out.

4.12.4. Selective Dissemination of Information (SDI)

➢ **Cur Articles:** An attempt may be made to scan only the current subscribed journals in the library through articles/reviews appearing in them. In the second phase only abstract will be the source of information for full coverage.

➢ **Keyword Gen:** Title key words are generated automatically so that PROMPT could be carried out for all possible terms in the title.

4.12.5. Profile Match of Project Topics (PROMPT)

This is a sort of SDI service. Any project of serious research can be reduced into keywords, Key persons and Key documents for the purpose of literature survey. Keyword includes topic keyword or subject key term or any conceptual term provided by the scholar. Key persons are those who are already working in the specific field, whose contributions in the form of journal articles are working.

Scanning: Key documents encompass both journal articles and books whose contents are available in the form of current content.

4.12.6. Current Awareness Service (CAS):

Recent Addition (READ): New arrivals to the library are notified to the potential users of the library. Mere list may not be appealing to the reader. And hence, a brief review of each book is given in order to arouse the interest of readers. Only selected titles could be reviewed.

4.12.7. Select Content-page of Advanced Research Periodicals (SCARP)

Here the periodicals include not only those subscribed but also the potentially useful core periodicals to each department. As the departments are situated in two campuses Article Alert Service is quite important. Scanning the content-page would help scholar pick out the useful articles.

4.13. Serials Control System

4.13.1. Nirmal-S: An overview

In terms of currency, there is a great divide in library resources; periodicals and books. As the library spends nearly one-third of its budget on current literature, Serials Control System cannot be coupled with the General Acquisition. This takes care of the Current/Retrospective Collection of Periodical Literature. It monitors the incoming issues of the journals and claims pending issues. Creation of the Serials database as per ISDS makes it easy for exchange of database and preparation of union catalogue. It also provides online access to the retrospective collection. It does other routines involved in the Acquisition. This self-contained module would prove to be a handy tool to control the valuable information resources for the immediate use of the research scholars.

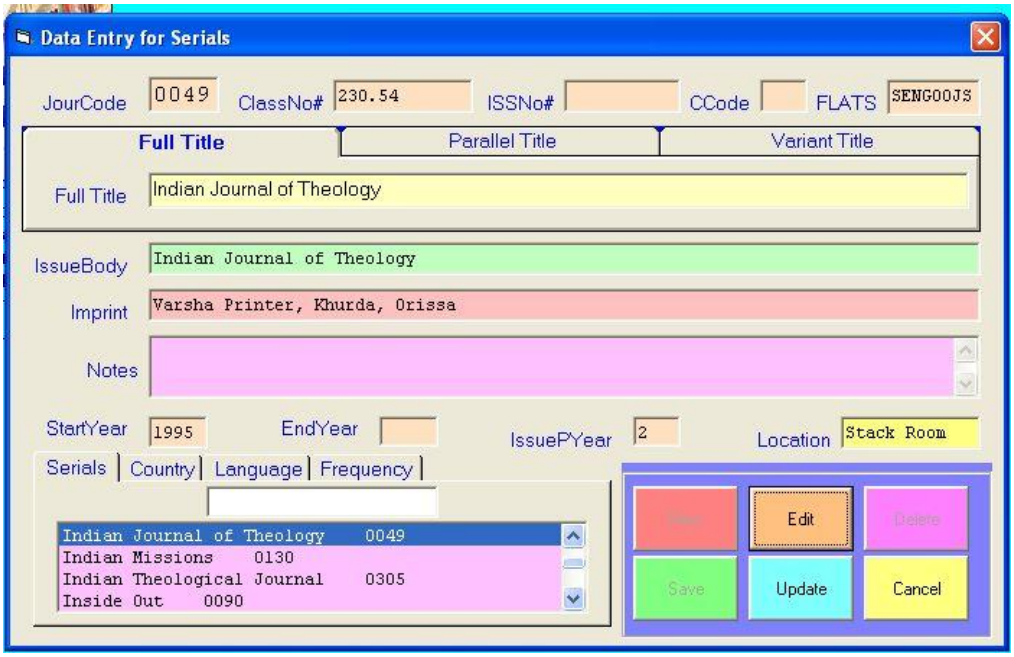


Fig. 15: Data Entry for Serials

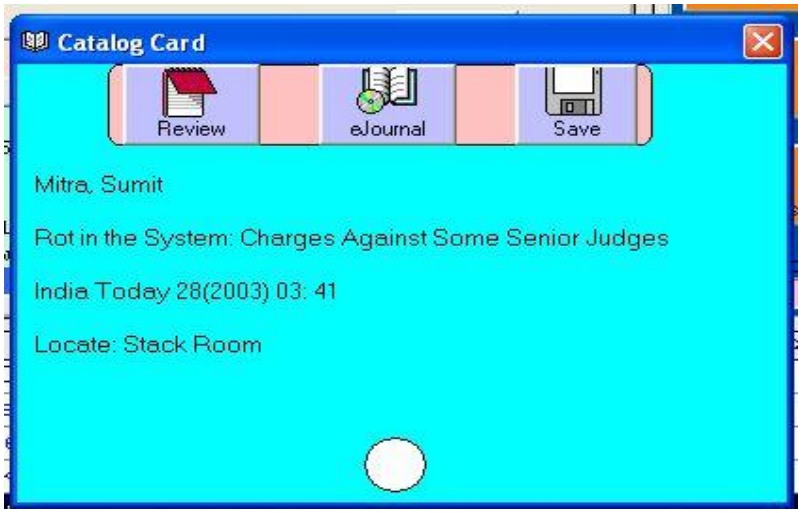


Fig. 16: Catalogue card for Serials

4.13.2. Characteristics of the Module:

This module like other modules of the software has different characteristics. It basically,

- Maintains master Serial records file
- Records the Issues received
- Readies New Acquisition List
- Keeps track of the issues sent to bindery
- Attends to Claims and Renewal Requests
- Undertakes the coordination with the local subscriptions agencies
- Controls the budgetary provisions
- Creates voucher for advance payment
- List out the expected arrivals
- Supports Retrospective Online Serials Search (ROSS)

4.14. NIRMALS GENERAL UTILITIES

4.14.1. Nirmal-U: An overview

Nirmals provide different Modules with some utility programs specifically required there. There is another DBU (Database Utility) Program also comes along with it. The chief service that you may appreciate is the Exporting/Importing facility for data transfer through the international exchange format. This is quite essential in the sense that database is your asset. You may use today *Nirmals* software, and we may switch over to some other software later on. In the even of switching over, the database has to be exported to the standard format and the new program should have the facility to import the bibliographic records. Your

bibliographic records should not lose international flavour. The general utilities associated with the *Nirmals* software has been placed below in Fig. 17 for clear understanding.

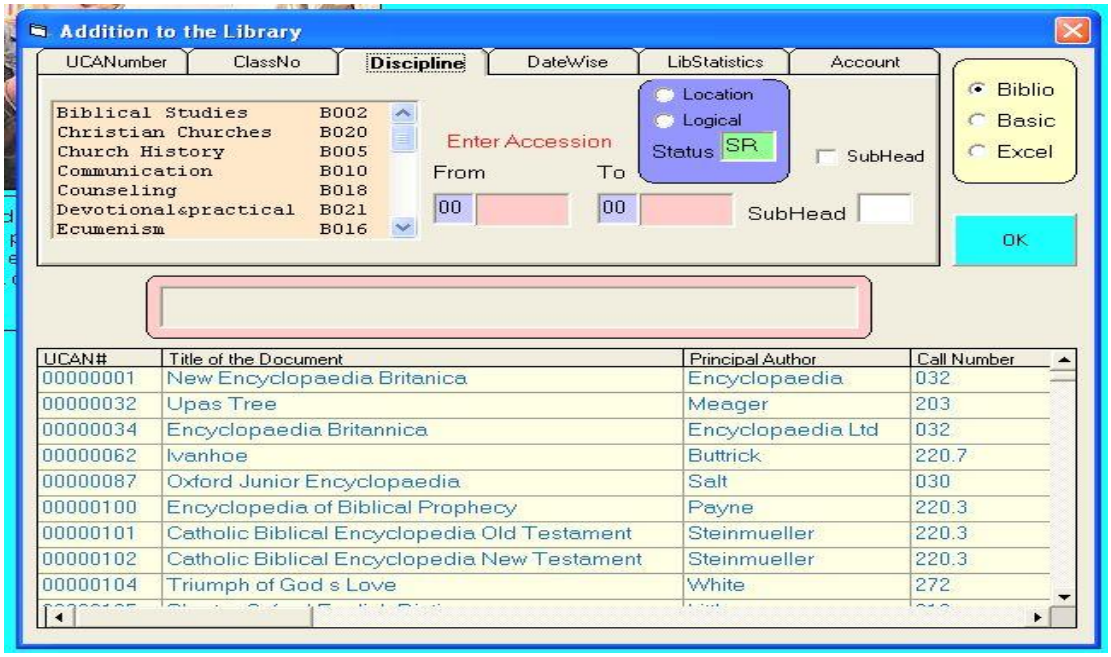


Fig. 17: NIRMALS General Utilities

4.14.2. Attributes of the Module

This module has different attributes. Primarily it,

- Exports and imports data form other sources through ISO 2709 format using CCF tags using CCF tags
- It provides an easy way of stock taking
- Compiles subject Term Dictionary (STD) it is a masterly auto-selective creation of controlled vocabulary of subjects term-an indispensable dictionary for retrieving documents through subject key terms
- Prints SMART (Scholar's Multi access Reference tool) it is a fully computer generated dictionary catalogue (classified, content-form, series, title), book card and book label
- Produces CASH (Classified Arrangement of Serials Holdings). This computer generated dictionary is an indispensable tool for research scholars.
- Provides Standard Forms-Data Worksheets for monographs and serials
- Bring out bibliography of Academic Research Dissertation with Supplementary Multi Index (BARDSMIND).

4.15. Comparison and analysis of SOUL and NIRMALS

4.15.1 Comparison for SOUL and NIRMALS

Sl. No.	FEATURES	SOUL	NIRMALS
1.	Programming language	SQL	C++
2.	Database (RDBMS)	MS-SQL Server 6.5	SQL Server, ORACLE
3.	Operating system	Windows ‘95	Windows ’95 Windows ‘98
4.	User friendly (Easy to use)	Yes	Yes
5.	Available modules	Acquisition, Cataloguing, Circulation, Serials control , Online Public Access Catalogue (OPAC), Administration	Acquisition control system (NIRMAL A), Bibliographic control system (NIRMAL B), Authority file maintenance, OPAC, Circulation control system (NIRMAL C), Desktop information system (DIS), Serial control system (NIRMAL S), Nirmal general utilities (NIRMAL U)
6.	Barcode generation	Yes	Yes
7.	RFID	Yes	Yes
9.	Multi language support	Yes	Yes
10.	Reminder system in circulation and acquisition section	Overdue books	Overdue books
11.	Catalogue card	Yes	Yes
12.	Bibliography standard followed	CCF, AACRII	AACRII
13.	Data conversion	MARC21, ISO 2709 format	MARC21, ISO 2709 format
14.	Statistical report can be graph	Yes	Yes
15	Kinds of reports that can be generated	Statistical reports	Statistical reports
16.	Provision for image storage	Yes	Yes

Table 6: Comparison of SOUL and NIRMALS

4.15.2. Comparative Analysis of SOUL AND NIRMALS

1. The programming language used by *SOUL* is SQL. In contrast, *Nirmals* used only C++. *SOUL* has its own proprietary database and support standard RDBMS such as MS-SQL server 6.5, ORACLE and MySQL. ORACLE or any other RDBMS is optional depending upon the user's choice. However, *Nirmals* requires SQL plus ORACLE RDBMS at the back end.

2. In *SOUL*, minimum hardware and software system requirement is Intel based Pentium III processor,64 MB of RAM, 8 GB free hard disk space, SVGA color monitor, parallel port (1), serial ports (2) and Windows 98,2000/XP. In contrast, minimum hardware and software system requirement for *Nirmals* is an IBM PC AT compatible,16 MB or more of RAM, SVGA monogram or color monitor, DOS 6.X or above, ANSI terminal support and Windows 95/98. *SOUL* is user friendly package; it is windows based menu driven software. In *Nirmals,* the various components have their own program files, we need to open the different programs in order to access the different components and it is not clear which program contain the component we need. It is not so user friendly. *SOUL* contains different modules i.e. Acquisition module, Cataloguing module, Circulation module, Serials control module, Online Public Access Catalogue Module (OPAC) and Administration module. In *Nirmals*, there are also a number of modules such as, Acquisition control system (*NIRMAL-A*), Bibliographic control system (*NIRMAL-B*), Authority file maintenance, OPAC, Circulation control system (*NIRMAL-C*), Desktop information system (DIS), Serial control system (*NIRMAL-S*), *Nirmals* general utilities (*NIRMAL-U*).

3. In *SOUL*, the acquisition module deals with approval and ordering of library materials, monitoring their receipt, invoice processing and accessioning. It also maintains expenditure and budget analysis under a variety of accounts or heads. Acquisition control system (*NIRMAL-A*) has considered several factors at the design stage itself and incorporated some of the existing practices and added new features in line with Total Quality Management techniques. It follows a set of procedures that are normally adopted while making purchased of new books. Facts and figures are made available at the press of Hotkey. It would be a great relief to the acquisition division. If this module is properly used, manual labour could be saved and intellectual work could be contemplated.

4. Cataloguing module of *SOUL* consists of cataloguing process, catalogue search, user services, authority file maintenance and retrospective conversion. The cataloguing process is further divided into - titles in process, new records and edit records. User services is again divided into two – current awareness and bibliographic service. Authority file maintenance is further divided into the following- publisher, subject, language, author, corporate body, meeting and type of material. Retrospective conversion includes data entry and import/export. In contrast, *Nirmals* has no particular cataloguing module; catalogue can be printed from *Nirmal-U*. It provides an easy way of stock taking. The chief service that we may appreciate is the exporting and importing facility for data from other sources through ISO-2709 format using CCF tags. It also provides standard forms- data worksheets for monograph and serials.

5. The circulation module of *SOUL* maintains up-to-date membership records as well as the latest status of the collection meant for circulation. It facilitates printing of Bar-coded ID cards along with an optional facility to attached member's photograph. It performs all the functions related to circulation, providing suitable checks at a very stage. It also takes care of infrequent but routine functions such as bindery record management, book on display in the library, latest addition to the library, etc. In *Nirmals*, circulation control system (*Nirmal-C*) maintains the transaction file, identifies the delinquent member and also Generate Reports-Daily and Occasional. Here the transactions are so transparent that all details about the document in circulation are faithfully recorded. It displays all items checked out to a patron. It also calculates fines and fees for overdue items. It automatically prints recall notices/fee statement. It registers members and automatically assigns ID.

6. In *SOUL*, the serial module provides control of subscription of periodicals and subsequent monitoring of the scheduled arrival of individual issues. It maintains records of the budget sanctioned for serials under different categories, amount spent, thus providing complete budgetary control. It also handles serials, which are received gratis or in exchange. Serial control system (*NIRMAL-S*) in *Nirmals* basically maintains Master Serial records file, records the issues received, Readies New Acquisition List. It keeps track of the issues sent to bindery and attends to claims and Renewal requests. It controls the budgetary provisions and creates voucher for advanced payment. It monitors the incoming issues of the journals and claims pending

issues. It also provides online access to the retrospective collection. It does other routines involved in the Acquisition.

7 In *SOUL*, OPAC module includes a word-based search facility using Boolean Operators that can narrow down a search to meet very specific needs. OPAC module in *Nirmals* operates chiefly on three types of literature-monograph, article and serials accessible to the users. It sets out its quest for documents matching with user's search options via Multi Access Points.

8 There are also other modules available in *Nirmals* such as bibliographic control system, Authority file Maintenance and Desktop Information System. The Bibliographic Control Module concerns itself with creating database for non-serial publication. The database has been designed in such a way that it incorporates all essential data elements described in International Standard Bibliographic Description (ISBD) and transforms/renders them according to AACR2 formats. Bibliographic data are so structured and codified that they can easily be exported to ISO-2709 exchange format either using the universally accepted MARC21 format.

9 Authority files cannot be affiliated to a particular module, but are common to all unlike other modules this does not keep a high profile. It mainly includes Keywords, Publisher, Series, Language, Country code and DDC scheme. It creates all pruning and tanning of the databases.

10 Desktop Information System (DIS) *Nirmal-D* in *Nirmals* acts as a direct communication channel between the users and the library resources. Its use may be appreciated more by the Research Scholars in the sense that Article Alert Service, Academic news Scan service, one introduced to keep up the academic temper. It is an intelligent module meant to act as an Electronic Reference Dictionary.

11 Reminder for overdue books available in *SOUL* and *NIRMALS*. In *Nirmals*, reminder for overdue books is in the circulation desk (under *Nirmal-C).* It indicates as pop-up every time an overdue book is returned. The expiry date and fine amount can be set up in the same program (*Nirmal-C*). Both Soul and *Nirmals* provide catalogue card – Main entry along with Added entries. *SOUL* Follow MARC 21, CCF for storage and exchange of bibliographic records. In contrast, *Nirmals* follows AACR2 format. SOUL has facilities for both data import and export filter that support machine readable /tagged format such as MARC, ISO-2709. In *Nirmals*, bibliographic data are

so structured and codified that they can easily be exported to ISO-2709 exchange format either using the universally accepted MARC21 format.

12 The statistical report can be graph in both Soul and *Nirmals*. In *Soul*, the statistical report includes books, thesis and bound journals where as in *Nirmals*, the statistical reports is divided into two i.e. occasional and Daily occasional report includes membership, expire membership, usage details, books returned, renewal, re-issued, overdue books and fine accounts. But graphical representation is not possible. In *Nirmals*, reports are generated in a word document.

4.16. Conclusion

The days were gone when traditional library was in practice. This is the age of information and communication technology and therefore, it requires knowing the methods and practice of library software. Automation and Digitization has become the important topic in the field of library and information science. The study of the two software packages namely SOUL and NIRMALS package has got its own capabilities and limitations. NIRMALS software has peculiarity because it has been developed by a library professional that has more than thirty years experience in library profession. Practical experiences in the university library had become important source to develop valuable library software. NIRMAL software is particularly developed in view of practical value and utilities for library operation. Present system and acquaintance with the software by the librarian brought out the library expertise and exploited the computer knowledge to bring out a more valuable package, reflecting the current trends and the state-of-art technology. SOUL is user-friendly software developed to work under client server environment. Looking at the name of the software, one may think that it is meant for University Libraries only, but in fact it is flexible enough to be used for automating any type or sizes of libraries, hence, Software for Universal Libraries may be matched as its name. The inputs received from expert team consisting of practicing librarians and the feed backs received from users are the strong base for designing this software. SOUL puts library staff at ease in exploring all the functions to their advantage with the help of professionally prepared manual. It however remains the decision of the individual library to select software that serves its requirements in the best way.

Reference:

- Aswal, R.S. (2006). Library automation for 21st Century. New Delhi: Ess Ess Publications, p 42 -45
- Venugopal, S (2000). NIRMALS: User's Guide. Tiruchirappali: Nirmal Institute of Computer Expertise.
- Venugopal, S (2000). Nirmals: A Client/Server package for Modern Library Management. Tiruchirappalli: Nirmal Institute of Computer Expertise.
- www.ccssind.org/lib/informanagement
- www.apcce.gov.in/autolibrary.aspx
- www.inflibnet.ac.in

5.1 Data Analysis

Data Analysis and findings are essential for a scientific study and for that the scholar has taken relevant data obtained through the filled-in questionnaire for making analysis and draw inferences. Analysis refers to the computation of certain measures along with searching for patterns of relationship that exist among data groups. The analysis of data in a general way involves a number of closely related operations, which are performed with the purpose of summarizing the collected data and organizing these in such a manner that they answer the research questions. Analysis is the product of insight into the total situation, paying upon the assembled facts and giving them a general significance. Its validity depends more upon common sense, experience, background knowledge, and intelligent honesty of the interpreter than upon conformity to any set rules that might be formulated.

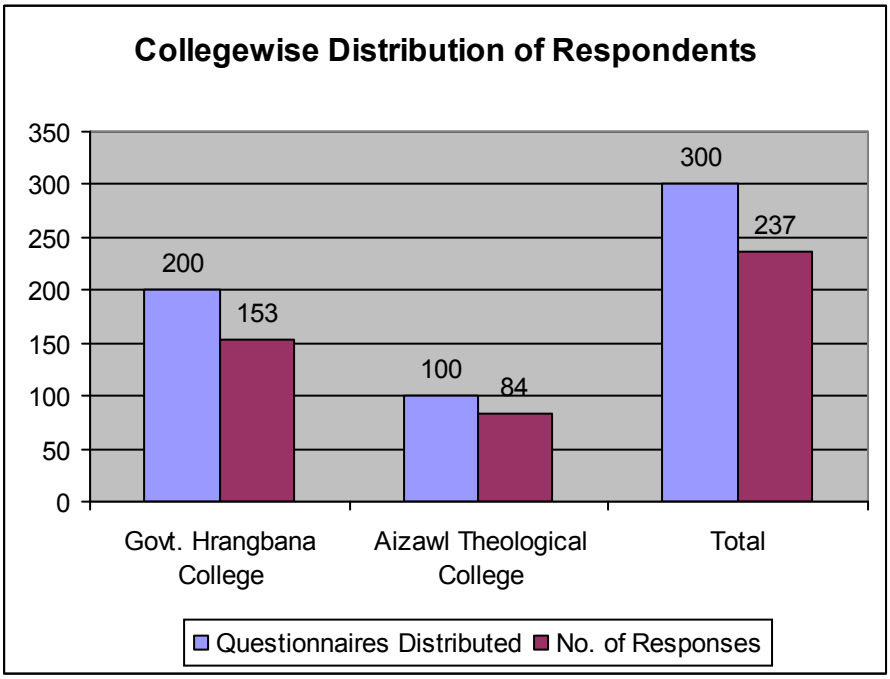
The purpose of the study is to investigate software packages for automation in the library based on the data through the questionnaire of college libraries under study in Aizawl. The data related to area of study were collected by the scholar primarily through questionnaire and as such there are more than 1700 users in total at HBC and ATC libraries which form the total population. Therefore as mentioned in the methodology, a stratified sampling technique was adopted to obtain representative samples as the samples constitute a heterogeneous group. In total altogether 300 questionnaires were distributed, 200 for HBC and 100 for ATC, out of which 237 filled in questionnaires were received there by, giving a response rate of 79%. However, the non-respondents constitute 63 (21%) in total. The data were tabulated for analysis in accordance in relation to the objectives of the study. A few respondents made some value observations in the space provided for the purpose; those observations were incorporated in the study at the appropriate places in the study.

5.1.1 College wise Distribution of Respondents

The college-wise distribution of the questionnaires to users of college libraries under study has been presented in the following Table-7 along with Graph-1. As already mentioned, a total number of 300 questionnaires, 200 questionnaires and 100 questionnaires were distributed to the library users of the HBC and ATC respectively, out of which 237 (79%) filled in questionnaires from the respondents of both the colleges under study were collected while a total number of 63 (21%) falls under the category of non-respondents.

Name of the College	Questionnaires Distributed	No. of Responses	Percentage
Govt. Hrangbana College	200	153	77
Aizawl Theological College	100	84	84
Total	300	237	79

Table-7: College-Wise Distribution of Respondents



Graph-1: College Wise Distribution of Respondents

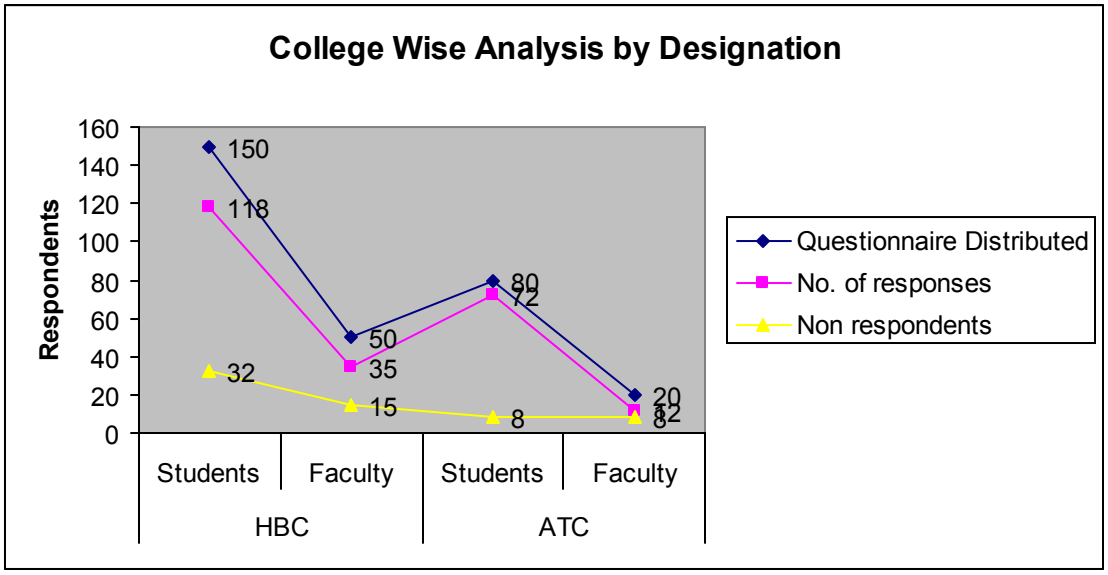
The table reveals that 153(77%) of the respondents are from HBC while, 84(84%) of the respondents are from ATC who responded the questionnaire. It seems that the respondents of ATC are more conscious to expose their ideas than that of HBC.

5.1.2. College-wise Analysis by Designation

Analysis of responses by designation of the library users under study has been discussed in Table-8 supplemented with Graph-2. As already mentioned, 300 questionnaires were distributed to the users both the colleges under study, constituting 50 faculty members and 150 students of HBC, and 20 faculty members and 80 for students of ATC, out of which a total number of 237 (79%) filled-in questionnaires were received.

Name of the College	Designation	Questionnaires Distributed	No of Responses	Not Responded
Govt. Hrangbana College (GHC)	Student	150	118(79%)	32 (21%)
	Faculties	50	35(70%)	15 (30%)
	Total	200	153(77%)	47(23%)
Aizawl Theological College (ATC)	Student	80	72(90%)	8 (10%)
	Faculties	20	12(60%)	8 (40%)
	Total	100	84(84%)	16 (16%)
	G. Total	300	237(79%)	63 (21%)

Table 8: College Wise Analysis by Designation



Graph-2: College wise Analysis by Designation

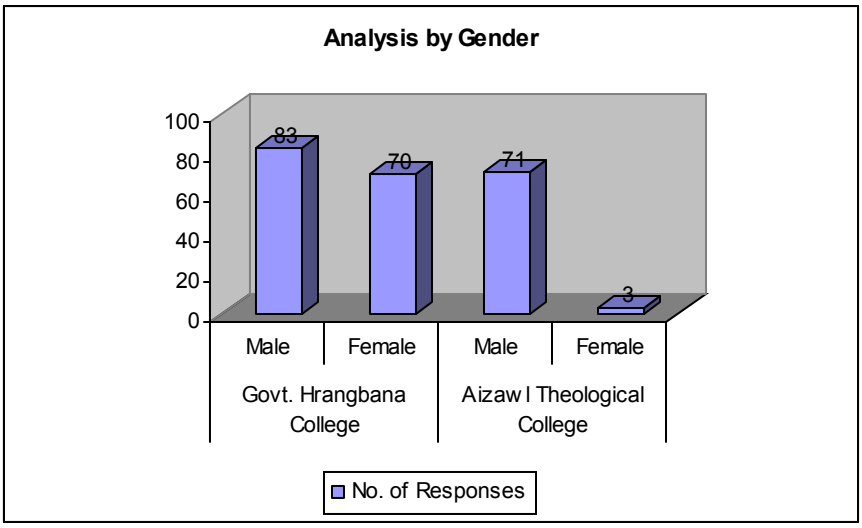
While analyzing the above table it was revealed that, the users belonging to the category of students in ATC have responded maximum which constitute 72 (90%) followed by the student of HBC 118 (79%) while, faculty members of HBC responded 35 (70%) and 12 (60%) from Aizawl Theological College respectively. This shows that, students of ATC give much emphasis to use the library. However, the scholar could not obtain 63 (21%) questionnaires in total by the users of both the library may be due to their pre-engagements. Further, the students responses are more compared to the faculties in both the colleges under study.

5.1.3. Analysis by Gender

Gender is one of the components of the questionnaire. Data relating to this component of the library under study has been placed in Table-9 supported with Graph-3 for analysis. Analysis relates to the users belonging to both the genders such as male and female.

Name of the College	Gender	No of Responses
Govt. Hrangbana College	Male	83(54%)
	Female	70(46%)
	Total	153
Aizawl Theological College	Male	71(85%)
	Female	13(15%)
	Total	84

Table 9: Analysis by Gender



Graph-3: Analysis by Gender

Analysis shows that, male in ATC constitute highest number covering 71 (85%) followed by male in HBC covering 83 (54%) while in HBC, female constitute 70 (46%) and 13 (15%) are female from ATC. It could also be observed that the responses from Male are more compared to the Female in both the colleges under study.

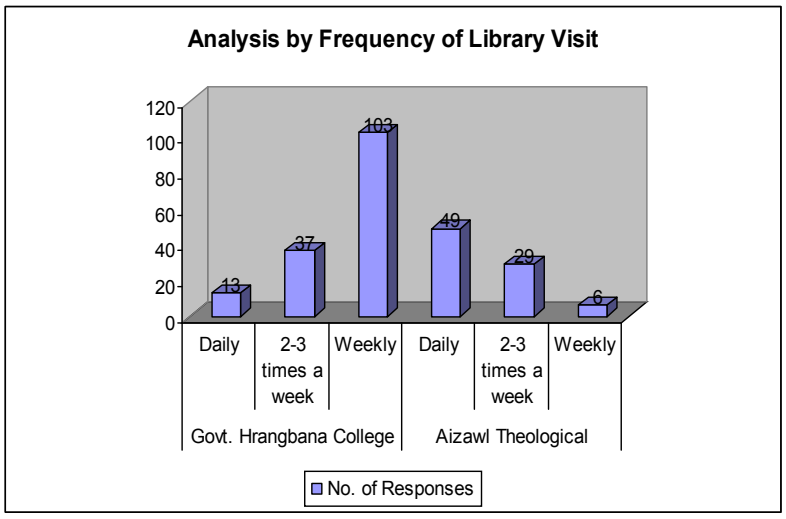
5.1.4. Analysis by Frequency of visit to Library

The frequency of visits to the library not only helps to know the use of the library but also ascertain an index to judge the utilization of the library resources. If users visit the library frequently, it can be implied that they are getting benefits from the library resources. Analysis

of frequency of visit of the users to the library under study is placed below in Table-10 supplemented with Graph-4 for clear understanding.

Name of the College	Frequency	No of Responses
Govt. Hrangbana College	Daily	13(8%)
	2-3 times a week	37(24%)
	Weekly	103(67%)
	Total	153
Aizawl Theological College	Daily	49(58%)
	2-3 times a week	29(35%)
	Weekly	6(7%)
	Total	84

Table 10 -: Analysis by Frequency of Library Visit



Graph-4: Analysis by Frequency of Library Visit

The frequency of visits to the library depends upon the nature of library collections and other resources including organization, management and services etc. Table-10 depicts the opinions of the users who responded to the questionnaire related to their frequency of visit to their respective college library. It is evident from the table that, the students and faculty members from both the colleges take interest of visiting the library according to their needs and requirements. The table reflects that the while the daily visitors to the ATC library are 49(58%), HBC library receives a visitor to the tune of 13 (8%) respectively. Further, it could be revealed from the questionnaire that the visitors visiting the library 2-3 times in a week constitute highest in HBC than ATC which tunes to 37(24%) and 29(35%) respectively. Moreover, the weekly visitors to the library of HBC are again high than that of ATC which comes to 103 (67%) against 6 (7%) in ATC. It shows that both students and faculties due to

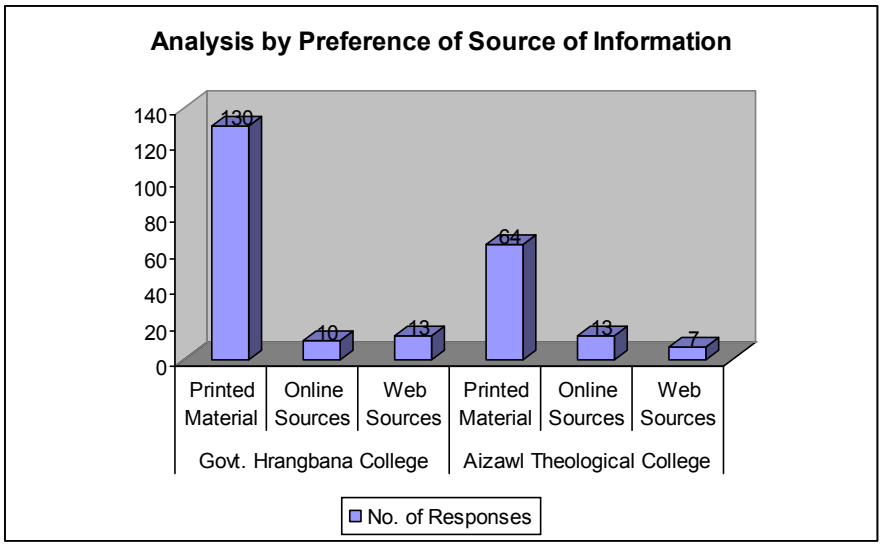
many academic assignments, preparation of classes etc. are not in a position to use the library resources. However, they take the option to visit the library at least once in a week which constitute the highest number of visit to the library in HBC which is altogether different in case of ATC as the regular visitors are high than that of HBC. This is due to the strategic location of the college in the city.

5.1.5. Analysis by Preference of Sources of Information

There are different kinds of sources of information in the library like printed materials, online sources, web sources, etc. which are provided with to the users basing on their needs and requirements. Table-11 supplemented with Graph-5 placed below deals with the types of sources available in the libraries as confirmed by the respondents.

Name of the College	Sources of Information	No of Responses
Govt. Hrangbana College	Printed Material	130(85%)
	Online Sources	10(7%)
	Web Sources	13(8%)
	Total	153
Aizawl Theological College	Printed Material	64(76%)
	Online Sources	13(15%)
	Web Sources	7(8%)
	Total	84

Table-11: Analysis by Preference of Source of Information



Graph-5: Analysis by preference of Source

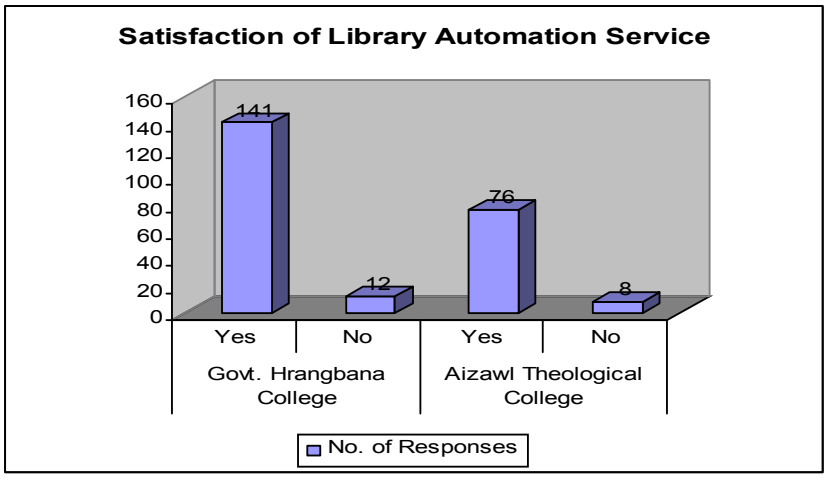
The user visits the library to fulfill the information needs by consulting the documents in the library. The users of both the libraries were asked to indicate the types of sources preferred by them and accordingly after getting relevant information for the components, the scholar has grouped the resources used by the users in the above table. While analyzing the table it could be ascertained that, while 130 (85%) users use print materials in HBC library, 64 (76%) use in ATC library. On-line resources and Web resources also add pragmatic value for teaching and research for both the communities that includes students and faculties. It could be reveled from the table that, the users prefer to use on-line resources more in ATC Library than that of HBC Library which constitute 13 (15%) and 10 (7%) respectively. Further, with regards to the use of web-resources, the users of HBC library prefer most than ATC library which comes to 13 (8%) and 7 (8%) respectively. This shows the interest of the users of both the college libraries as the library facilitates the users with ICT facilities. However, in total it could be found that, the HBC library is the highest compared to ATC library which constitute 153 and 84 respectively. This is due to the fact that, while HBC library facilitate with degree courses in multiple disciplines, ATC provides only to a confined stream.

5.1.6. Satisfaction of Library Automation Service

The respondents were requested to indicate their rate of satisfaction over the library automation services being provided to them by the respective library. The scholar after obtaining the relevant information placed in Table-12 below along with Graph-6 for clear understanding the phenomena.

Name of the College	Satisfied	No of Responses
Govt. Hrangbana College	Yes	141(92%)
	No	12(8%)
	Total	153
Aizawl Theological College	Yes	76(90%)
	No	8(10%)
	Total	84

Table-12: Satisfaction of Library Automation Service



Graph-6: Satisfaction of Library Automation Service

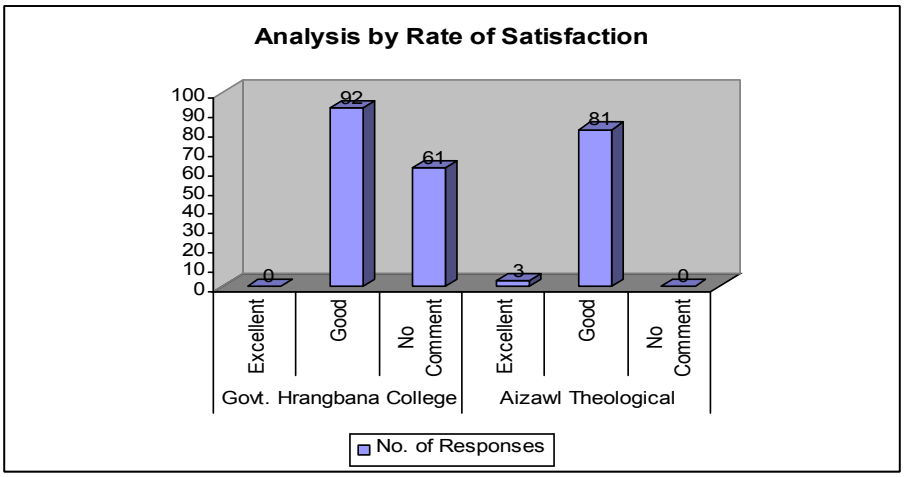
Rate of satisfaction is a major component for the libraries, where the users opine their views. This depends upon the type of services provided to the users and intension of the library to feed them with optimum resources. The scholar while analyzing the data relating to the satisfaction could ascertain that 141 (92%) out of 153 users view in a positive way in HBC library. While 76(90%) out of 84 also viewed positive way in ATC library. Again 12(8%) in HBC library and 8(10%) in ATC library viewed as negative. This shows that both the libraries under studies provide the optimum services in an automated way to fulfill the needs and desires of the users. The users equally get a conducive environment to retrieve their literature in an automated environment.

5.1.7. Analysis by Rate of Satisfaction

The respondents were requested to indicate their satisfaction level of various services provided by the college libraries under study which has been discussed in the below by providing the relevant data in Table-13 supported with Graph-7.

Name of the College	Rate of Satisfaction	No of Responses
Govt. Hrangbana College	Excellent	0
	Good	92(60%)
	No Comment	61(40%)
	Total	153
Aizawl Theological College	Excellent	3(4%)
	Good	81(96%)
	No Comment	0
	Total	84

Table-13: Analysis by Rate of Satisfaction



Graph-7: Analysis by Rate of Satisfaction

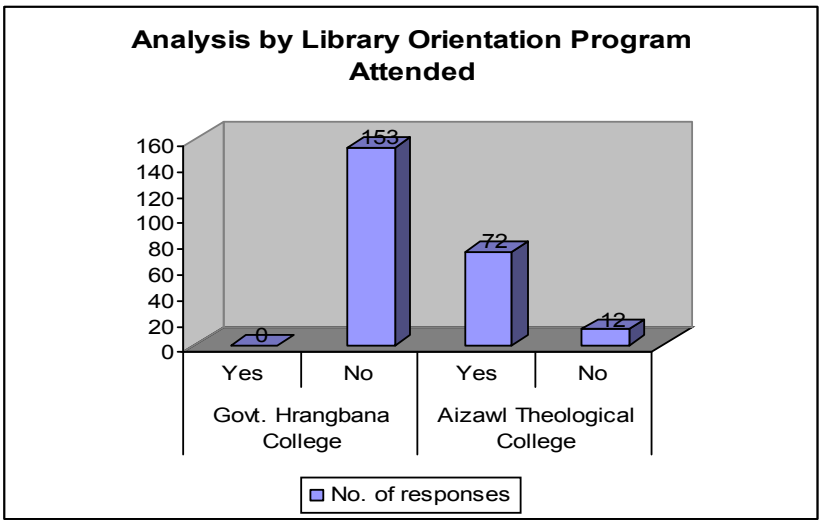
It could be inferred from the above table that most of the users in both the colleges under study have rated good which constitutes 92(60%) and 81(96%). The users of HBC however did not comment on the library services which constitutes 61(40%) in total while for Aizawl Theological College the user did not give any comment. It is surprising to note that while the user of HBC library did not rate excellent 3(4%) responses, came from ATC as Excellent.

5.1.8. Analysis by Library Orientation Program Attended

Library orientation program is one of the important plans of the library where the users of the library learn how to get their required documents and know all the functions and services of the library. In Table-14 supplemented with Graph- 8 placed below, the library orientation programs attended by the users of the college libraries under study are reflected.

Name of the College	Attended	No of Responses
Govt. Hrangbana College	Yes	0
	No	153(100%)
	Total	153
Aizawl Theological College	Yes	72(86%)
	No	12(14%)
	Total	84

Table-14: Analysis by Library Orientation Program Attended



Graph-8: Analysis by Library orientation program Attended

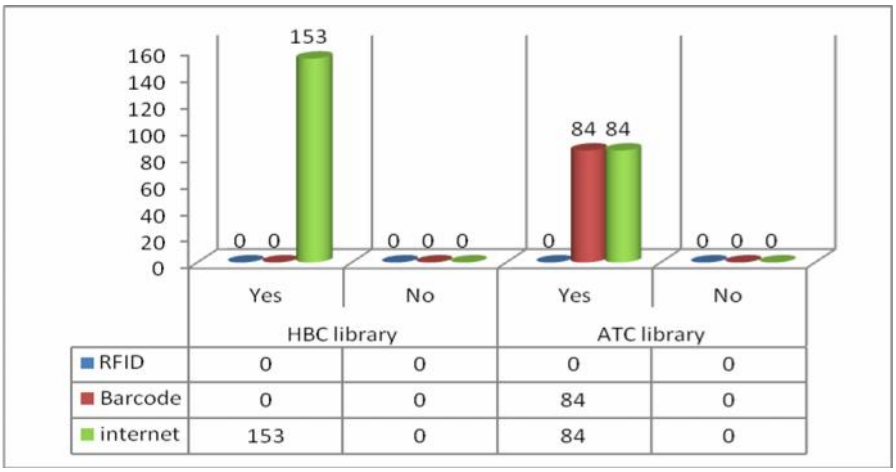
The above table reveals that, out of a total of 237 respondents of both the college libraries under study, while, 72 (86%) respondents from ATC attended the orientation program of the library, none of the users from HBC library attended the same. Further, with regard to the non-attending of the orientation programs of the library it could be known that, while 12 (14%) did not attend orientation, a major chunk of the users almost all constituting 153 (100%) in total did not attend the orientation program conducted by HBC library. It is surprising to note that, in spite of the various programs conducted by both the college libraries under study for the benefit of the users ATC respondents are more inclined to be aware of the use of library compared to the HBC library users reason being that, ATC provides specific education on theology while HBC provides general education. Further, it may be due to the fact that, while specific information relating to theology may be obtained from the concerned college, general education can be obtained through multiple gateways such as by visiting to other libraries or information centers etc.

5.1.9. Analysis by Providing Library Facility

Advances in technology gave birth to many new interdisciplinary fields in Information technology including in the Library. Internet, Barcode and RFID (Radio Frequency Identification Devices) security system plays an important role in the library services. The scholar has submitted the information relating to the various facilities provided to the users in Table-15 supplemented with Graph-9 below.

Name of the College		Library Facility		
		RFID	Barcode	Internet
Govt. Hrangbana College	Yes	0	0	153
	No	0	0	0
	Total			
Aizawl Theolgical College	Yes	0	84	84
	No	0	0	0
	Total			

Table-15: Analysis by Providing Library Facility



Graph-9: Analysis by Providing Library Facility

While analyzing the above table it could reveal that 153 users take the benefit of Internet in HBC while 84 from ATC. It also could be noticed that the HBC does not provide any Barcode facility whereas 84 users are of the opinion that ATC provides the barcode facility. This could be observed that the ATC is marching ahead in application of more technological parameters in the library. Moreover both the colleges under study do not provide any RFID facilities

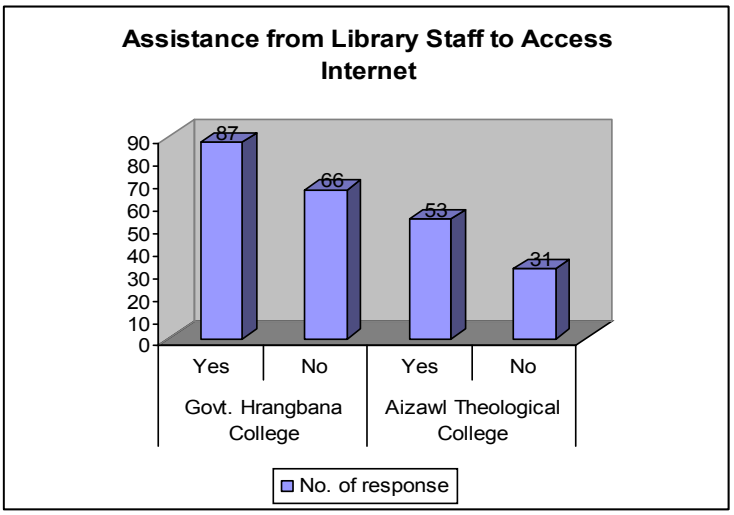
5.1.10. Assistance from Library Staff to Access Internet

Internet has now become an indispensable component in libraries so as to accesses multiple web resources that adds value in teaching and research. The respondents were requested to indicate any assistance to get from the library staff to access internet. The scholar after

obtaining the relevant data for this component of the study has placed below in Table-16 supported with Graph-10 for clear understanding the phenomena.

Name of the College	Assistance from Library Staff	No of Responses
Govt. Hrangbana College	Yes	87(57%)
	No	66(43%)
	Total	153
Aizawl Theological College	Yes	53(63%)
	No	31(37%)
	Total	84

Table-16: Assistance from Library Staff to Access Internet



Graph-10: Assistance from Library Staff to Access Internet

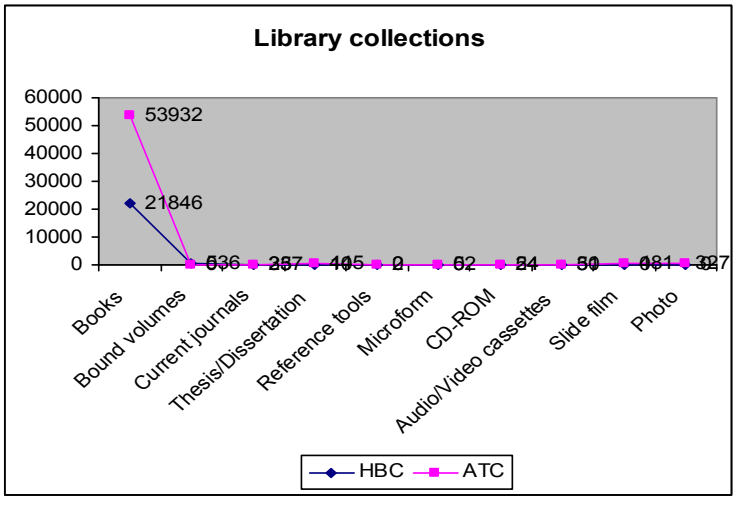
While analyzing the table-16, it could be found that out of 153 respondents in total from HBC library 87(57%) has given their opinion for accessing to internet what is subject to the assistance from the library staffs. Likewise, 53 (63%) users out of 84 in ATC library also required the help from the library staffs to browse on internet. This reveals that those who do not take any assistance also browse on internet. It maybe due to the fact that their use to internet browsing. However, those who take the assistance can access to e-resources in a better way than those who do not take any assistance. It also reveals that internet browsing has become user friendly from both faculties and students of the college libraries under study.

5.1.11. Library Collections

Library collection depends upon the policies and guidelines of the colleges including the involvement of the teaching faculties, subject experts etc. Sound collection developments of the library facilitate the users with maximum benefits. The data relating to the collections of the libraries under study has been placed below in the Table-17 supplemented with Graph-11 for understanding of the holdings of the libraries. The scholar has split the collections of the libraries under the purview of the study into 10 various components as reflected in the table.

Library Collections		**Name of the College**	
		Govt. Hrangbana College	**Aizawl Theological College**
Books		21846	53932
Bound Volumes		536	0
Current Journals	Indian	27	147
	Foreign	8	90
Theses/Dissertation		10	445
Reference tools		2	0
Microform		0	52
CD-ROM		54	214
Audio/Video Cassettes		30	51
Slide film		0	481
Photos		0	327
Total		22513	55739

Table-17: Library collections



Graph-11: Library Collections

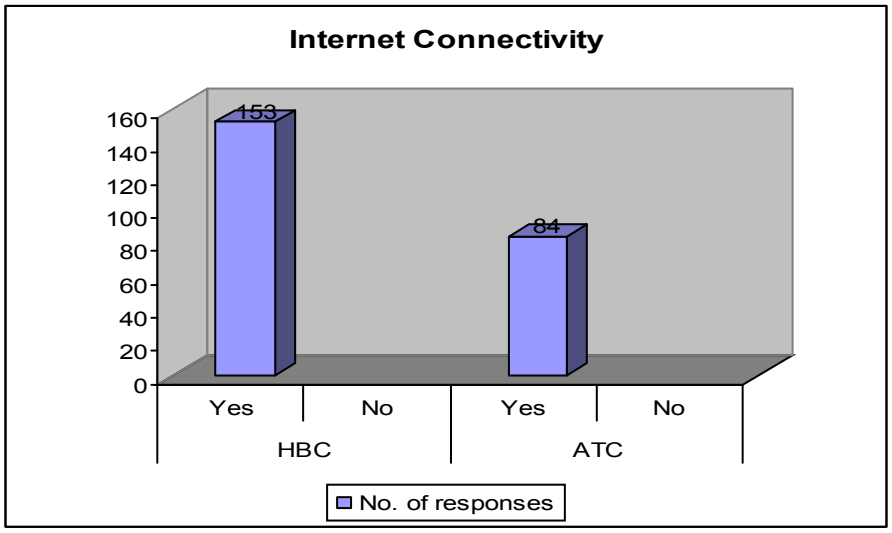
The analysis of the Table 17 reveals that the ATC Library compared to HBC library is having a highest collection development with regard to books which comes to 53932 and 21846 respectively whereas, the bound volumes collections are 536 in HBC library and on contrary ATC library does not have a specific collection of bound volumes which however, is included in the books. With regards to the current journals it has been divided into Indian and foreign journals. The total number of current journals subscribed by the libraries under study amounts to 237 and 35 in ATC library and HBC library respectively, out of which foreign journals subscribed by ATC library are higher than that of HBC library which comes to 90 and 8 respectively. Further, in case of Indian journals in ATC library and foreign journals 90 in Aizawl Theological College while Indian journals while ATC library subscribes for 147, HBC library subscribes 27 only. This may due to the fact that while the ATC library is funded by theological society, HBC gets its funds from the government more budgetary provision has been earmarked for ATC library than that of the ATC library. While discussing about the collection of theses/dissertation, ATC library again stands at the apex than that of HBC library, where 445 and 10 thesis/dissertation are available in the libraries respectively. A close analysis to other facets reveals that the ATC library is always in the higher position than that of the HBC library.

5.1.12. Internet Connectivity

The internet has become an indispensable resource generation centre for libraries which not only enhances the collection development of e-resources and improvement services but also make the library viable for taking various new operations for the benefits of the users. It has become the very important platform for information access and disseminate among the users. Internet has been implemented in different areas of library services such as, (i) Downloading of information (ii) Retrieval and Dissemination of information, (iii) Visiting multiple URL sites to seek information, (iv) Browsing for accessing to various library sites etc. which practically add positive value to promote teaching, research and development. Availability of internet connectivity in the libraries under study has been shown in Table-18 supplemented with Graph-12 for clear understanding the notion.

Name of the College	Available	No of Responses
Govt. Hrangbana College	Yes	153(100%)
	No	0
	Total	153
Aizawl Theological College	Yes	84(100%)
	No	0
	Total	84

Table-18: Internet Connectivity



Graph-12: Internet Connectivity

Analysis of the Table- 18 reveals that, both the college libraries under study at present are having the internet connectivity which has become a necessity in the academic libraries to promote learning and research. It is surprising to note that, both the college library users opined in a positive sense which comes to 100% of responses. However the connectivity of internet is in both the college libraries are restricted for the faculties and library staffs. Still, some facilities to the students are also extended by both the libraries due to their unfiltered information searching on internet.

5.1.13. Internet Services

Internet service equally has an important role among the users to get access to internet resources. The scholar obtained the data regarding the facilities available to the users through internet of both the college under study which has placed in Table-19

Services on Internet	
Govt. Hrangbana College	**Aizawl Theological College**
E-mail service to users	E-mail service to users
www service to users	
FAX	
Document Delivery Services	
Providing access to INFLIBNET Database	

Table-19: Internet services

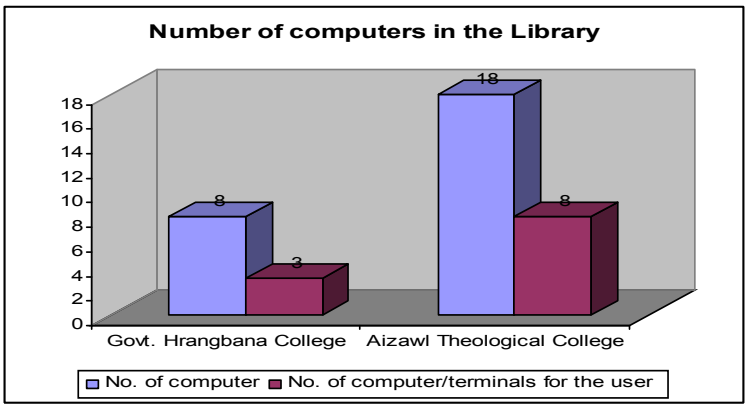
Analysis of the Table-19 reveals that both the college libraries provide the internet service to the users. The HBC library allows more extensive services than ATC library which restrict only to the e-mail for the users. It could be assessed from the librarian of ATC that in future they are going to provide extensive services for the academic benefit of the users.

5.1.14. Number of Computers in the Library

Availability of computers in the college libraries are essential to take up multifarious functions of the library. Therefore, this being one of the components of the questionnaire, the scholar obtained the relevant information which has been placed in the following Table-20 along with Graph-13.

Available	**Colleges**	
	Govt. Hrangbana College	**Aizawl Theological College**
No. of computer	8	18
No. of computer/terminals for the user	3	8

Table-20: Number of computers in the Library



Graph-13: Number of computers in the library

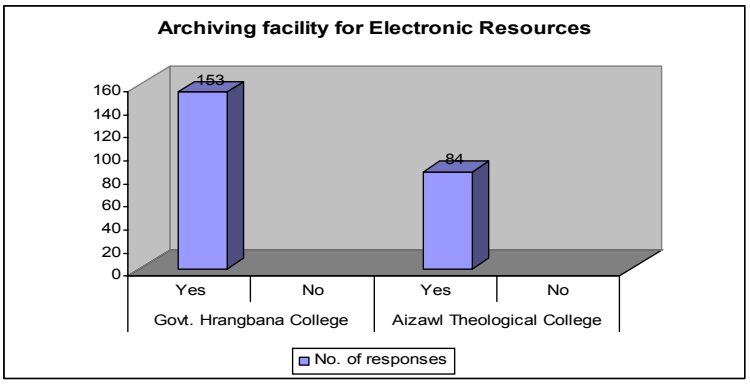
Analysis of the Table-19 reveals that ATC library comparatively has got the maximum number of computer that is 18 compared to HBC library whereas only 8 computers are available. Further, the number of terminals meant for the users are again high in ATC library than that of HBC library which comes to 8 and 3 respectively. The fact behind this remain that the ATC library has got more budgetary provision because of the funding from theological institute while the HBC library has got a merger funding from the state government still then the HBC library is a lined of with progress in bringing about more computers and allowing more terminals for the user in future.

5.1.15. Archiving of Electronic Resources

Electronic Resources are increasingly becoming important these days as they are more up-to-date, nascent, reliable and can be accessed anywhere across all geographical boundaries. E-resources add value while conducting R&D activities. Electronic resources are making a significant growth as part of library collection which adds potential value to the resources of the library. Though a huge finance is involved in building of e-resources, it adds positive value to the users. The questionnaires to the user of both the college under study has been presented in the following Table-21 along with Graph-14.

Name of the College	Available	No of Responses
Govt. Hrangbana College	Yes	153(100%)
	No	0
	Total	153(100%)
Aizawl Theological College	Yes	84(100%)
	No	0
	Total	84(100%)

Table-21: Archiving facility for Electronic resources



Graph-14: Archiving facility for Electronic Resources

Analysis of the Archiving of electronic resources of both the college libraries under studies placed in Table-20 reveals that the total responses are in favour of the e-resources and this is in commendable step of the users as they know the meaning and use of electronic resources. Both the colleges under study are now engaged in archiving the electronic resources available through e-book, consortium and internet, etc. Consequent upon the demands and needs of the users for accessing to a vast area of information sources.

5.1.16. Library Services

Library services are the prime components for the benefits of the user community. Library imparts services in multiple ways both in the form of traditional and electronic. The traditional service relates to lending, reference, CAS, etc. While electronics services concern to e-book, e-journals, consortium, etc. The scholar obtained the data related to the services provided by both the college library which has been placed in Table-22

Services of the Library	
Govt. Hrangbana College	**Aizawl Theological College**
Lending	Lending
Reservation	Reference
Reference	CAS
Bibliographical	Document tracing
CAS	Indexing
SDI	Photocopying
Photocopying	CD-ROM search
Newspaper clipping	Online search
CD-ROM search	Orientation programme to users
Online search	
Networking	

Table-22: Library services provided in the College

Analysis to the above data place in Table-22 reveals that general services are being offered by both the college libraries. However, while the indexing service, document tracing, etc are provided in ATC library the HBC library does not provide the same. On contrary the HBC library extend the services like networking, newspaper clipping, SDI, etc which are unique and are not available in ATC library.

5.1.17. Awareness programme about e-resources from UGC-INFONET

Under this programme, Indian Universities are getting access to more than 4500 journals and some databases of around 23 publishers. The most remarkable thing about this ambitious programme is that there is less financial burden on the universities. The usage statistics of UGC-Infonet resources is increasing day by day and Indian universities are now in a position to overview their collection development policy regarding journals. Data relating to the awareness programme about e-resources from UGC-Infonet is placed in Table-23

Name of the College	Awareness Programme	No of Responses
Govt. Hrangbana College	Yes	153(100%)
	No	0
	Total	153(100%)
Aizawl Theological College	Yes	84 (100%)
	No	0
	Total	84(100%)

Table-23: Awareness programme about e-resources from UGC-INFONET

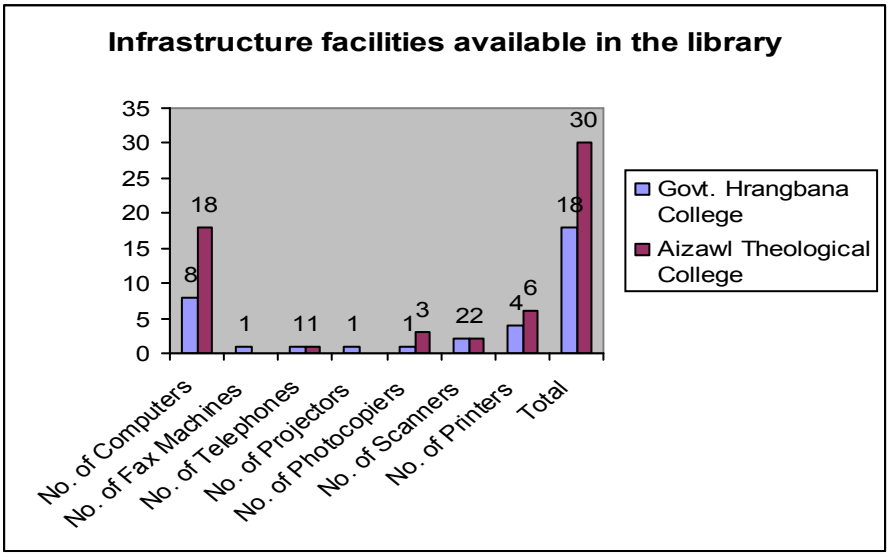
Analysis of the table reflects that, the users in total of both the college libraries under study are aware of the UGC-infonet service and the libraries provide the service to all of its users for greater academic benefits.

5.1.18. Infrastructure facilities available in the Library

The infrastructures of the library are essential to provide optimum services to the users. The scholar concerning to this component obtained the data and placed in Table-24 supplemented with Graph-15

Library Infrastructure	Colleges	
	Govt. Hrangbana College	Aizawl Theological College
No. of Computers	8	18
No. of Fax Machines	1	
No. of Telephones	1	1
No. of Projectors	1	
No. of Photocopiers	1	3
No. of Scanners	2	2
No. of Printers	4	6
Total	18	30

Table-24: Infrastructure facilities available in the library



Graph-15: Infrastructure facilities available in the library

Analysis to the Table reveals that almost all the infrastructure as lead down in the Table-23 are available in both the college library under study which however defers from the numbers. The ATC library has 30 as HBC library has 18 as already discussed the computers are more in number at ATC library than HBC library. Likewise other infrastructures are also there which are found to be more in ATC library than HBC library. However the HBC library is making effort to procure more infrastructures for the library in future which depends upon the grants available in the library.

5.1.19. Computerization of the Library

The impact of computers has permeated all sectors of librarianship. House-keeping operations by automation of libraries include acquisition control, serial control, circulation control, technical processing comprising cataloguing and classification. Automation helps achieving greater standardization, efficiency cooperation and improved services in libraries. The questionnaires to the user of both the college under study has been presented in the following Table-25

Section of Library Computerized	
Govt. Hrangbana College	**Aizawl Theological College**
Cataloguing	Cataloguing
Circulation	Circulation
Textbook	Serial Control

Table-25: Section of the Library Computerized

Analysis to the computerization of the library placed in Table-22 reveals that both the colleges under study are partially automated. The circulation and cataloguing sections of both the college libraries are computerized while the serial control (Journal section) of ATC library has been computerized, the textbook section of HBC is computerized. It seems that slowly their extending the automation facilities to other section of the library which depends upon the professional staffs and the working border of the library with the near future almost all the sections of the library are going to automated.

5.1.20. Findings

After analysis of the questionnaires placed under different tables as noted above, interacting with the users concerning to the present study of both the college library of Govt. Hrangbana College and Aizawl Theological College of Mizoram, the scholar deduced with the following findings.

- ATC Library users have responded quite in a large number 84(84%) in comparison to HBC Library users 153(77%). This shows the seriousness of the users who wants to project their feelings about Library Automation in the library.
- ATC students have responded maximum which constitute 72 (90%) followed by the students of HBC 118 (79%) while, faculty members of HBC responded 35 (70%) and 12 (60%) from ATC respectively. This shows that, students of ATC give much emphasis to use the library.
- Gender being one of the components of the questionnaire, ATC constitute highest number covering 71 (85%) followed by male in HBC covering 83 (54%) while in HBC, female constitute 70 (46%) and 13 (15%) are female from ATC. It could also be observed that the responses from Male are more compared to the Female in both the colleges under study.
- With regards to the frequency to visit the college library, the daily visitors to the while ATC library receives 49(58%), HBC library experiences a visitor to the tune of 13 (8%) respectively. Further, it could be deduced that the visitors visiting the library 2-3 times in a week constitute highest in HBC than ATC which tunes to 37(24%) and 29(35%) respectively. Moreover, the weekly visitors to the library of HBC are again high than that of ATC which comes to 103 (67%) against 6 (7%) in ATC. It shows that both students and faculties due to many academic assignments, preparation of classes etc. are not in a position to use the library resources.

- For getting information in the library, the scholar found that most of the respondents 130 (85%) users use print materials in HBC library, 64 (76%) use in ATC library. The users further prefer to use on-line resources more in ATC Library than that of HBC Library which constitute 13 (15%) and 10 (7%) respectively. Moreover, with regards to the use of web-resources, the users of HBC library prefer most than ATC library which comes to 13 (8%) and 7 (8%) respectively. However, in total it could be found that, the HBC library is the highest compared to ATC library which constitute 153 and 84 respectively. This is due to the fact that, while HBC library facilitate with degree courses in multiple disciplines, ATC provides only to a confined stream.

- Level of satisfaction of library services being one of the components of the discussion could revealed that 141 (92%) out of 153 users view in a positive way in HBC library. While 76(90%) out of 84 also viewed positive way in ATC library. Again 12(8%) in HBC library and 8(10%) in ATC library viewed as negative. This shows that both the libraries under studies provide the optimum services in an automated way to fulfill the needs and desires of the users. The users equally get a conducive environment to retrieve their literature in an automated environment.

- With regard to the rate of satisfaction the scholar deduced that the user rated good which constitutes 92(60%) and 81(96%) for both the libraries. The users of HBC however did not comment on the library services which constitutes 61(40%) in total while for ATC the user did not give any comment. It is surprising to note that while the user of HBC library did not rate excellent 3(4%) responses, came from ATC as Excellent.

- Discussions on library orientation program one of the requirements for the users revealed that out of 237, 72(86%) respondents from ATC attended the orientation program of the library none of the users from HBC library attended the same. The non-attending of the orientation programs of the library it could be known that, while 12 (14%) did not attend orientation, a major chunk of the users almost all constituting 153 (100%) in total did not attend the orientation program conducted by HBC library. It is surprising to note that, in spite of the various programs conducted by both the college libraries under study for the benefit of the users ATC respondents are more inclined to be aware of the use of library compared to the HBC library users reason being that, ATC provides specific education on theology while HBC provides general education. Further, it may be due to the fact that, while specific information relating

to theology may be obtained from the concerned college, general education can be obtained through multiple gateways such as by visiting to other libraries or information centers etc.

- Concerning to the library facilities of both the college libraries it could be noticed that all 153 users take the benefit of Internet in HBC while 84 from ATC. It also could be pointed out that the HBC does not provide any Barcode facility whereas all 84 users opined that ATC provides the barcode facility. This could be observed that the ATC is marching ahead in application of more technological parameters in the library. Moreover both the colleges under study do not provide any RFID facilities.

- The scholar obtained the data from the respondents on the part assistance to get access internet from the library staff and after due analysis came to the conclusion that out of 153 respondents in total from HBC library 87(57%) has given their opinion for accessing to internet what is subject to the assistance from the library staffs. Likewise, 53 (63%) users out of 84 in ATC library also required the help from the library staffs to browse on internet. This reveals that those who do not take any assistance also browse on internet. It maybe due to the fact that their use to internet browsing. However, those who take the assistance can access to e-resources in a better way than those who do not take any assistance. It also reveals that internet browsing has become user friendly from both faculties and students of the college libraries under study.

- Related to the facet of library collections, the ATC Library compared to HBC library is having a highest collection development with regard to books which comes to 53932 and 21846 respectively whereas, the bound volumes collections are 536 in HBC library and on contrary ATC library does not have a specific collection of bound volumes which however, is included in the books. With regards to the current journals it has been divided into Indian and foreign journals. The total number of current journals subscribed by the libraries under study amounts to 237 and 35 in ATC library and HBC library respectively, out of which foreign journals subscribed by ATC library are higher than that of HBC library which comes to 90 and 8 respectively. Further, in case of Indian journals in ATC library and foreign journals 90 in Aizawl Theological College while Indian journals while ATC library subscribes for 147, HBC library subscribes 27 only. This may due to the fact that while the ATC library is funded by theological society, HBC gets its funds from the government more

budgetary provision has been earmarked for ATC library than that of the ATC library. While discussing about the collection of theses/dissertation, ATC library again stands at the apex than that of HBC library, where 445 and 10 thesis/dissertation are available in the libraries respectively. A close analysis to other facets reveals that the ATC library is always in the higher position than that of the HBC library.

- ATC Library has more computers and provides more terminals for the user than that of HBC.
- Both the colleges under study are now engaged in archiving the electronic resources available through e-book, consortium and internet, etc. Consequent upon the demands and needs of the users for accessing to a vast area of information sources.
- General services are being offered by both the college libraries. However, while the indexing service, document tracing, etc are provided in ATC library the HBC library does not provide the same. On contrary the HBC library extend the services like networking, newspaper clipping, SDI, etc which are unique and are not available in ATC library.
- The users in total of both the college libraries under study are aware of the UGC-infonet service and the libraries provide the service to all of its users for greater academic benefits.
- The ATC library has more infrastructure than that of HBC Library. However the HBC library is making effort to procure more infrastructures for the library in future which depends upon the grants available in the library.
- The circulation and cataloguing sections of both the college libraries are computerized while the serial control (Journal section) of ATC library has been computerized, the textbook section of HBC is computerized.

Besides distributing the questionnaire, the scholar also had an observation method including interview with some of the users of the library to experience the problems encountered by the users while obtaining the required information from the library. Some of the important observations are mentioned below.

- As most of the users are not aware with the functions and services of the library and are not familiar with the OPAC service, they have to search for their required documents in the library directly from the rack, it waste a lots of time of the user. This

my due to the fact that the college library under study does not organize library orientation program for their users

- ⇨ Most of the users have no knowledge with the basic of IT. Therefore, they do not know how to access the Internet and do not even know the availability of electronic document in the Internet. This is because IT is given a vital place among the Mizos only few years back and majority of the people are still backward in its functions and application.
- ⇨ Most of the library staffs are not trained staff and have a little knowledge in the field of library and information science.
- ⇨ More user oriented training programmes for users should be organized.
- ⇨ More services for electronic resources like e-book, e-journals, e-thesis, etc. needs to be extended in the libraries.
- ⇨ It is necessary to provide RFID facility for security in the libraries.
- ⇨ All sections needs to be automated for better and effective services.
- ⇨ Internet facilities to all types of users require to be provided.

6.1 Suggestions

Based on the findings, there are lots of suggestions to make for improving the library and its services of the college libraries in Aizawl. Some of the suggestions may be mentioned as:

- Library orientation programme is a must in every library where users would learn the importance of getting their required information and how the different types of library services can be used to a greater degree. The college library under study organize library orientation programme only in ATC but only for the user and HBC does not organize library orientation programme to each and every student. Every student must attend the library orientation programme.
- Only few of the respondents know that other sources of information such as journals, reference books, electronic documents, etc. can also provide their required information. All the users of library must be given awareness on the importance of different sources of information and how they can get access to it.
- Database services, networking services, web-OPAC services, UGC-INFONET services, etc. must be provided by the library to its users so that they can have benefit to different application of the stated facilities
- More IT facilities such as photocopier, printer, web camera, digital camera, etc. must be provided to its users by the college library under study and must give training on how to handle and use the facilities
- Browsing of the internet provide good sources of information for the college library users of Aizawl. Therefore, it is necessary for the users to browse through Internet.
- Internet connection must be provided which can be used by the library users to get their required information.
- More and more electronic documents must be acquired by the library so that users can get their required information through it.
- Training programme on the application of ICT and library software should be organized by the college library so that all the users would be acquainting with modern technological developments.
- Even among the users of college library, there are still many who do not cater their information through an online journal which shows that they are not aware with the

information available through internet. Therefore, training on how to use the Internet is a must where they would learn not only it operation but its importance as well.

College libraries need to have facilities that promote effective and interactive access and use of information resources for all users. In the area of physical facilities, the libraries need to offer safe, comfortable, well-lighted, clean space, with adequate and appropriate seating arrangements to ensure effective use of the library's resources including digital resources. Also, college libraries are required to consider study space needs, while allocating the seating space, with special attention being paid to reserve collections and the hostel environment of the institution. The libraries need to prepare well-framed rules and guidelines with regard to hours of access, circulation policies, and other regulations to offer better service to the users.

6.2 Conclusion

Technology application in the service fields has become indispensable and Library and Information Service is no exception to it. Library automation, which is the call of the hour, requires to be applied for taking up multifarious activities including effective dissemination of services to a wide user's community. A traditional service is limited to the enrolled users in the library and the notion has been changed in an automated environment especially in libraries. Library automation requires initially a huge investment which subsequently not only proves to be cost effective but the utilization of library resources in a prolific manner. Further, technical support, infrastructures, users, resources etc. are some of the important parameters in an automated environment. Technically, it is feasible to get the required hardware, software and person having complete understanding of the requirements to develop software package. Automation further not only opens avenues of job opportunities but also relieves the existing professional staff from their routine manual activities to enable them to perform intellectual professional duties. The reorganization of professional staff will lead to job satisfaction.

Automation in libraries is desirable which however, is a complex project and needs to be carefully planned. Planning ensures success and further development. Automation is a means to an end and not the end itself. Planning for automation must be part of the strategic development plan of the library. Implementation of an ILS is a never ending process. The future holds many new developments that need to be addressed. Exponential rise in generation of new information has gradually reduced the effectiveness of the traditional tools and retrieval aids used by librarians. We are now in the age of information technology

revolution along with information explosion. Due to information explosion, automation of library service is imperative for efficiency and effective working of library and information center. The automation is defined as a technique of making, a process or a system operates automatically. Though generally library automation may mean use of suitable machines to perform the activities of library mechanically without much manual or mental efforts by human beings, today library automation signifies "mechanization of library housekeeping operations predominantly by computerization". The most commonly known housekeeping operations are acquisition control, serials control, and cataloguing and circulation control. In recent times, even the related topics such as information retrieval, semi-automation, automatic indexing and networking of automated systems are also treated as part of library automation. Although computers have a major role in library automation, telecommunication and reprographic technology have an equally important role because of the extent of support they offer.

Most of the Library and Information Centers (LICs) of India have started using computers and Information Communication Technologies in organizing their collections, housekeeping operations, processing, retrieval and dissemination of information to the end users. The use and impact of ICTs is now visible in Indian library and information centers which may be due to the drastic reduction/escalation of the cost of hardware and software and their easy availability in the markets with service support from the suppliers or vendors. Impact of ICT is also evident on the activities of many LICs associated with universities and other institutions of the national importance. INFLIBNET, created under the aegis of the University Grants Commission is playing an important role since its inception in initiating automation and networking activities of library and information centers of universities, colleges, R&D laboratories, and various institutions of higher learning by way of imparting and promoting automation services in the libraries. So far more than 142 universities have been covered under the INFLIBNET Programme which enables the university libraries to purchase computers, modem, printer, software (Operating and application software) and networking with high bandwidth including internet connectivity etc. The recurring grant is also provided for meeting the expenses of data support work and other services in the libraries including taking the burden of Information Scientist, telephone charges for accessing INFLIBNET etc.

Library automation activities are gaining momentum in the college and University library in Mizoram. It is quite a good sign that SOUL and NIRMALS are now available at an affordable cost as a comprehensive library automation package. However, librarians should

be prepared to meet the challenges. They should acquire adequate knowledge about the hardware and software options available. The two college libraries Govt. Hrangbana College and Aizawl Theological College use standard software packages for automation. There is need for continuous monitoring of automation activities for improvement of the situation and for meeting the future needs. Therefore, it is concluded that the status of computerization of library housekeeping operations and computer based library services of college libraries of Mizoram is in nascent stage. Only few colleges, affiliated to Mizoram University have started implementing the project of automation in their college libraries.

Bibliography

- Aizawl Theological College (http://www.atcmizoram.org/index.php) (Accessed on 2/12/2010)
- Aswal, R.S. (2006). Library automation for 21st century. New Delhi: Ess Ess Publications.
- Bhatia, Rajesh K.A. Hybrid technique for searching a renewable component from software libraries. *DESIDOC Bulletin,* vol. 25(5), pp 27-33
- Boss, R.W. (1984). Library Manager's guide to automation. New York: Knowledge Industry.
- Bryson, (T O) (2002). Effective Library and Information Center Management. 2nd. Burlington: Ashgate Publishing Company.
- Chandel, Sunil Singh (2003). Information service in Academic Libraries. New Delhi: Rawat Publication.
- Chandraiah I (2003). University Library Automation Scenario-a study proceeding. *CALIBER*
- Chowdhury, G.C. Text retrieval and library management software in India. *Electronic library and information systems*, vol.28(3), pp. 253-261
- Cybulsk, Jacob L. (1992). Introduction to software reuse. Parville: The University of Melbourne
- Dhiman, Anil K. (2005). Learn: computer basics and its application in libraries. New Delhi: Ess Ess Publications.
- Epstein, Susan B. Administrators of automated systems: a survey. *Library journal*, 2002, pp. 24-30
- Garcia, A.F. A comparative study of exception handling mechanism for building dependable object-oriented software. *The journals of systems and software*, 2001
- Gilliman, P. and Peniston, Silvinia. (1984). Library automation: a current review. London: ASLIB
- Gopal, Krishna (2005). Modern library automation. New Delhi: Authorpress.
- Goswami, (Anjana). (1995). Application of information technology in library services. *Library Herald*. Vol. 33, pp.1-2
- Govt. Hrangbana College. http://hbc.mizoram.gov.in/ (Accessed on 1st September, 2010)
- Hari, Narayan N.S. (1991). Concepts of library automation. *Herald of Library Science,* vol. 30 (3-4)
- Harvana, L.J. (2001). Experience in Library automation and possible lesson for the future: a case study. *Herald of Library Science,* vol. 40, pp. 200-211
- Harinarayana, N.S. Concept of library automation. *Herald of library science*, vol. 30, p. 3-4

- Husain, (Shabahat) and Ansari (Mehtab Alam). (2007). Library automation software packages in India: A study of Alice for Windows, Libsys and Virtua. *Annals of Library and Information Studies.* Vol. 54; September; pp. 146-151
- IGNOU (1995). *Library Services in Library Automation Packages*. IGNOU; New Delhi (www. Egyankosh.ac.in) (accessed on 8th March. 2011)
- Inflibnet. (2003). Software for University Libraries – user manuals. Ahmedabad
- Kaur, (Amritpal). (2000). Five laws: their relevance in information technology of automated environment. *ILA Bulletin*. Vol. 36, pp.24-27.
- Kimber, R.T. (1974). Automation in libraries. Oxford: Pergamon Press.
- Krishna Kumar. (1980). Application of computer: a challenge or change. *ILA Bulletin*. Vol. 16, pp.122-129.
- Kumar, P.S.G. (2004). Information Technology Applications (Theory & Practice). New Delhi: B.R. Publishing Corporation.
- Kumar, Sunil (1999). Library automation: an immediate need. *Library Herald,* vol. 36
- Kumbar, (Mallinath). (1995). Use of information technology in library service. *Herald of library Science*, vol. 35.
- Lalchhuanliana. Missionaryte hnuhma. *Didakhe*. Vol. 18(2), 1980
- Laltlani, P.C. (2006). Aizawl Theological College Chanchin. Aizawl: Synod Press
- Lalzawmliana, H. (1981). The Strucuture of the Mizo Presbyterian Church (Unpublished) B.D. Thesis.
- Librarian. ATC Library. ATC Annual Magazine 1984-1985. Aizawl: Tlangveng Printing Press.
- Library Committee Resolutions
- Library Monthly Reports, 1994 onwards
- Lloyd, J.M. Principal Thukhawchang. ATC *Silver Jubilee Souvenir*. 1965-1990.
- Lovecy, Ian (1984). Automating library proceedings: A survivors handbook. London: Los Angeles.
- Lynch, Clifford A (1991). The system perspective in the evolution of library automation: management issues and future perspective. Westport: Mecklev.
- Maarek, Y.S. An information retrieval approach for automatic constructing software libraries. *Software Engineering*, 1991
- Mishra, R.K. (1999). Library software selection: an analysis. *IASLIC Bulletin,* vol. *44*
- Mizoram Synod. Synod Bu 1983. Aizawl: Synod Press
- Nair, (Raman R). (1992). Computer applications to libraries and information science. New Delhi; Ess Ess. Pp.143-145.
- Nanda, Manohar. (2006). Library automation. New Delhi: Anmol Publications Pvt Ltd.
- NIRMALS. (http://nicesoft.co.in/) (Accessed on 8.3.11)

- Padmajam, C.K. (2002). Essentials of automated acquisition. New Delhi: Ess Ess
- Pazawna, C. (1979). Principal's Report. *ATC Annual Magazine* 1978-1979. Aizawl: Tlangveng Printing Press
- Quin Ian, Catherine A. (1991). Libraries and computing centers in the evolution of library automation: management issues and future perspectives. Westport: Medler.
- Rajendra, P. (2007). Automated Bibliographic record capturing from Web OPAC and Online Bibliographic Database for Library and Information studies. *Annals of Library and Information Studies,* vol. 54
- Rajashekar, (T B). Computer software for library and information work. *In.* Handbook for libraries: Archives and information centers in India. *Ed.* Gupta & others. Vol.5.New Delhi. pp. 147-149.
- Rao, C.R. (1995). Evaluation of library software: its implication on library services. New Delhi: Ess Ess Publication.
- Rao, P.V. Subba (2005). Library and information technology. New Delhi: Sonali Publications.
- Ravichandra Rao, I.K. (1992). Library automation. New Delhi: Wiley Eastern.
- Ray, A.C. (1979). Mizoram. New Delhi: Publication Division, Ministry of Information and Broadcasting.
- Satyanarayana, (N.R.) (2003). A manual of Library automation and networking. Lucknow: New Royal Book Co.
- Seghal (R L) and Behi, (D K) (1996). Manual on computer applications training in library science. New Delhi; Ess Ess. pp.143-145
- Sharma, Pandey T.K. (1993). Library computerization: theory and practice. New Delhi: Ess Ess.
- Sharma, R.K. (2001). A modular library automation solution for next millennium. H*erald of Library Science,* vol. 40
- Singh, Mahendar Pratap. (2004). Use of Information technology in library and information science. New Delhi: Abhijeet Publication
- Suri, R.K. (2005). Introduction to computers and information. New Delhi: Sun India Publication.
- Tedd, Lucy A (1985). An introduction to computer-based library systems, 2nd ed. London: John Wiley
- UNESCO (1989). Division of Software development and applications: Mini-micro CDS/ISIS reference manual. Paris: UNESCO
- Unesco (1999). Advanced course in CDS/ISIS and Winisis. UNESCO
- Vanlalchhuanawma. Inauguration of M.Th Programme in Aizawl Theological College. Presbyterian Review, vol. VIII (30), 2002.
- Vasantha, N and Mudhol, Mahesh V. (2000). Software packages for library automation. New Delhi: Ess Ess Publication.

- Vashisth, C.P. (1991). Computerization and library network. New Delhi: Indian Library Association
- Venugopal, S (2000). NIRMALS: User's Guide. Tiruchirappali: Nirmal Institute of Computer Expertise.
- Venugopal, S (2000). Nirmals: A Client/Server package for Modern Library Management. Tiruchirappalli: Nirmal Institute of Computer Expertise.
- Weatherby et.al. (1990). Guidelines for establishing automated libraries in developing countries. *Computer in libraries*, Vol. 21, pp 21
- Willceron, G.G. ed. (1987). Fundamentals of Information technology. London: John Wiley.
- Zaihmingthanga. Principal's Report. *ATC Annual Magazine* 1998-1999. Aizawl: Synod Press
- http:// www. education. nic.in/ higedu. asp (accessed on 7th. November. 2010)
- www.ccssind.org/lib/informanagement (accessed on 7th. November. 2010)
- www.apcce.gov.in/autolibrary.aspx (accessed on 7th. November. 2010)
- www.inflibnet.ac.in (accessed on 7th. November. 2010)

QUESTIONNAIRE
On

A STUDY OF LIBRARY AUTOMATION IN HRANGBANA COLLEGE AND AIZAWL THEOLOGICAL COLLEGE OF MIZORAM

Dear Sir/ Madam,

I am pursuing my M.Phil course in Library and Information Science in Mizoram University and carrying out my dissertation work on the above topic under the guidance of Dr**. R.N. Mishra,** Asst. Professor of the Department of Library and Information Science, Mizoram University, Aizawl. You are kindly requested to fill-up the questionnaire for the purpose of dissertation work only. The information given by you will be kept strictly confidential and will be used exclusively for academic work.

Thanking you,

Sincerely yours,

(**Lalsangzeli)**
M. Phil Scholar

- **The respondent is requested to put (✓) mark in the space provided in each question or provide information wherever necessary.**
- **You are kindly requested to use separate sheet wherever applicable.**

1. Name of the respondent:_____
   with address, e-mail etc._____

2. Category to which you belong: (a) Student ☐ (b) Faculty ☐
   Member (c) Research Scholar☐ (d) Others ☐

3. Sex Male ☐ Female ☐

4. Name of the Department:
   _____

5. Do you visit the library? Yes ☐ No ☐
   (If yes, what is the frequency Daily ☐ Weekly ☐
   of visit to Library) Occasionally

8. How does the Automation Process help you in getting pertinent information from the library? (Please state in brief)
   _____
   _____
   _____

9. Does the library provide you the bar coded facility?

Yes ☐ No ☐

10. Does the library provide you the bar coded ID card?

Yes ☐ No ☐

11. How do you borrow the books?

_____

_____

_____

12. Does the library provide you OPAC service?

Yes ☐ No ☐

If yes, how many terminals have been provided for the users?

_____

13. What are the other facilities electronically you get from the library?

_____

_____

_____

_____

14. Does the library provide RFID facility?

Yes ☐ No ☐

15. Does the library provide you internet facilities?

Yes ☐ No ☐

If yes, how many days do you visit in a month to access internet?

_____

16. Do you get any assistance from the library to access internet

Yes ☐ No ☐

17. Does the library provide services on?

a) E-books ☐ b) E-journal ☐ c) E-content ☐ d) E-thesis ☐

18. Are you satisfied with the automation service of the library?

Yes ☐ No ☐

19. How do you rate your satisfaction?

Excellent ☐ Good ☐ No Comment ☐

20. After automation whether you have found any problems? (Please tick any relevant)

a. Lack of adequate staff ☐
b. Lack of proper knowledge of computer by user community ☐
c. Lack of co-operation from the staff ☐
d. Lack of interest by the staff to educate clienteles rather more superfluous interest in day-to-day administrative works ☐
e. Lack of attention towards users by the staff ☐
f. Lack of co-ordination among the staff ☐
g. Ignorance of duty by staff ☐

Date _____ Signature_____

(Thank you for your cooperation)

QUESTIONNAIRE
On

A STUDY OF LIBRARY AUTOMATION IN HRANGBANA COLLEGE AND AIZAWL THEOLOGICAL COLLEGE OF MIZORAM

Dear Sir/ Madam,

I am pursuing my M.Phil course in Library and Information Science in Mizoram University and carrying out my dissertation work on the above topic under the guidance of Dr**. R.N. Mishra,** Asst. Professor of the Department of Library and Information Science, Mizoram University, Aizawl. You are kindly requested to fill-up the questionnaire for the purpose of dissertation work only. The information given by you will be kept strictly confidential and will be used exclusively for academic work.

Thanking you, Sincerely yours,

(**Lalsangzeli)**
M. Phil Scholar

Note: The Librarian is requested to use separate sheet of papers where ever necessary corresponding to the question number.

A. GENERAL

1. Name of the Library: _____

2. Year of establishment: _____

3. Name of the Librarian: or Library in-charge _____

4. Correspondence Address: _____

5. Telephone: _____ Fax: _____ E-Mail:_____

6. Web site URL (If any): _____

B. LIBRARY COLLECTIONS

7. Collections of the Library

7.1 Books: _____

7.2 Bound Volumes: _____

7.3 Current Journals: Indian:_____ Foreign: _____

7.4. Theses/Dissertation: _____

7.5. Reference Tools: _____

7.6. Microform: _____

7.7. CD-ROM: _____

7.8. Audio/Video Cassettes: _____

7.9. Others: _____

8. No. of journals procured for different disciplines under the library

Department	**Indian Journal**	**Foreign Journal**	**Total**
Total			

9. Total books procured for different disciplines under the library

Department	**Books**

C. LIBRARY INFRASTRUCTURE

10. Are you satisfied with the present Systems and Services with which the Library is functioning? Yes ☐ No ☐

11. If no, Please Specify the Reasons.

_____

_____

12. Do you have Internet facility in the Library? Yes ☐ No ☐

13. If yes,

a) Is it a Dedicated Link? Yes ☐ No ☐

b) Is it a Dial-up Link? Yes ☐ No ☐

c) Any other (please specify) _____

14. How many Computers do you have in your Library? _____

15. How many Computers/ Terminals do the Students use? _____

16. Is LAN facility available in your Library Yes ☐ No ☐

17. Does the Faculty have access to Internet at their Desk? Yes ☐ No ☐

18. Do you have Archiving Facilities for Electronic Resources? Yes ☐ No ☐

19. What Changes are Planned with respect to your Library System and Services and Why?

_____

_____

_____

20. Please state Specific Suggestions, if any.

_____

_____

D. LIBRARY SERVICES

21. Please indicate the services provided by your library

Services	**Provided(Please√)**
Lending	
Reservation	

Inter Library Loan	
Reference	
Bibliographical	
CAS	
SDI	
Document tracing	
Book bank	
Indexing	
Photocopying	
Translation	
Newspaper clipping	
CD-ROM search	
Online search	
Networking	
Orientation programme to users	
Any other	

22. What are the total working hours of the library?

a. Week days ☐ b. Sundays ☐

23. Does the library remain open during holidays and vacation? Yes ☐ No ☐

24. Do you provide OPAC service? Yes ☐ No ☐

25. Do you have electronic / AV resources, workstations and appropriate Infrastructure for use and delivery of information? Yes ☐ No ☐

26. Do you provide any awareness programme about e-resources from UGC-Infonet? Yes ☐ No ☐

27. Do you provide any training to the users in information literacy? Yes ☐ No ☐

28. Do you have any institutional repositories of research articles, reports, and institutional publications? Yes ☐ No ☐

E. LIBRARY AUTOMATION

29. **Computer Application**

29.1. Is your Library Computerized? Fully ☐ Partially ☐ No ☐

29.2. If "Fully/Partially", Please specify the following:

i) Name of the Computer: _____

ii) Type of Hardware installed: _____

iii) Year of Installation: _____

29.3. If No, When are you planning to have computerized your Library? _____

29.4. If your library is not computerized, do you intend to computerize in future?

Yes ☐ No ☐

29.5. If Yes, does the library provide terminals to the users? Yes ☐ No ☐

29.6. Are you able to use computer yourself? Yes ☐ No ☐

29.7. Are you satisfied with the computer facilities provided to you? Yes ☐ No ☐

29.8. Give the details about the Computer systems that you have on the following dimensions.

I.COMPUTER HARDWARE

Systems	**Mainframe**	**Mini/Micro**	**Multi-user**	**Other**
No. of Units				
Vendor's name				
CPU Size				
Core Size				
Tape Drive(specify no & capacity)				
FDD(floppy)				
HDD(Winchester)				
RDD(Removable)				
Dot matrix Printer(Specify no & speed)				
Laser printer(specify no & speed)				
Colour terminal (number)				
Mouse/Tablets (Numbers)				
Digitizers (Number)				
Plotter (Number)				

II. SOFTWARE

Systems	Mainframe	Mini/Micro	Multiuser	Other
Operating systems(OS)				
Major Language Compilers				
Database Packages				
Word Processing				

III. LIBRARY SOFTWARE PACKAGES

Softwares	Used in Library	Year
Wilisys		
SALIM		
LIBSYS		
Golden Libra		
ARCHIVES(1,2,3)		
CDS/ISIS		
MINISIS		
NIRMALS		
SLIM		
SOUL		
Techlib Plus		
SANJAY		
In-house Prepared		
Any other, Please Specify		

30. Please Specify the name of the software used in your Library _____

If "Yes", please indicate the areas which have been computerized?

Area of Operation	Computerized Since			
	One year	2-3 Years	3-4 years	5years
House-keeping Jobs				
Reader's Services				
Reference				
Indexing				
Data Processing				
Networking				
Management support activities				
Any other				

31. Did you face any problems at the time of computerization of your library activities?

Yes ☐ No ☐

32. If Yes, What type of problem did you face?

_____

_____

33. If Computer is used for reader services, Please indicate the services being provided

Services	**Available**
CAS	
Bibliography	
Union Catalogue Access	
SDI	
Database Searches	
Article delivery	
Any other	

34. For providing readers services, please indicate availability of the kind of databases in use and mention their numbers

Kinds	**Availability**	**Numbers**
Bibliographic		
Referral		
Numeric		
Full-text		
Any other(Pl specify)		

35. Please indicate the numbers of records created in machine readable form in each category.

Database	No of records completed	No of records pending	Expected date of completion
Books			
Journals			
Current Periodicals			
Theses/Dissertation			
Union Catalogue			
Back volumes			
Reports			
Non-Book Materials			
Any other			

36. Kindly mention the use of different library services by

I). **Area of operation**

Automated Library Services	Area Used
Automated Lending	
Automated CAS	
Automated SDI	
Automated Translating	
Email	
CD-ROM Search	
Online Database	
Telex	
Facsimile	
Accounts/Mgt.Services	
Bibliography Compilation	
Internet Browsing	
Web-based OPAC	
Dial-up services	
Telnet	
Voice Chatting	
Knight-Rider Search	

II) **Services Based on Automation of Library Functions**

Library Functions	
Providing access to Library OPAC	
Generating Reminders	
Providing recent additional list	
Providing individual alert service	
User can know their status of issue/return date etc	

III) **Services Based on Internet**

Email service to users	
www service to users	
FTP Usenet/news group	

FAX	
Union Catalogue of periodicals	
Union List of Current periodicals	
Document Delivery Services	
Providing access to INFLIBNET Database	
Access to International Databases	
Subscribe to Electronic Journals Service	
Providing Access to Resources by Cataloging the Internet Resources	

F. NETWORKING OF LIBRARIES

37. Do you adopt any electronic mode of dissemination of information to the users?

Yes ☐ No ☐

If yes, please mention the methods adopted for dissemination of information

_____

38. Do you provide any CD-ROM service? Yes ☐ No ☐

39. Total number of users accessing to CD-ROM database: _____

40. Which section in the library is computerized?

Acquisition ☐

Cataloguing ☐

Circulation ☐

Serial control ☐

Back volume ☐

Textbook ☐

Any other (please mention) _____

41. On which server the library software has been installed?

Local (Library) ☐ Central (Institute's) ☐

If central, who is managing your library software?

Library and Inf. Professional ☐ Computer Professional ☐

Information Scientists ☐ Any other _____

42. Does your institute have a website? Yes ☐ No ☐

If yes, who is hosting your website _____

43. How frequently you up-date the website? Monthly ☐ Half Yearly ☐ Yearly ☐

44. Has your library got an independent LAN or is a part of campus network?

Independent ☐ Part of campus network ☐

45. How do you spread out your institute' campus LAN?

- To all Departments ☐
- To all Labs/Centers/Units ☐
- To the entire campus including Hostels ☐
- To the individual rooms of all students ☐
- To all faculties and officers residences ☐
- Any other _____

46. Are your campus network and library network connected to internet? Yes ☐ No ☐

If yes, please specify your Internet Service Provider (ISP)

a) ERNET (ex: ac.in, edu.in, res.in) ☐
b) VSNL ☐
c) NICNET ☐
d) Any other _____

47. Type of internet connection is being used in the library, departments, students' hall and residences.

47.1 *Library*

-Dial-up ☐
-Leased ☐
-Radio link ☐
-Cable network ☐
-V-sat ☐
-Any other _____

47.2. *Departments*

-Dial-up ☐
☐
-Leased ☐
-Radio link ☐
-Cable network ☐
-V-sat
-Any other _____

47.3 Bandwidth of library network

- <=1.0 Mbps ☐
- >1.0 to <=2.0 Mbps ☐
- >2.0 Mbps to <=6.0 Mbps ☐

- >6.0 Mbps and above ☐

48. Do you have networking of Libraries? Yes ☐ No ☐

If yes, please mention the name of the libraries/Information Centers _____

To which the networking have been established: _____

Is your library a member of any library networks, and a part of any consortium in India?

Yes ☐ No ☐

481. *Library Networks*:

- DELNET ☐
- CALIBNET ☐
- INFLIBNET ☐
- Any other _____

48.2. *Consortium:*

- INDEST ☐
- UGC-Infonet Digital Library ☐
- Any other _____

49. Does the library provide online information access? (Please tick).

- E-books ☐
- E-journals ☐
- Abstracting databases ☐
- Open access journals (free) ☐
- Any other services _____

50. Does the library provides CD-ROM services, please tick mark the type of service(s)?

- Standalone ☐
- Networked ☐
- Both ☐
- Any other services _____

51. Does the library provides Internet facilities, please provide the following data?

- No. of PCs connected _____
- Type PCs used (ex. P1, P2, P3, P4) _____
- No. of users accessing per day _____

52. If your library provides communication network services, please tick mark the type of service(s) available

☐

- E-mail
- Telephone ☐
- Facsimile ☐
- Voice mail ☐
- Videotext ☐
- Teletext ☐
- Any other services _____

53. Has your library initiated digitization process? Yes ☐ No ☐

(If yes please specify the type of documents, software and format for digitizing documents)

53.1. Types of Documents:

- Books (rare, out of print, public domain) ☐
- Journal ☐
-Thesis and dissertations ☐
- Question papers ☐
- Any other _____

53.2. Type of software is being used:

- Omni page pro ☐
- Fine reader ☐
- Any other _____

53.3. Type of format is being used:

- PDF ☐
- TIFF ☐
- HTML ☐
- DOC ☐
- Any other _____

54. Please provide the infrastructure facilities available in the library.

- No. of computers _____ No. of photocopiers _____
- No. of fax machines _____ No. of scanners _____
- No. of telephones _____ No. of barcode _____
- No. of TVs _____ No. of scanners _____
- No. of VCP/VCRs _____ No. of printers _____
- No. of projectors _____

G. FINANCE

55. Please state budget of the library since 2004 and expenditure

Year	University	UGC	Govt.	Any other
2004-05				
2005-06				
2006-07				
2007-08				
2008-09				
2009-10				

55.1. Please indicate the budget for the following resources for the last five years:

Description	Budgetary provision in Rs.	Expenditure in Rs.
2005-06		
Institutional Budget		
Library Budget		
Books		
Current periodicals		
E-resources		
Hardware		
Software		
Maintenance		
2006-07		
Institutional Budget		
Library Budget		
Books		
Current periodicals		
E-resources		
Hardware		
Software		
Maintenance		
2007-08		
Institutional Budget		
Library Budget		
Books		
Current periodicals		

E-resources		
Hardware		
Software		
Maintenance		
2008-09		
Institutional Budget		
Library Budget		
Books		
Current periodicals		
E-resources		
Hardware		
Software		
Maintenance		
2009-10		
Institutional Budget		
Library Budget		
Books		
Current periodicals		
E-resources		
Hardware		
Software		
Maintenance		

56. How much money has been earmarked for automation? (Please state in detail)

_____

_____

57. How much money has been spent for digitization process?

58. **PROBLEMS**

In your opinion what are the problems you are facing in your library for automation?

Please tick in order of preference by putting 1,2,3…

a. Insufficient library grant [ ]
b. Inadequate staff [ ]
c. lack of adequate space [ ]
d. deprived of proper status and salary [ ]
e. indifferent attitude of authorities [ ]
f. lack of computer skills among the staff [ ]
g. lack of cooperation from teaching community [ ]
h. lack of infrastructure [ ]
i. lack of coordination among staffs [ ]
j. lack of cooperation [ ]
k. failure of internet connectivity [ ]
l. any other problem (please specify) _____

59. What are the ways adopted to modernize the library?

_____

_____

_____

_____

60. What is the future developmental plan for automation in the library?

_____

_____

_____

_____

_____

Date _____ **Signature of the Librarian**

(Thank you for your cooperation)