

Chapter - One

1. Background

Collection and access of all kind of information materials is out of reach for an individual with respect to organization and financial point of view. It is also true that no single library can supply everything and serve all kind of users. Library automation helps in manage diverse library resources and provides better and wider access to resources. Computer and telecommunication technologies began to build up an information society, which has crossed the geographical limitations and has provided facilities to access into global information systems. In fact, 'automation' is an indispensable part of modern library's information systems development, organization, management and services. In the present 'age of information', automation has been making tremendous impact on different sectors of the library and information centers.

With the development of Information Technology (IT) and Information Communication Technology (ICT) number of sophisticated Open Source Software (OSS) and proprietary software are developed for library automation. Costs for proprietary software in developing countries are extraordinarily high. OSS developers make the source code freely available for anyone to distribute copy and modify. OSS is offering particular advantages to development countries- local adaptability, opportunities for developing knowledge and skills and cost saving.

1.1 Library

Library is a public institution or establishment charged with the care of a collection of books, the duty of making them accessible to those who require the use of them and the task of converting every person in its neighborhood into a habitual library user and reader of books. A modern library is regarded as a service institution. Its aim is to enable the users to make the most effective use of the resources and services of libraries' (Ranganathan, 1940).

Library is an indispensable organization of educated and civilized society. The increased growth, use and value of information generated the concept of information society or information oriented society “Libraries may not create civilization; but a civilization can not exist without them.” (Hutchings, 1969).

The word 'library' which in English refers to a collection of books gathered for study, research, reference and recreation is derived from the Latin liber "a book". But the word library in French does not have the same meaning, being used to denote a bookshop or, by extension, a publisher; the word used in many other countries to signify a collection of Books, is derived from a Latinized Greek word, bibliotheca. (Khanna, 1994).

In the strict sense the term 'library' is a collection of materials organized for use. The word derives from the Latin word 'liber' a book (Feather & Sturge, 1997).

A building in which collections of books, CDs, news papers etc. are kept for people to read, study or borrow: a public/reference/university etc. library (Hornby, 2005).

A library is a collection of information materials; it acquires, organizes, and serves information to its users. It is dedicated to serve the information needed to users. Technological development has added more functions and responsibilities of the library. In the more traditional sense, it means a collection of books and other information materials, but now it is an information providing centre with a number of alternative forms like electronic, digital and other advanced collections (Wikipedia, 2009).

Library now is being used as a generic term for information centre, digital library, virtual library, electronic library, and other electronic extensions of the physical library. The major components are always that of the basic library collection, processing, organization and circulation.

1.2 Automation

International Encyclopedia of Information technology and library science defines automation as 'the technology concerned with the design and

development of process and system that minimize the necessity of human invention in their operation.

The fundamental unit of requirement for automation is the technological infrastructure. The infrastructure mainly consists of the 'Computers'. The computers are the essential components for the automation. It is that super product of electronics that is capable of performing the functions as desired by the user with maximum accuracy and quickness. (Sonker, 2000-2001)

The automation is economically feasible and technologically required in modern libraries to cope 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 (Bhardwaj & Shukla, 2000).

1.3 Library automation

Library automation can be defined simply as the use of computer and networking technologies in the library.

Modernization of library housekeeping operations mainly by computerization is known as 'Library Automation'. The term 'Library Automation' in the past was used to refer to the mechanization of the traditional library operations like acquisition, serial control, cataloguing, and circulation control. Today it is used to refer computerization of not only traditional library activities but also such related activities as information organisation, information storage, retrieval, use etc. (Sonker, 2000-2001)

Library automation is generic term used to denote the various activities with an improving quality of products and services of library and information centers. It enhance the speed, productivity, adequacy and efficiency of the library professional staff and save the manpower to avoid some routine, repetitive and clerical tasks such as filing, sorting, typing, duplication checking etc. (Bhardwaj and Sukla, 2000)

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 (Bhardwaj, 2000).

Libraries created integrated systems in which the traditional library functions of circulation, cataloguing, the public catalogue, acquisitions and serials check-in were computerized using the library database as the foundation (Cohn, 1998).

Due to the vast explosion of information, the librarians are facing difficulties to meet the user demand and are forced to take up the task of systematic organization of the recorded knowledge. On the other hand, the computer programs are being very much advanced day by day in each and every activity. Librarians also are moving with this fast development of computers using various kinds of databases, software and library automation software packages and automating their diverse activities in the libraries, as a solution for this matter (*Wright, 1996*).

1.4 History of library automation

Historical development of library automation can be divided into two different era-one before the advent of computers and other after the advent of computers. It is possible to return to past centuries when visionary well before the computer age created devices to assist with their book lending systems. Even as far back as 1588, the invention of the French “Book Wheel” allowed scholars to rotate between books by stepping on a pedal that turned a book table. Another interesting example was the “Book Indicator”, developed by Albert Cotgreave in 1863. It housed miniature books to represent books in the library’s collection. The miniature books were part of a design that made it possible to determine if a book was in, out of overdue. It could be said that actual library automation development began in the

1930's when punch card equipment was implemented for use in library circulation and acquisition.

The actual revolution in library automation had come after the advent of computers. It seems that computers were used in 1950's in few big libraries of USA and UK. At that time it was very expensive and difficult to operate. And the computers were limited for scientific and numerical work. The use of computer had grown in 1960's due to its reduced cost and development of application packages. HP Luhn, in 1961, used a computer to produce the "keyword in context" (KWIC) index for articles appearing in Chemical Abstracts. By mid 60's, computers were being used for the production of machine readable catalog records by the Library of Congress. During the 1970's the inventions of the integrated computer chip and storage devices caused the use of minicomputers and microcomputers to grow substantially. The online computer library center (OCLC) began in 1967. The 70s were the era of the dummy terminal that was used to gain access to mainframe on-line databases.

The automation of libraries started in the early 1960s with the development of computer use. The period from 1965 to 1975 (Boss, 1990) encompasses virtually all principle development in the application of computer to information retrieval. Among the earliest true computer based systems were those established at the Naval Ordnances Laboratory, Silver Spring, Maryland in 1959 and the system put in to operation by Western Reserve University for the American Society for Metals in 1960. Armed services Technical Information Agency in the period 1959-1963, National Aeronautics and Space Administration in 1962 and the National Library of Medicine launched Medical Literature Analysis and Retrieval System Services (MEDLARS). These agencies must be regarded as the pioneer of large scale producers of bibliographic information by computers. These agencies have been important and influential in the development of information retrieval in the USA. In India, computerization and networking activities started with the establishment of National Information System for Science and Technology (NISSAT) in 1979.

The 1980's gave birth to a new revolution. The size of computers decreased, at the same time, technology provided faster chips, additional random access memory (RAM) and greater storage capacity. The use of microcomputers during the 1980's expanded tremendously into the homes, schools, libraries and offices. The major development was the development stage of the use of electromechanical devices and computers in library and information centers. The introduction of CD-ROMs in the late 80's has changed the way libraries operate. But the actual revolution in the library world has come only after the tremendous growth of Internet, an open computer communication infrastructure and a network of networks, enabled global level inter-connectivity of computers and computer networks and their access at low cost.

Nepalese Context

The practice of sending, receiving and intercepting information using different modes existed in Nepal since the ancient times. Nepalese started to communicate by sending messages through e-mail and retrieved essential information from the Internet. Thus, the period in the early 90s could be called the beginning of computer era in Nepali history. The first instance of use of large scale computer in Nepal was in the year 1971 (CAN, 2005) when tabulation of census data was made.

In earlier eighties, National Computer Center (NCC) was established and the centre was entrusted with the task of processing governmental and institutional data. But due to lack of work, the centre had to limit its work such as tabulating and publishing the results of SLC (School Leaving Certificate) examinations. The only large scale work that was performed by the centre was data entry, editing, coding and processing of 1991 (CAN, 2005) census. The data entry was done by using 40 XT compatible micro computer terminals under the local area network environment.

At present almost all offices, business houses, banks, and middle class and high class families use computers for their day to day activities. Thus computer has become an integral part of Nepalese life.

In Nepal, the library system entered automation scenario after 1986, when UNESCO distributed free CDS/ISIS (Computerized Documentation System/Integrated Set of Information System). It is mainly used to create bibliographic database in recent years, with the trend of OSS and web based system, librarians are moving toward web based system. At present time the libraries in Nepal follow MARC standard to create database. However, most of the libraries use UNESCO developed CDS/ISIS database and Common Communication Format (CCF) to build their database. The CDS/ISIS database supports fields and subfields. The bibliographic data elements are in the form of fields and subfields, which uses MARC. The standard used in creating data entry form in CDS/ISIS is in CCF. In KOHA the data entry form used is in MARC21. (Pradhan , 2008)

1.5 Current Trend

Library vendors have taken the first steps toward making their software social with the advent of personalization features in their products. Today's web sites allow users to interact with each other and to create and share content. Web sites, like Web 2.0, Library 2.0, LibraryThing, Facebook, and Flickr connect users with each other and enable them to keep in touch and chat with each other online. Users post photos and videos to these sites where they can add tags, comments, and notes on their own and each others' items. Members of LibraryThing create a catalogue of books that they have read, or are interested in, and are able to review, rate, and tag books as well as see what other LibraryThing members own the same books. Social web sites bring together disparate users regardless of their geographic location, facilitating connections among people who have similar interests (e.g. www.ravelry.com/ for those who like knitting and crocheting), professional connections (e.g. www.linkedin.com/), or who merely want to share information and have online conversations (Trainor, 2009).

Till today, we are familiar with OPAC, but now webOPAC, Social OPAC (SOPAC) etc. are playing vital role to retrieve required information and interactive interface.

1.6 Software

Software includes the electronic program applications that allow the hardware to perform a set of functions, such as tracking circulation or cataloguing (Cohn, 1998).

A set of command is known as program, and a set of program is known as software. The hardware operates on the basis of a set of programs of software (Sharma, 1993). Basically, software is the program that runs the computer to produce the required results. It is said that, "A computer without software is similar to a man without his brain, or a library with neither books nor librarians". Therefore, on principle, the selection of software comes before hardware. The author emphasized the software needed for library housekeeping routines and information retrieval services in detail (*Malik, 1994*).

A Software package can have one or more computer programs to solve a specific problem. A programming language provides a special type of grammar and syntax to the programmer to enable him to give instructions in a simple and understandable way. Writing programs and developing software packages involves special training, hard work, time and money. For developing in-house software to solve complex problems these requirements become severe and unmanageable. Due to these limitations, the practicing librarians or information scientists are going for commercial software packages instead of in-house developed ones.

Software is the one of the essential components of the computer system. It is the main component that makes the computer to manipulate data. Software is a set of programs that determine the processing of the computer. Without software the computer is just a machine. Software is the main interface between the machine and man. It is responsible for the processing either numerical or logical data. Now a wide myriad of software are available for different applications of the library.

Types of library software

Computerization of library and information services, involves non-numeric data processing, text retrieval, manipulation of strings of characters. Information can be used for these purposes and for specific needs, special purpose software are also available in the market. The various categories of such software and their features are: Basic software for data entry, validation, sorting, merging of files, and editing of data.

Word processing software to manipulate text-storage, recall, use and modify; alignment of margins, addition and deletion of string of characters, manipulate paragraphs etc.

Database management systems (DBMS) are for creation and management of databases, file management systems, relational database management systems (RDBMS), network and hierarchical DBMS.

Text-retrieval packages for storage and retrieval of non-numeric record (tabular and even graphics). These are self-contained software, require minimum involvement of computer specialists, records are independent of variable length for natural language, text, have access to data by context, inverted file access, user interfaces which makes them simple and easy to use. These incorporate search and indexing facilities and other important features.

Software can also be associated with searching online retrieval system and CD-ROM databases. Major online systems have their own software usually written in command language, which provide access to external databases. They also provide private or personal file facility and permit editing of search files on micros. Library automation software can be grouped into three broad categories which are being used in Nepal. They are as follows:

- Freeware –CDS/ISIS, WINISIS
- Open Source Software –Koha, GSDL, OJS, Dspace,
- Proprietary – (SOUL, Voyager, AFW, LoBiondo, LMS, Libra etc.)

1.7 Open Source Software (OSS)

The history of OSS is given below in nutshell

- 1984 Richard Stallman formed Free Software Foundation (FSF).
- 1991 Linus Torvalds developed Linux
- 1994 Red Hat (commercial Linux) company founded.
- 1998 “Open Source Initiative” was formed

“Open source software is more about building communities and less about computer programs. It is more about making the world a better place and less about personal profit” (Morgan, 2003).

“Open Source Software is computer software whose source code is available under a license that permits users to use, change, and improve the software, and to redistribute it in modified or unmodified form” (*Wikipedia,2009*)

Open Source Software (OSS) is an antonym for closed source and refers to any computer software that is released free of cost and its licenses usually prohibit modifications and commercial redistribution. Source code is available under a license that permits users to study, change, and improve the software and to redistribute it in modified or unmodified form. A definition of open source is “free distribution and redistribution of software and source code; licenses that allow distribution of modifications and derived works and non-discrimination against persons, groups or fields of endeavor” (OSI; www.opensource.org).

Open source software is computer software for which the human-readable source code is made available under a copyright licence (or arrangement such as the public domain) that meets the Open Source Definition. This permits users to use, change, and improve the software, and to redistribute it in modified or unmodified form. Open source software is often developed in a public, collaborative manner. Open source software is the most prominent example of open source development and often compared to user generated content (*Wikipedia, 2009*).

OSS is both a philosophy and a process. As a philosophy it describes the intended use of software and methods for its distribution. The concept of OSS is a relatively new idea being only four or five years old. On the other hand, the GNU Software Project – a project advocating the distribution of “free” software – has been operational since the mid ‘80’s. Consequently, the ideas behind OSS have been around longer. It begins when a man named Richard Stallman worked for (Massachusetts Institute of Technology) MIT in an environment where software was shared. In the mid ‘80’s Stallman resigned from MIT to begin developing the GNU- a software project intended to create an operating system much like UNIX. His desire was to create “free” software, but the term “free” should be equated with freedom, and as such people who use “free” software should be:

- i. Free to run the software for any purpose
- ii. Free to modify the software to suit their needs
- iii. Free to redistribute of the software gratis or for a fee
- iv. Free to distribute modified versions of the software

(Morgan, 2003)

1.8 Proprietary/Commercial

Proprietary is a term for computer software with restrictions on use, and private modification, or with restrictions on copying or publishing of modified or unmodified versions. These restrictions are placed on it by one of its proprietors. Similarly, closed source is a term for software whose licence does not meet the Open Source Definition (Wikipedia, 2009).

1.9 Freeware

Free software is software that can be used, studied, and modified without restriction. Free software can be copied and redistributed in modified or unmodified form, either without restriction, or with restrictions only to ensure that further recipients can also do these things. To make these acts possible, the human-readable form of the program (called the source code) must be made available. The source code may be either accompanied by a

software license stating that the copyright holder permits these acts (a free software licence), or be released into public domain, so that these rights automatically hold (Weikipedia, 2009).

Most of the libraries in Nepal, CDS/ISIS is mainly used to create bibliographic database in recent years, with the trend of OSS and web based system, librarians are moving toward web based system. Presently, libraries in Nepal follow MARC standard to create database. However, most of the libraries use UNESCO developed CDS/ISIS database and Common Communication Format (CCF) to build their database. The standard used in creating data entry form in CDS/ISIS is in CCF. So, much software are used in the library and information centers for the automation of the library for cataloguing, catalogue card generation, authority file maintenance, serial control, online public access catalogue (OPAC), automatic indexing, thesaurus construction, union catalogue, etc.

2 Problem of the study

Open source software is the new phenomenon in the software development practices. Many libraries in Nepal are focusing their automation. But most of them are not aware about the use and advantages of the OSS based library software. The major trend of the libraries and librarians is to purchase the proprietary software such as SOUL, Alice, Voyager, Libra etc. or use the freeware software such as CDS/ISIS. The executives, decision makers and librarians do not have updated knowledge about the OSS. The problem is to study the use of OSS in different library environment.

3 Objectives of the study

The objectives of the study are:

- To identify different Open Source Software (OSS) being used in libraries in Nepal.
- To find out the features available in different OSS library software those are used in the libraries of Nepal.

- To prepare a comparative study of different OSS for Library Automation/management.
- To identify the problems in the use OSS in Nepal.

4 Scope of the Study

This study covers OSS that is being used in different libraries located in Kathmandu valley, Nepal. It identifies all the possible functions and requirements of a computerized library. This study identifies all function and requirements of library automation. It is observed that some libraries already started database creation in CDS/ISIS, WINISIS and some are just starting data converting ISIS to KOHA for library automation.

In this study, the entire OSS models presently being used are examined. The selected freeware/OSS is:

- ISIS
- KOHA
- GSDL
- OJS for journal management and publishing (NepJOL).

5 Limitations of the study

This study is limited in the libraries of Kathmandu Valley. The focus is in the following Libraries and OSS which are introduced and used in Nepal.

Libraries

- Tribhuvan University Central Library (TUCL)
- Social Science Baha Library (SSBL)
- Nepal National Library (NNL)
- International Centre for Integrated Mountain of Development (ICIMOD) Library

Software

- CDS/ISIS features
- KOHA features and benefits for library automation

- GSDL features and benefits for library automation
- Open Journal System (OJS) for Journals Management and publishing process (NepJOL)

6 Methodology

Primary and secondary data has been collected. Qualitative and quantitative research has been applied as the research design for the study.

The below mentioned methodology is incorporated to collect the relevant data.

- Interviews with the librarians
- Questionnaires for the librarians
- Surveys / Field observation of the libraries
- Review of the websites of the selected libraries.

7 Importance of the Study

With the development ICT, the number of sophisticated OSS is developed for library automation to fulfill the customers need. It is very important for the library and information professionals to acquire knowledge on feature and functionality of different OSS. Today, there is great demand, challenges and opportunities for librarians to develop library database for the worldwide access not only of the bibliographic but also the full text.

Therefore, this study will help to librarians in Nepal to guide in the selection and development of Library Management System and Services.

As the OSS represents in existing opportunity for libraries, and major shift in software design it allows the library to participate directly in the development of its systems and innovate services in a manner consistent with the value of librarianship according to the best known license agreement for OSS –the General Public License (GNU).

8. Organization of the study

The study is organized as described below:

- Chapter one deals with background of the study, objectives, scope, limitation, methodology and importance
- Chapter two presents review of literature published within and outside the country about OSS.
- Chapter three highlights, the four libraries where the study is specifically and thoroughly presented. It is also known as focus of the study.
- Chapter four highlights of the software which are included in the study.
- Chapter five deals with evaluation and also about library research methodology, research design, population; sampling procedure, data collection procedure and data analysis procedure.
- Chapters six represent data and remarks of professionals and experts of library and information field. The options and remarks are collected through questionnaire and survey methods, and observations. Data analyzed in this chapter under the heading, analysis and presentation. The chapter evaluates the set objective and
- Chapter seven highlights findings and summary.

Chapter - Two

2. Literature Review

OSS is considered as an important issue for libraries. However, only few numbers of studies have been found on the topic of OSS for libraries. More specifically, in context of Nepal, no studies have been carried out on OSS for Library Automation/Management. However, it does not mean that no study has been carried out on the topic because there are several scholars, author or researchers at the international level who have said one thing or the other in relation to the OSS for library automation.

In order to get the better understanding of the subject, it is essential and helpful to survey the literature and study the relevant and related topics. The review of such related literature provides the rationale for the hypothesis and findings.

"The basic idea behind open source is very simple: When programmers can read, redistribute, and modify the source code for a piece of software, the software evolves. People improve it, people adapt it, people fix bugs. And this can happen at a speed that, if one is used to the slow pace of conventional software development, seems astonishing." -The Open Source Initiative (OSI)

Open-source software is peer-reviewed software. It is exposed to extreme scrutiny, with problems being found and fixed instead of being kept secret until the wrong person discovers them. This peer-review process results in a code base that's more reliable than closed, proprietary software. Mature open-source code is as bulletproof as software ever gets. (<http://www.liblime.com/open-source>)

Sharma, (2007) found that most of the academic libraries in Nepal are using the UNESCO's software CDS/ISIS and WINISIS more popularly due to its free distribution. The other reasons are availability of the training provided by many training institutions and even prescribed in the Syllabus of Masters Degree in Library and Information Science, TU. Some of the academic libraries have used local made software package for the automation. It is also found that many other private college libraries are using simple

database only for the record keeping matter which is created by the students as a project work. These types of database have either house keeping operations or other facilities which may create problem in future by losing its record and debugging the data.

Mittal and Mahesh (2008) in their article on *Digital libraries and repositories in India: an evaluative study* stated that with the easy availability, increased awareness, training facilities and, most importantly, the negligible costs involved in setting up digital libraries and repositories using OSS, more and more libraries are using OSS rather than commercial or custom-made solutions. A number of digital collections have been developed using OSS with the purpose of restricted use, or use on the intranet of the institution.

They found in the study that DSpace, GSDL and Eprints are becoming common solutions for the creation of digital libraries and repositories in India. Moreover they concluded that Digital libraries and repositories in India are developing rapidly. Open source software, especially DSpace, is increasingly being used for the creation of digital repositories. Centres with expertise on DSpace, GSDL and Eprints have evolved in India and these centres are spearheading digital libraries and repository activities in India with regular training programmes that are developing human resources in the area. However, considering that India has a large number of education and research institutions, the number of digital libraries and repositories available today is still fairly low. The collection size in all the digital libraries put together are minuscule when considering the fact that India is abound with volumes of information that can be digitised and made available in digital libraries. The Digital Library of India is one major initiative that is striving to create a truly digital library. Awareness of the creation of institutional repositories is essential and funding agencies should have open access mandates so that creation of institutional repositories, or depositing a publication to open access repositories becomes compulsory.

Gautam (2008) conducted a study entitled "*Digital library in Nepal: relevance of digital contents for users and technological competence of the library*". He found that all the librarians are abreast of the new technology with that

what is implanted in their digital library. Most of them have received in-service/ refreshment course. Most of the librarians' tasks are completed by using word processor, and downloading the contents. Most of the librarians have faced difficulties in handling hardware/software. Various natures of database, digital materials, key words assigning, value-added information assigning, and etc. have made their job difficult.

Airy, Salmon (1999) has advised "the latest trend of library professional is not a huge collection of materials but of 'paperless library' and up to date library instead of being 'document-rich' thrives to be 'access-rich'. For such rich access to information, computer is an essential tool to be used. It will be better to automate all libraries activities and services in fact because library automation will get good result in greater accuracy, speedy, processing, networking controls, quality service, and reputation of library."

Moyo, (2004) states that information technologies have led to the transformation of library services from traditional services such as card catalogs, printed books and periodicals, bibliographic instructions, in-person/face-to-face reference, to new services and delivery modes incorporating: electronic collections, such as e-books, e-journals and databases; virtual reference services, and other online services. Innovation of new services that are peculiar to the online/Web environment is the trend in modern electronic libraries.

Bhardwaj and Sukla (2000) defined the library automation as a generic term used to denote the various activities with an improving quality of products and services of library and information centers. It enhance the speed, productivity, adequacy and efficiency of the library professional staff and save the manpower to avoid some routine, repetitive and clerical tasks such as filing, sorting, typing, duplication checking etc.

Rashid (1996) reviewed on "Library Automation an Overview" the significant developments in the area of library automation, size, library management system, and information retrieval system, OPAC, CD-ROMs and networking. Further, he added that librarians and vendors are working together to

improve service and systems and develop new products in response to user needs.

Bhardwaj and Shukla (2000) in their article on “*A Practical approach to library automation*” discussed the aims, objectives and need for the change of library tools and techniques under the changing environment with the concepts of automation of library activities, areas and services such as acquisition, database management, classification and cataloguing circulation, serial control, information retrieval, communication networks, and documentation services etc.

Muir (2005), in his article "*An introduction to the open source software issue*" traced the issue on Open Source Software (OSS). He described features and utilization of open source software and what is happening with OSS applications in universities and other libraries in the western world like USA, Canada, New Zealand etc. According to this article, OSS allows programmers to alter the software and redistribute it, with the requirement that they make these changes available to other developers.

Joint (2006) in his article "*Evaluating library software and its fitness for purpose*" provided a conceptual paper based on existing software evaluation models. The main purpose is to adapt general principles used for evaluating software quality to more specific requirements characteristic of information retrieval and educational applications in library environments. It also provided a model of software quality which embraces a number of top level factors. These are functionality, reliability, usability, efficiency, maintainability and portability.

Randhawa (2008) described in his article on “Open Source Software and Libraries” that OSS users have the ability to run, copy, distribute, study, change, share and improve for any purpose. Open source library software’s does not need the initial cost of commercial software and enables libraries to have greater control over their working environment. Library professionals should be aware of the advantages of open source software and should involve in their development. They should have basic knowledge about the selection, installation and maintenance. Open source software requires a

greater degree of computing responsibility than commercial software. Library professionals do not think seriously about the advantages of open source software for automation and hence are reluctant to use it.

There are some advantages of open source software which are as follows:

- Lower software costs: Open source solutions generally require no licensing fees. The logical extension is no maintenance fees. The only expenditures are for media, documentation and support, if required.
- Simplified license management: Obtain the software once and install it as many times and in as many locations as you need. There's no need to count, track, or monitor for license compliance.
- Lower hardware costs: In general, Linux and open source solutions are elegantly compact and portable, and as a result require less hardware power to accomplish the same tasks as on conventional servers (Windows, Solaris) or workstations. The result is you can get by with less expensive or older hardware.
- Scaling/consolidation potential: Again, Linux and open source applications and services can often scale considerably. Multiple options for load balancing, clustering, and open source applications, such as database and email, give organizations the ability to scale up for new growth or consolidate to do more with less.
- Support: Support is available for open source—often superior to proprietary solutions. First, open source support is freely available and accessible through the online community via the Internet. And second, many tech companies are now supporting open source with free online and multiple levels of paid support. For example Liblime.
- Escape vendor lock-in: Frustration with vendor lock-in is a reality for all IT managers. In addition to ongoing license fees, there is lack of portability and the inability to customize software to meet specific needs. Open source exists as a declaration of freedom of choice.

- **Unified management:** Specific open source technologies such as CIM (Common Information Model) and WBEM (Web Based Enterprise Management) provide the capability to integrate or consolidate server, service, application, and workstation management for powerful administration.
- **Quality software:** Evidence and research indicate that open source software is good stuff. The peer review process and community standards, plus the fact that source code is out there for the world to see, tend to drive excellence in design and efficiency in coding.

He concluded that there are some very powerful solutions available today that could be used to create a much more resourceful library. By using open source software in the library, money that otherwise would be spent on software solutions can be used for other important resources, such as purchasing additional media resources (books, journals, etc.), or can be used to hire educated, technical support that provides patrons with the know how to better use already existing resources. In addition, this free software is constantly being updated, changed, and customized to meet the library's needs.

Anuradha and Sivakaminathan (2009) in their Proceeding Paper on *“Enhancing Full text Search Capability in Library Automation Package: A Case Study with Koha and Greenstone Digital Library Software”* stressed about automation packages available with open source software. They provide advanced features of searching and retrieving of bibliographic records, none of them facilitate full text indexing and searching. Most of the available open source digital library software facilitates indexing and searching of full text documents in different format.

Library automation software, integrating all the activities and routines of the library is essential software for the libraries and is referred to as Integrated Library Automation Package (ILAP). An ILAP means an enterprise resource planning system for a library, used to track items owned, orders made, bills paid, and patrons who have borrowed the items. In other words it is one where all the library activities such as acquisitions, cataloguing, circulation,

serials, and the Online Public Access Catalogue (OPAC) are automated. There are many ILAP available in the market that meets the needs as well as budgets. However, with the open source software movement catching up, a few open source library automation package (LAP) are also available, which are comparable with any commercial LAP. To name a few: Koha, Evergreen, OPAL, PhpMyBibli, OpenBook, OpenBiblio. Among these Koha is the first open source library automation software and is widely used.

Pyati, Ajit (2008) his article on “Open Source Software and Libraries” concluded that OSS, may not be quite the democratizing technology that many of its fervent advocates claim it is. However, OSS and the free software movement provide an opportunity and opening for libraries to re-envision alternatives to the dominance of corporate, capitalist modes of software development. Libraries are taking part in these movements, but more work needs to be done in understanding how to sustain these projects and in theorizing a larger political voice for libraries in debates about technological democratization.

Chapter - Three

3. Focus of the Study

The study focuses on the use of OSS in the following libraries which are described below:

3.1 Tribhuvan University Central Library (TUCL)

TUCL was established along with the University in 1959. It is the largest library in Nepal, has total collection of 3,35,000 volumes of documents. It serves various types of users. Most of the documents are catalogued and indexed in AACR format. In the library electronic databases is put in online for local users as a computerized bibliographic database which can be retrieved with 5 different terminals while searching the bibliographic information. TUCL has started its electronic database from 1993. CDS/ISIS and WINISIS software are used for electronic database, under Nepal Automation Project through initiation of IDRC, Canada. The library has also providing Internet and email services to the users. INASP/PERI programme was started in 2003. Under it one of the important programme implemented in 2006 is called Nepali Journal Online (NepJOL), which is open access for all. The NepJOL is managed on Open Journal System (OJS), Public Knowledge Project (PKP), Canada. Now, there are 51 journals are uploaded (see www.nepjol.info)

- Established:1959
- Members: 12000
- Daily Visitors: 1200 – 1500
- Reading Capacity at a time: 800 users
- Area Covered: 150000 Sq.Ft.
- Collection: 3,35,000
- National Agency of ISBN: 2000
- UN Depository Library of UN: 1964

- International Network
- National coordinating Agency of International Network for the Availability of Scientific Publications (INASP), UK
- Total Staff: 75
- Professional staff:=15
- Library Hours: 8:00am-6:00(Winter) and 8:00am -7:00pm(Summer)

3.1.1 Objectives of TUCL

- i. To fulfill the teaching and research needs of the University.
- ii. To provide materials both in conventional and e-formats and furnish an environment conducive to study & research.
- iii. To encourage membership and promote information literacy, readership and life long learning.
- iv. To promote resource sharing, networking and exchange of databases.
- v. To help develop libraries and promote standards, guidelines and best practices.
- vi. To promote professional expertise in information management and conduct trainings in librarianship

3.1.2 Database of TUCL

Since 1995 the library has maintained TUCL Master Database of the document processed by the library to allow searching for their material at computer terminals in different location. A database of 50,000 documents can be accessed from the library' home pager www.tucl.org.np as well as internal networks.

- i. TUCL Master Database
- ii. ISBN database.
- iii. Article database
- iv. Tribhuvan University Archive database
- v. Audio Visual Materials database

Different software are using for library automation and e-resource management.

- At first manual cataloguing
- Started using CDS/ISIS in 1993
- After 1995, all resources available in OPAC
- More than 50,000 items accessible online

3.1.3 Software used

- About 48000 records, migration in KOHA from CDS/ISIS during 2009.
- Now, TUCL are going to start Recon (Card Catalogue to computerized catalogue) in KOHA.
- Creating digital library using GSDL from 2008 will be available in Intranet only. Starting with Ph. D. Thesis and Master Degree Dissertation.
- Plan to continue with some other publications

3.1.4 Nepali Journal Online (NepJOL)

After the implementation of the INASP/PERI programme in Nepal, TUCL was started to Nepali Article Database on CDS/ISIS in 2003. Under PERI there was an important component to Strengthen national research publications

- Nepal Journals OnLine (NepJOL) is a service to provide access to Nepalese published research, and increase worldwide knowledge of indigenous scholarship. TUCL are uploading the electronic journals on the OJS with the support of INASP.
- Now, there are 51 journals listed on NepJOL website www.nepjol.info
- Library's OPAC is available <http://www.tucl.org.np>

3.1.5 Information Technology Unit

This is one of the important sections of TUCL. Since July 2002 this unit has been providing the following services:

1. Search service from the TUCL database
2. E-mail and Internet services @100/- for 10 hrs
3. Full text database
4. Services from the CD-ROM
5. Services for blind user audio-cassettes
6. Online access to few databases etc.
7. INASP/PERI
8. eIFL.net, and other e-resources

Regarding electronic resources, it has online access to a vast treasure of scholarly journal, literature, etc in various disciplines through international online database: like JSTOR, AGORA, BioOne, Emerald, Cambridge University Press and Oxford University Press through INASP/PERI and Electronic Information for Libraries (eIFL.net). Further, the library is connected to DELNET, Delhi that provides access to bibliographic records and inter-library loan service to its users.

3.1.6 Services and Products of TUCL

The TUCL attempts to satisfy its users mostly by providing pinpointed information search service in any discipline at least time. It renders a wide range of services such as user's education/guides; information search; downloading; printing and CD burning of required articles; references, CAS, SDI, inter-library loan, Computerized Retrieval Service, Internet Service, E-Mail Service, User Education service and Press Clipping services.

3.1.7 Functions of TUCL

- i. Development and Organization of Collection
- ii. Creation and maintenance of computerized bibliographic databases

- iii. Provision of modern library and information services
- iv. Development of linkages / networking for resource sharing
- v. Participation in various, seminars, workshops
- vi. Library Orientation
- vii. Books Display
- viii. Group Discussion, etc.

The special collections are as follows:

- i. Nepal Collection, Dissertation & Thesis Collection
- ii. Nepali Research Journal Collection
- iii. Manuscript Collection
- iv. Textbook Collection
- v. American studies collection
- vi. Japanese Studies collection
- vii. References collection
- viii. ISBN collection, etc.

3.1.8 Standards and Tools at TUCL

The TUCL has been using following standards and tools:

- i. DDC 16th -DDC 22nd for classification
- ii. AACR I - II for cataloguing
- iii. Macro thesaurus for information processing.
- iv. Library of Congress Subject heading 23rd ed. for subject indexing.
- v. Local Authority List of Subject Descriptors compiled by selecting necessary Keywords from the very books / documents included in the database for in-depth subject indexing.
- vi. Reference Manual for Data Entry specially prepared for creating computerized bibliographic database

- vii. TUCL bibliographic Data input sheets for data entry
- viii. CDS/ISIS Software for database designing, organization and management.

Library hours: 8:00AM - 7:00pm (summer)

8:00AM – 6:00PM (winter)

3.2 Nepal National Library (NNL)

Government of Nepal established NNL in 1957 A.D. after having bought the personal collection of the then Kings' spiritual preceptor, the late Hem Raj Pandey. At present NNL has a collection of 86,000 books and periodicals, including those brought in as a result of the amalgamation of the Central Secretariat Library. The collection has been classified according to Dewey Decimal Classification. Until 1960, it functioned only as a Reference Library and from 1961 it was opened to the general readers. The library published National Union Catalogue, conducted basic library training, started mobile library service, published childrens' literature during 5 years UNESCO/DANIDA project (1994 to 1999). The library is situated in Lalitpur district at Harihar Bhawan.

3.2.1 Objectives

- Setting up adequate central services, including publication of the National Union Catalogue, National Bibliography and other reference tools
- Providing library services to the general public
- Collecting, organizing and preserving entire published materials within the country and Nepal related materials published from abroad
- Promoting literacy through a network of mobile libraries and the publication of Nepali literature and
- Assisting in the development of other public libraries in the country

3.2.2 Collection

The NNL has books, documents, and periodicals in different languages like Sanskrit, Nepali, Hindi, Marathi, Bengali, English, Newari etc.

Facilities and Services are:

- Reference Service
- Inter-library loan
- Mobile library services
- Electronic database: Online/Local
- CAS
- Microfilm

3.2.3 Organization

- Administration
- Library and information service
- Technical

3.2.4 Users

The library users are the general public, government personnel, teachers, students and all interested persons.

3.2.5 Database

The local database has been created for the bibliographic information using WINISIS software developed by UNESCO, whereas the internet-based software developed by Madan Puraskar Library in Unicode has been used for the Devanagari collection. Online search could be done through its website: www.nnl.gov.np

Cataloguing and others:

- At first manual cataloguing
- Started using CDS/ISIS
- WINISIS and separate software for Nepali

- Records accessible online

Software KOHA and GSDL used for:

- Transfer of about 16000 records in KOHA
- Creating digital library using GSDL
 - Starting with some theses
- Plan to continue with some other publications
- Library's OPAC is available <http://nnl.healthnet.org.np>

3.2.6 Finance

Entire expenses of this library are funded by the Government of Nepal. In the fiscal year 2006-2007, a total of Rs. 4.67 million was allocated.

3.2.7 Library hours

Summer: 10:00 am to 5:00 pm (Sunday to Thursday)

10:00 am to 3:00 pm (Friday)

Winter : 10:00 am to 4:00 pm (Sunday to Thursday)

10: 00 am to 3:00 pm (Friday).

3.2.8 Human resources

The library is under the Planning Division of the Ministry of Education and Sports. The library has a total number of 24 staff members of which 3 senior staff are qualified librarians, 6 semi-professionals and rest of others are administrative and supportive staff (NNL, 2062).

It conducts various programmes to develop LIS professionalism. Most note worthy functions are conferences, workshops, trainings (LIS III level and refresher), assistance by resource persons.

3.3 Social Science Baha Library (SSBL)

The Social Science Baha was set up in January 2002 to foster and facilitate the development of the study of the social sciences in Nepal. In keeping with its stated objective, the Baha has focused mainly in the following activities.

- Library: SSB has run a public library to facilitate study and research in the field of Social Sciences
- Lectures, Conferences: The Baha hosts various lectures, it organises conferences, roundtables and other interactions of an academic nature.
- Publications: The Baha publishes books, occasional and working papers as a means to make available scholarly works

The Social Science Baha Library is a reference public library. It was established in 2002 with the objective to cater information needs of students, teachers, researchers, scholars and other professionals engaged in study, teaching and research activities in the fields of social sciences. But it opened its services for public in 2003 only.

- Total Collection: 22000 (approx)
- Collection Types: Books (14557), Journals (513), Vertical files, CDs, AVs, Maps, Computer files(electronic documents), Online Journals
- Total Members: 1300
- Member Types: General, Student, Institutional, Temporary
- Customers: Students, Teachers, Researchers, Scholars, Intellectuals, Journalists, Planners / Policy Makers, Development Professionals, etc
- Facilities: Reading room equipped with cozy, Electrical terminals for use of personal laptops, Pencils and writing papers, Computers for local and international online databases search, Utility facilities.
- Services: Number of services are carried out like; Search and retrieval services, Reading, Reference, and Referral Services, CAS, CCS, SDI services, Downloading, copying and printing of articles, Inter-library loan from DELNET resources.
- Database of SBBL: Database with sufficient subject headings and keywords have made easier to retrieve the exact documents through the IT. All together about 17091 records documents put WINISIS,

KOHA and GSDL. They were already used CDS/ISIS Software 3.08 Version 1997 for database designing, organization and management.

- Moreover, regarding electronic resources, it has online access to a vast treasure of scholarly journal literature in various disciplines through international online database: like JSTOR & AGORA, Blackwell Synergy, EBSCO Host, BioOne, Cambridge University Press and Oxford University Press through INASP and eIFL.net. Further, the library is connected to DELNET, Delhi that provides access to bibliographic records and inter-library loan service to its users.

3.3.1 Objectives of SSBL

To ensure efficient library and information services vital for the quality research & development activities that contribute to the development of the Nepalese society as a whole by capturing and organizing relevant information / knowledge resource in conventional and electronic formats not easily available elsewhere in Nepal.

- i. To cater information needs of students, teachers, and researchers, scholars and other professionals engaged in study, teaching and research activities in the fields of Social Science

3.3.2 Functions of SSBL

SSBL carries out various functions, such as:

- i. Development and Organization of Collection
- ii. Creation and maintenance of computerized bibliographic databases
- iii. Provision of modern library and information services
- iv. Development of linkages / networking for resource sharing
- v. Participation in various, seminars, workshops, etc.

3.3.3 Standards and Tools at SSBL

The SSBL has been using following standards and tools:

- i. DDC 21st for classification
- ii. AACR II for cataloguing

- iii. Macro thesaurus for information processing in the field of economic and Social Development, 5th ed. 1998 and other popular thesauri / subject heading list such as: UNBIS Thesaurus, POPIN Thesaurus, etc.
- iv. Library of Congress Subject heading 23rd ed. 2000 for subject indexing.
- v. Local Authority List of Subject Descriptors compiled by selecting necessary Keywords from the very books / documents included in the database for in-depth subject indexing.
- vi. Reference Manual for Data Entry specially prepared for creating computerized bibliographic database
- vii. SSBL bibliographic Data input sheets for data entry

3.3.4 Implementations of KOHA and GSDL

SSBL implemented Koha in November 2008 after the service contract with Healthnet Nepal and design of database according to their need with the help of Dr. Mohan Pradhan. About 15000 existing records migrated in Koha from CDS/ISIS. Koha is utilizing only for bibliographic purpose (only for cataloguing not for acquisition, serial management, circulation, etc.)

Regarding GSDL Capacity building of human resources for Koha by getting training from HealthNet Nepal designing and testing of collections according their need and they are preparing to install and use GSDL for library's local digital collection.

3.4 International Centre for Integrated Mountain of Development Library (ICIMODL)

ICIMOD, established in 1983, is located at Khumaltar, Lalitpur, an independent regional knowledge, learning and enabling centre which is serving the eight regional member countries of Himalayan region. From the very beginning of the establishment it had its own library to assist the researcher, students, professional of same fields' staff and others. It is one of the founding members of Himalayan University Consortium (HUC).

3.4.1 Objective of ICIMODL

- i. To enable and facilitate the equitable and sustainable well-being of the people of the Hindu-Kush Himalayas by supporting sustainable mountain development through active regional cooperation.

3.4.2 Functions of ICIMODL

- i. Development and Organization of Collection of ICIMOD.
- ii. Creation and maintenance of computerized bibliographic databases
- iii. Provision of modern library and information services
- iv. Development of linkages / networking for resource sharing

4.4.3 Resources of ICIMODL

The ICIMODL has been able to develop a good collection covering related material of Mountains development, through purchase, and permanent loan. The conventional resource consists of 20,000 volumes of books, documents, journals, etc. Now ICIMODL Started documents put into digital format. Regarding electronic resources, it has online access to a vast treasure of scholarly journal literature in special field of Mountain development through international online database: like JSTOR, AGORA, Blackwell Synergy, EBSCO, EMERALD and Oxford University Press through PERI

4.4.4 Services and Products of ICIMODL:

The ICIMODL attempts to satisfy its users most by providing pinpointed information search service in special related documents at least time.

- i. Full-text search service
- ii. Information search
- iii. Downloading
- iv. Printing and CD burning of required articles.
- v. Current Content services (CCS); Current Awareness Services (CAS); Selective dissemination of information (SDI);
- vi. Local database search services & Inter-library loan, etc.

4.4.5 Standards and Tools of ICIMODL:

The ICIMODL has been using following standards and tools:

- i. DDC 21st for classification
- ii. AACR II for cataloguing
- iii. Macro thesaurus for information processing in the field of Mountain Development
- iv. AGROVOC for using Subject heading.
- v. Local Authority List
- vi. Bibliographic Data input sheets for data entry
- vii. CDS/ISIS library software is using for database designing, organization and management.

ICIMOD books -online provides direct access to all ICIMOD technical and scientific publications. It holds Full- text and chapter- wise download options for publications published from 2000 onwards and some selected earlier publications, and table of contents download and pdf request options for earlier publications. There is a link for ordering hard copies. ICIMOD books online can be searched using full-text contents, title, year of publication, keywords, language, author and broad subjects. Advanced search options are also available. Combine multiple entries to make the result more precise. The search format is 'AND', only results showing all the selected entries will be shown. Enter as many words as you need to define the topic, only entries including all words anywhere in the book will be displayed. ICIMODL has well organized for the information retrieval and systematically to retrieve the information for the users easily, through the IT in cataloguing & indexing. It used the library software CDS/ISIS, users can find required information at the location given in the computer via-bibliographic records. In computerized bibliographic records additional subject or keywords or terms are provides for the information users. And it's website is www.icimod.org/library

Chapter - Four

4. Focused Software under Study

The Open Source Software (OSS) that is being used in Nepal is focused in this study.

4.1 Open Source Software (OSS)

Open Source software is software that users have the ability to run, distribute, study, and modify the program for any purpose.

Cost of commercial software is very high and commercial developers do not reveal the source code of their programs, therefore, number of OSS have been developing worldwide for library automation.

4.1.1 Features of Free Software

- GNU public license (GPL).
- Anybody can do anything with public domain works.
- 73 % of free softwares registered under GPL Licence.

4.1.2 Features of Open Source Software

- Historically evolved from free software.
- Open source grants the four types of freedom such as run, study, distribute and modify).
- Open Source Initiative License (OSI).
- Open Source has a copyright holder.

4.1.3 History of Free/OSS

- 1984 Richard Stallman formed Free Software Foundation (FSF).
- 1991 Linus Torvalds developed Linux Operating System
- 1994 Red Hat (commercial Linux) company was founded.
- 1998 “Open Source Initiative” was formed.

Today, number of Open Source Softwares are available for free of cost to fulfill the need of open access. For example the popular freeware CDS/ISIS and WINISIS, whereas the OSS are Avanthi, FireFly, Emilda, PhpMylibrary, OpenBiblio, WEBILS, NewGenLib, OpenILS, Evergreen, GNUTECA, PMB, PhpMyLibrary, Dspace, Greenstone, Fedora, Koha etc.

Number of persons and institutions are developing new sophisticated OSS for remote access. Each software has similar features therefore it eases in the application part of OSS in our context.

4.2 CDS/ISIS and WINISIS

CDS/ISIS has been designed and developed by UNESCO's Division of Software Development and Applications Office of Information Programme and Service. The windows version is called WINISIS.

It is a menu-driven generalized information storage and retrieval system, designed specifically for computerized management of structured non-numerical databases (UNESCO, 1989). The first version of CDS/ISIS was released in 1985. Similarly, its 2nd version 2.3 was released in 1989, 3rd i.e. 3.07 version in 1992 and latest version 3.08 is available now. The range of ISIS users includes all types of libraries, as it is distributed free of charge. More than 5,000 libraries are licensed users of ISIS worldwide. It is a non-numeric database specially designed for bibliographic records, and is multilingual. A database can hold 16 million records. It provides variable length fields, repeatable fields, and sub-fields. It has powerful indexing and searching techniques. It provides a stop-word file. Advanced programming can be done using PASCAL language. Data can be exchanged according to international standard ISO 2709 (Sharma, 1993). It can run on LAN. A well elaborated documentation is available along with the software. Although, CDS/ISIS cannot perform all the housekeeping operations easily, its use is rapidly increasing. National distributors of this software in India are NISSAT, Which is distributing this software free of cost to interested libraries. NISSAT is also financing and giving grants to various organizations for conducting training of library personnel to use CDS/ISIS. DESIDOC has

developed a new package that is based on CDS/ISIS, and named the product as “Sanjay”.

In Nepal, the distributing agents of ISIS are ICIMOD and RONAST. Many Nepalese Library Association offer courses on CDS/ISIS and hundreds of librarians have become trained users of it.

4.2.1 Features

- Compatibility between the DOS and windows version
- Data are created and modified in data entry worksheet
- Data base can contain over 16 millions records
- Data can be imported and exported with ISO2709 format
- Handling of repeatable field
- Handling of variable length records, field and subfield
- Integrated application program language of CDS/ISIS allows the user to introduce new software
- It allows a user to create database on his/her own
- Its indexing capabilities are extremely dependable and fast
- Its search facilities are simple, accurate, and rapid
- Powerful hypertext function to design complex user interface
- Sorting and printing facility in desired format, (catalogue or index format)
- The system allows its users to create non-numerical data-bases

4.2.2 WINISIS

The window version of the CDS/ISIS is called WINISIS developed and released by the UNESCO in June 1997 and has several additional useful features. The first window version was distributed for testing in May 1995 and the first WINISIS version officially released was version 1.31 launched in November 1998. WINISIS uses the same database structure as CDS/ISIS. Database created by DOS version of the CDS/ISIS system do not require

any changes to be processed by the Windows version of this system. WINISIS, which is fully compatible with the MS-DOS version of CDS/ISIS, is designed for both current MS-DOS users who wish to shift to the windows environment, and for new users. It includes all the features of the MS-DOS version except some database utilities such as the database re-initialization. WINISIS is in c++, facilitating the portability level.

4.2.2.1 Features of the WINISIS

- Allow the user to build relational data bases
- An integrated application programming language(CDS/ISIS Pascal) and the CDS/ISIS Dynamic Link Library (ISIS_DLL)
- Availability of graphical user interface (GUI)
- Availability of new numerical and string functions.
- Compatibility between the DOS and Windows versions
- Guided search interface is available for inexperienced users of the package, apart from the standard search interface.
- Increased length of a format which can support up to 26,000 characters and its output is up to 64,000 characters.
- Maximum record size has been increased almost 4 times (30 KB in the Windows version as compared with 8 KB in the DOS versions)
- Powerful hypertext functions allow designing complex user interface.

4.3 KOHA

4.3.1 Overview of KOHA

In 1999 when the Horowhenua Library Trust (HLT) in New Zealand, was looking for a Y2K compliant replacement for their library system, Katipo Communications proposed a new system, using open source tools to be released under the GPL. Koha (the Maori word for 'gift' or 'donation') went live at HLT in January 2000, and was the world's first open source ILAP and is distributed under *GNU* General Public License (*GPL*). Latest version of the Koha is Koha-3.0.2 (Linux platform only) and Koha 2.9.x (for Windows and

other platforms) (<http://koha.org>). It runs on different platform like Linux, MacOSx, FreeBSD, Solaris, and Windows. Originally developed on the Linux OS, is written in Perl. It runs on Apache web server. It has better support for multi-RDBMS like MySQL, PostgreSQL. It has OPAC interface in CSS with XHTML. It supports all major library standards such as MARC record import/export. Data can be exchanged using Z39.50 server and SRU/W features. Koha-3.x supports Zebra full text search engine as backend. Records are stored internally in an SGML-like format and can be retrieved in MARCXML, Dublin Core, MODS, RSS, Atom, RDF-DC, SRWDC, OAI-DC and Endnote standards. Its OPAC can be used by citation tools such as Zotero. Koha's default installation supports running in Zebra which is configured to support SRU queries on bibliographic and authority data. Zebra itself is capable of detecting Z39.50 or HTTP and responding with SRU if the incoming request is HTTP (Anuradha, K.T. and Sivakaminathan, 2009).

Koha is a full featured open source Integrated Library System (ILS) for automating Library transactions, developed initially in New Zealand by Katipo Communications Ltd. and first deployed in January of 2000 for Horowhenua Library Trust, it is currently maintained by a team of software providers and library technology staff from around the globe. (www.koha.org)

Koha is an open-source Integrated Library System (ILS). It supports global standards including MARC 21 bibliographic format and Z39.50 Server. Web-centric architecture (no additional software/utility is required at the client side, access through the browser Mozilla Firefox only). It provides tremendous freedom for customization. All the modules of LMS including Acquisition, Cataloguing, Circulation, OPAC, Membership Management, System Administration, Serial Control, etc are available. Web based OPAC system allows the public to search the catalogue in the library and at homes. The software is UNICODE compliant. The creation and retrieval of Indic script based documents is possible. Export and import as well as backup or restoration facilities are available in it. Koha runs on Linux, Unix, Windows and MacOS platform. Koha uses MySQL as backend RDBMS and Apache Web server which are also open source software (DELNET, 2008).

4.3.2 KOHA Features

- Management Interfaces
- Circulation i.e. issues & returns of Library items
- Database of Library users
- E-mail Overdue Notifications and
- It uses dual database design that utilizes the strengths of the two major industry standard database types (Text & RDBMS). This ensures that it is scalable enough to meet the transaction load of any Library.
- Management of serials i.e. subscription, renewals etc
- MARC21 and UNIMARC support
- Online Public Access Catalogue of the Library holdings
- Online Reservations & Renewals
- Other most of the related functions of the Library
- Transfers between Library Branches
- Virtual Shelves Barcode Generator
- Web-based OPAC
- Z39.50 server compliant.

4.3.3 Software and Hardware Requirements

- Operating System: Linux or Windows
- Web Server: Apache
- Database: MySQL
- Programming Language: Perl
- 1GB RAM, 80GB Hard Disc

- Pentium 4 or Core 2 Duo

In Nepal, Koha was introduced and the training was organized by Healthnet Nepal and Tribhuvan University Central Library in 2008. In Nepal, there are a number of libraries those have started using KOHA for Online Public Access Catalogue and record management.

The pioneering libraries to use the KOHA are:

Tribhuvan University Central Library (TUCL)

Social Science Baha Library (SSBL)

Nepal National Library (NNL)

Nepal Health Research Council (NHRC)

Madan Puraskar Pustakalaya (MPP)

Martin Chautari Library (MCL)

4.4 Greenstone Digital Library Software (GSDL)

The GSDL Software was developed by the New Zealand digital library project at the University of Waikato in the early 2000, and provides a suite of open source software for building and distributing digital library collections. Greenstone is now well developed and distributed in co-operation with UNESCO and the Human Info, a non-governmental organisation. GSDL runs under Unix as well as in Windows. GSDL aims to provide ease of use as users can create files using varying formats, e.g. PDF, Postscript, MS-word or ftp.

GSDL is essentially suitable for managing the huge amount of information as information explosion is taking place. Its impact on library and information centres is profound. With the growing number of e-resources, it has become imperative for information professional to redefine their role in disseminating information to the users. Institutional Repository is a new concept for collecting, managing, disseminating and preserving scholarly works created in digital form by faculty and students in individual universities and colleges. Therefore for institutional repository GSDL is suitable.

4.4.1 Features of GSDL

- Builds and distributes digital library collections
- Full-text document search and display
- Multi-platform support
- Web-based user interface
- Highly customizable
- Document collections can be exported to CD-ROMs
- Can be used for archiving

There are five stages in developing a digital library using GSDL:

1. Collect information.
2. Describe the data.
3. Configure the collection.
4. Build the collection.
5. View the collection.

Greenstone constructs full-text indexes from the document text, and from metadata elements such as title and author. Indexes can be searched for particular words, Boolean combinations, or phrases and results are ranked by relevance or sorted by a metadata element. Greenstone 3 is a complete redesign and re-implementation of the original Greenstone digital library software and incorporates all the features of the existing system. GSDL is backward compatible, that is, it can build and run existing collections without modification. Written in Java, it is structured as a network of independent modules that communicate using XML (Witten et al., 2002). A number of examples of libraries around the world that have implemented GSDL are provided on the website (www.greenstone.org). These include Human Rights in Argentina, Kyrgyz Republic National Library, Philippine

Research Library, Education and Government Information Network and the Sudan Open Archive (Krishnamurthy, 2007).

4.4.2 Overview of GSDL

GSDL is a suite of software for building, publishing and distributing digital library collections, either on the Internet or on CD-ROM. It is compatible with many library standards such as SRU/W feature, Z39.50 feature, MARC record import. These features of Greenstone make it a very good selection for integrating it with library automation package for full text indexing and searching. It is produced by the New Zealand Digital Library Project at the University of Waikato, and developed and distributed in cooperation with UNESCO and the Human Info NGO.

4.4.2.1 Full text search with SRU

SRU/W (Search/Retrieve through URL or Web service) is a web-services based protocol for querying the databases and returning to the search results. It uses the Common Query Language (CQL) as the format for submitting the queries. Although CQL is a formal language for representing queries to information retrieval systems, it has been designed to be human readable and writable. It allows both simple and very complex and powerful queries. Search results from SRU/W are in XML format (<http://www.loc.gov/standards/sru/index.html> accessed on June 9th, 2009).

4.4.2.2 Full text indexing

The main objective of this module is to catalogue full text documents in Koha and index it in GSDL for carrying out full text search. In Koha cataloguing module, the URL of the full text document is specified under the tag 856, which is repeatable field, there by multiple URL for the same document can be given. After filling up the required cataloguing details, the record is saved. After saving the catalogue information, a unique document number is assigned by Koha for each catalogued document. This document number along with other required metadata details and full text document location is obtained through the catalogue form that is passed on to GSDL

for carrying out full text indexing. This is enabled by modifying add items 'tmpl' in Koha. A PHP script is invoked to carry out indexing in GSDL through command line collection building option.

4.4.2.3 Full text search feature

The main objective of this module is to enable the full text search in Koha and display the results of GSDL in Koha OPAC. For this purpose, four different perl scripts are written, viz., fulltextsearch.pl, fulltextsearch1.pl, fulltextsearch.tmpl, fulltextsearch1.tmpl. In fulltextsearch.pl query term is obtained from the user and passed to GSDL through SRU technique. The URL which is passed is split into 4 parts with question mark as the delimiter. The four parts in the GSDL are location in the system, collection name, required query and do option (ibid).

In Nepal, GSDL software is being used to archive the Ph. D. thesis, dissertations, reports, conference proceedings, CD and image collection to store and full text retrieval and e-resource, as well as CD management in different libraries since 2007. Various training and workshops were conducted by Healthnet Nepal and Tribhuvan University Central Library. Now, it is popular in Nepalese libraries for digital collection and management.

4.5 Open Journal System (OJS)

OJS is a journal management and publishing system that has been developed by the Public Knowledge Project (PKP) through its federally funded efforts to expand and improve access to research.

4.5.1 Overview

- Once published, articles are exposed for harvesting via OAI-PMH
- OJS includes reader tools for metadata, database searches, citation capturing, etc
- Reader tools are customizable per journal

4.5.2 Features of OJS

Special Features of OJS

- Submission of articles, reviews, and other Items
- Management for each stage of publishing
- Comprehensive indexing of published articles
- Research support tool for each article published
- Email notification and commentary for readers

Other Features

- OJS is installed locally and is locally controllable.
- Editors configure requirements, sections, review process etc.
- Online submission and management of all contents.
- Subscription module with delayed open access options.
- Reading tools for content, based on field and editors' choice.
- Email notification and commenting ability for readers.
- Complete context-sensitive and online help support.

OJS assists with every stage of the refereed publishing process, from submissions to online publication and indexing. Through its management systems, it has finally gained indexing of research, and the context it provides for research. OJS seeks to improve both scholarly and public quality of referred research.

OJS is open source software made freely available to journals worldwide for the purpose of making open access publishing as a viable option for more journals, as open access can increase a journals's readership as well as its contribution to the public good on the global scale. (<http://pkp.sfu.ca>)

4.5.3 Use of OJS in Nepal

Tribhuvan University Central Library is first institution to implement in Nepal with the help of INASP/PERI Programme to support Nepali Journal Online (NepJOL). The NepJOL website uses the Open Journal System created by the Public Knowledge Project based in Canada. It provides participating journals the opportunity to take control of their own area within NepJOL, to load, edit and update own journal information. Researchers can read free abstracts and access full text articles from participating journals, while authors can submit their article online by following a few simple steps:

- NepJOL offers online hosting of abstracts free of charge, opportunity to load full text online, loading and managing own content, Consistent growth in exposure, online instructions for authors and contact information to the participating publishers.
- NepJOL offers reputable peer reviewed journals, free access to abstracts, free email alerts, sophisticated searching facilities, link to online full text, online article submission to the researchers.
- Successful journal submissions to NepJOL must be Scholarly, Peer Review and published from Nepal.

4.6 Status of OSS used in libraries

Computerization of the entire library house keeping operations like Acquisition, Cataloguing, Circulation Control, Serial Control and Report Generation etc. which is also known as library automation. Automation plays a vital role in this age of information explosion and library software is very important in library automation. Although knowing its importance by the librarian, they are not able to computerize their library due to various reasons. However some libraries have either fully computerized or partially computerized. The following libraries have used different software packages to automate their libraries.

Status of Software used in libraries

Name of the Institution	Automation started	Software used		Possibility of modification	Kind of software
		Earlier	Current		
TUCL	1993	CDS/ISIS	KOHA, GSDL, OJS	Yes	Free/OSS
SSBL	2002	CDS/ISIS	KOHA, GSDL	Yes	Free/OSS
NNL	1995	CDS/ISIS	KOHA, GSDL	Yes	Free/OSS
MPP		CDS/ISIS	Dspace	Yes	Free/OSS
Kaisher Library	1997	CDS/ISIS	KOHA GSDL	Yes	Free/OSS
Martin Chautari	2006	CDS/ISIS	KOHA GSDL	Yes	Free/OSS
ICIMOD Library	1993	CDS/ISIS	KOHA CDS Invinio	Yes	Free/OSS
UNESCO Library	1998	CDS/ISIS	GSDL	Yes	Free/OSS

Above Table shows the general status of software used in different libraries and the automation has started in these libraries only after 1993. Although, TUCL is the largest and oldest university library of Nepal, it has started computerization since 1993 using CDS/ISIS for the bibliographic database and presently it uses KOHA, GSDL and OJS for library automation/management. The Nepal National Library has started automation from 1995 with CDS/ISIS and presently it has been using KOHA and GSDL as Integrated software. Social Science Baha Library has started computerization from 2002 with CDS/ISIS and presently it has been using KOHA and GSDL. Madan Puraskar Pustakalaya had been using CDS/ISIS at first and now for Digital library it has been using Dspace. Kaiser Library has started automation from 1997 with CDS/ISIS and now it has been using KOHA and GSDL. Martin Chautari has started library software with

establishment of Library in 2006 and it has converted all data from CDS/ISIS into KOHA. ICIMOD library has started library software from 1993 with CDS/ISIS and presently it has been using KOHA and CDS Invenio. UNESCO Library has started library software from 1998 with CDS/ISIS and presently GSDL as digital library software.

The table reveals that all the selected libraries have previously been using CDS/ISIS to store their collection and access information through computer catalogue.

All the above library automation software has the facilities of data migration from the CDS/ISIS database to newly installed software.

Chapter - Five

5. Research Methodology

Research is described as an active diligent and systematic process of inquiry aimed at discovering, interpreting and revising facts. The term research is also used to describe a collection of information about a particular subject too. So, the application of procedure for research is known to be research methodology. One can also define research as a scientific and systematic search for pertinent information on a specific topic (Kothari, 1989).

Research is essentially a systematic inquiry and organized effort to investigate a specific problem that needs a solution. Research has become an important aspect of human activity. It is through research that knowledge grows and develops. It also enables man to find solution to his problems and resolve conflicts. It generates new idea, knowledge which can be used for different purpose. It builds a theory, develop policies behaviors, support decision making and solve problems. The term research is also used to describe a collection of information on a specific topic. So, the use of technique for research is known as research methodology. For the study on 'Open Source Software for Library Management- a Comparative Study' the researcher visited the four libraries in Kathmandu valley. On the basis of data collected from libraries the research is carried out.

5.1 Research Design

A research design is strategy for the collection of information or data. It comprehends to make a planned sequence of the entire process involved of a fruitful problem. The design may be a specific presentation of the various steps in the research process. So research design is conceptual structure within which the research is conducted. In case of this study, the researcher visited and observed that the libraries used various types of software. These software are CDS/ISIS, KOHA, Evergreen, NewGenLib, GSDL, OJS, DSpace, etc. The methods mainly used are structured questionnaires, survey and direct interviews with concerned people. In some cases, data is collected

through telephone contact, similarly, personal contact with librarians, information officers and users.

5.2 Population

The population of study is different libraries and institutions that are using OSS for Library Management inside the Kathmandu valley. The libraries are TUCL, NNL, SSBL, and *ICIMOD* Library. The total sample size is 87 i.e the number of the library staff. As the research practice more than 30% of the total sample size is included in the research process. The rationale behind the selection of the library TUCL is the oldest and largest academic and research libraries of Nepal. Rests of the libraries are reputed for their advanced collection and up to date information services which is availed by the users. The librarian and library professionals of the mentioned libraries comprise the population of the study.

5.3 Sampling Procedure

For the study, the researcher prepared one set of questionnaire for the librarians (Library Professionals). The questionnaire was prepared keeping in mind the OSS for libraries and distributed the questionnaire to the library professional only.

In order to collect the needed information the researcher has applied to simple random sampling technique. Following established libraries in Kathmandu Valley were approached to collect the information. These libraries are:

- i. Tribhuvan University Central Library (TUCL)
- ii. Social Science Baha Library (SSBL)
- iii. Nepal National Library (NNL)
- iv. ICIMOD Library

The researcher personally paid a visit to the respected libraries and distributed the questionnaire to the library professionals.

5.4 Data Collection Procedure / tools

The researcher has used the following tools/ methods to gather primary and secondary information

5.4.1 Questionnaire Method

Questionnaires were prepared for the librarians (library professionals). The questionnaires were structured as closed and open ended questions. The researcher paid a visit to the respective libraries and personally distributed the Questionnaire to the library professionals.

A set of questionnaire was prepared and distributed to 40 respondents. 30 questionnaires were submitted to the researcher but in few cases when no response was received after long time, the researcher personally contacted and over telephone. Personal visits were made for reminding and collecting the filled up questionnaire.

5.4.2 Interview Method

Structured and unstructured interviews have been conducted with knowledgeable librarians in OSS, professionals, semi-professionals for gathering concerned data, facts and figures. Among all the method, interview method was very useful in the study of completion of information which was left at the time of filling of questionnaire.

5.4.3 Data Analysis Procedure

The data from the questionnaire was collected, edited, coded, tabulated and classified for analysis. The data from both respondents was analysis manually. The results of the analyzed data were presented in the different form of tabulation and graphical, diagrammatical representation. Finally relating to the findings, conclusions were drawn.

Both qualitative and quantitative data collected during the field work and obtained from other secondary sources has been used to interpret the data. The data has been broadly categorized according to the research objectives. Qualitative data has been analyzed descriptively. Collected data were analyzed and interpreted in as systematic way, mainly characterizing in various headings and sub-headings for the fulfillment of research goal.

Chapter – Six

6. Data presentation and analysis

The automation of libraries has gone a long way in providing quality service and facilitating easy access to varied information sources cutting across space and time. Adoption of IT has not only saved the time of scholars, it also widened the access base of information sources. Library automation software being used in selected libraries in Nepal which are located in Kathmandu valley has been taken for the study. Data have been collected from automated libraries and it is also noticed that libraries that were not automated or that do not use commercially available software are not included in the study.

On the basis of checklist and according to the questionnaire (in appendix) distributed to the librarians and information professionals the data has been collected.

Only four software packages have been taken into consideration for the comparative study. They are as follows:

1. CDS/ISIS, WINISIS
2. KOHA
3. GSDL
4. OJS

The questionnaire was prepared on the criteria discussed above to fulfill the objective of the study. The data analysis and presentation is based on the response received from the librarians/information professionals. Besides this, the literature written on respective OSS and personal interviews have been used in this comparative study.

According to the questionnaire, the data are analyzed from details of the library automation software. In the introductory part of the questionnaire, the respondents have been asked about personal information, institutional information and library resources. The personal information section has been kept optional. Other three parts of the questionnaire are to obtain the

information about the library. This information has been used to formulate the related chapter.

6.1 Presentation of the Data

In this chapter the results of the study are presented in tables, bar diagram and pie-charts. They are analyzed and the major findings are interpreted.

Collection Details

A questionnaire was distributed to find out the collection status of the libraries. Most of the respondents' replied shows that they house, preserve and deal with the print format materials. The questionnaires were distributed to 40 library professional of different libraries. But only 26 professional returned questionnaire with answers.

Table No. 6.1

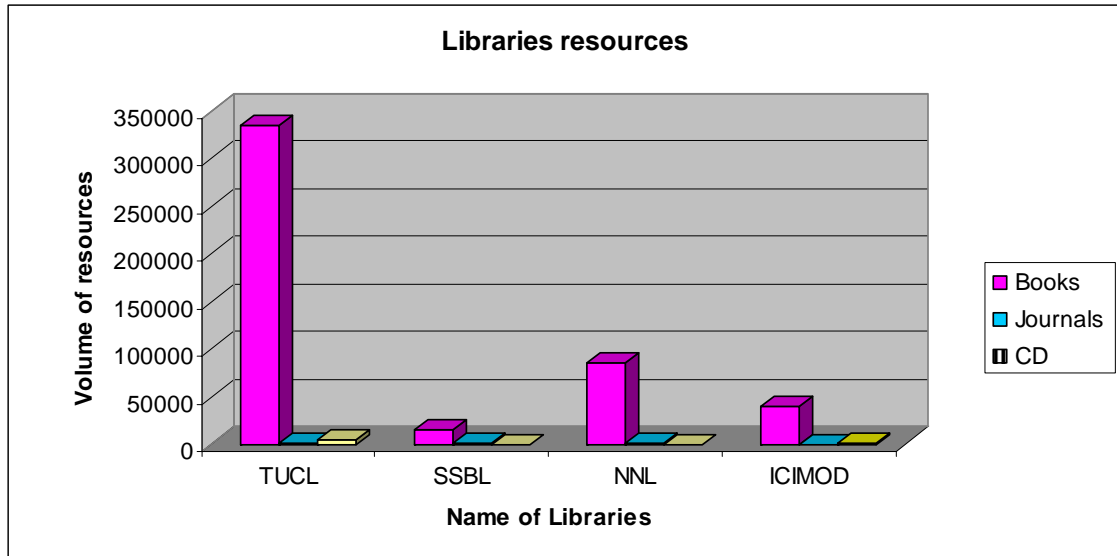
Collection Details of Selected Libraries

S. No.	Name of Library	Resources			Total	Percent
		Books	Journals	CD		
1.	TUCL	3,35,000	580	5000	3,40,580	71
2.	SSBL	15,162	500	52	15,714	3
3.	NNL	86,000	250	45	86,295	18
4.	ICIMOD	40,000	50	200	40,250	8
Total		4,76,162	1,380	5,297	4,82,839	100
Percent		98.61%	0.39%	1%	100%	

Source: Field Survey

The above data has been depicted as bar diagram below in Figure 1.

Figure - 1



The table and bar chart shows that most of the libraries house books materials in bigger quantity (98.61%) where as journals are fewer (0.39%) and digital materials like CD are in small proportion that makes only 1%. The table also shows the quantity of resources present in different libraries. TUCL consist total of 71% of resources, SSBL consist of 3%, NNL consist of 18% and ICIMOD consist 8% of the total resources. Resources contain volume of books, journals, and CDs.

From the questionnaire, it was found that users opted for the following services like OPAC, Reservation, Circulation, and Full Text Access which is presented in Table 6.2.

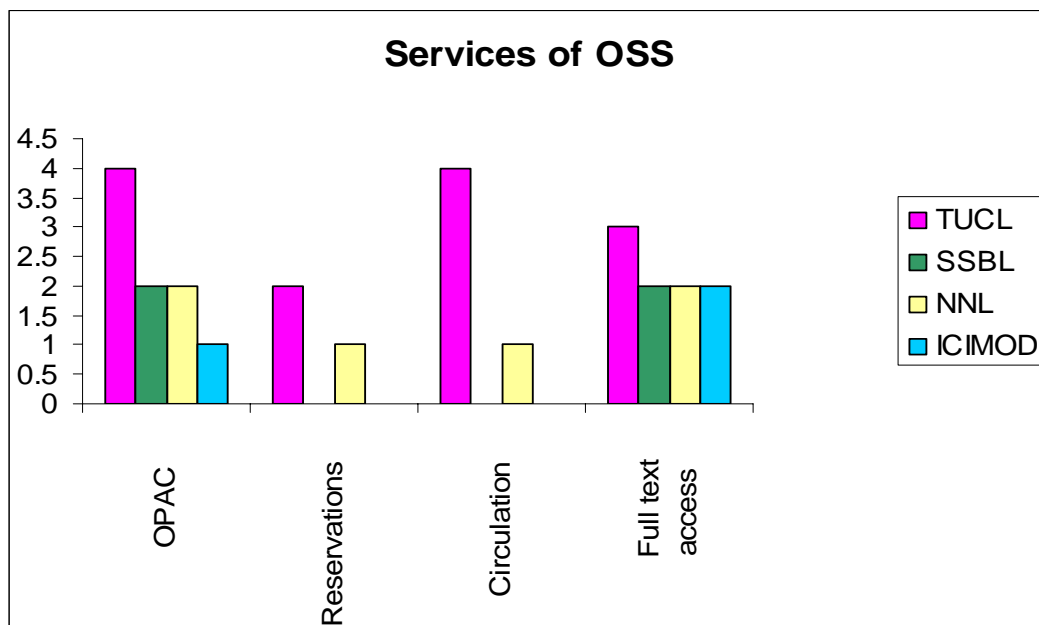
Table No. 6.2

Services Users Opt for

SN.	Name of Library	Services Opt				Total	Percent
		OPAC	Reservations	Circulation	Full text access		
1.	TUCL	4	2	4	3	13	50
2.	SSBL	2	0	0	2	4	15
3.	NNL	2	1	1	2	6	23
4.	ICIMOD	1	0	0	2	3	12
	Total	9	3	5	9	26	100
	Percent	35%	11%	19%	35%	100	

Source: Field Survey

Figure - 2



The above table and diagram shows that 35% respondent chose OPAC, 11% respondent chose reservation facility, 19% professional chose Circulation and 35% responded wants to access full text features of the OSS.

It was represented in the questionnaires, the nature of OSS used by the selected libraries. They are listed below.

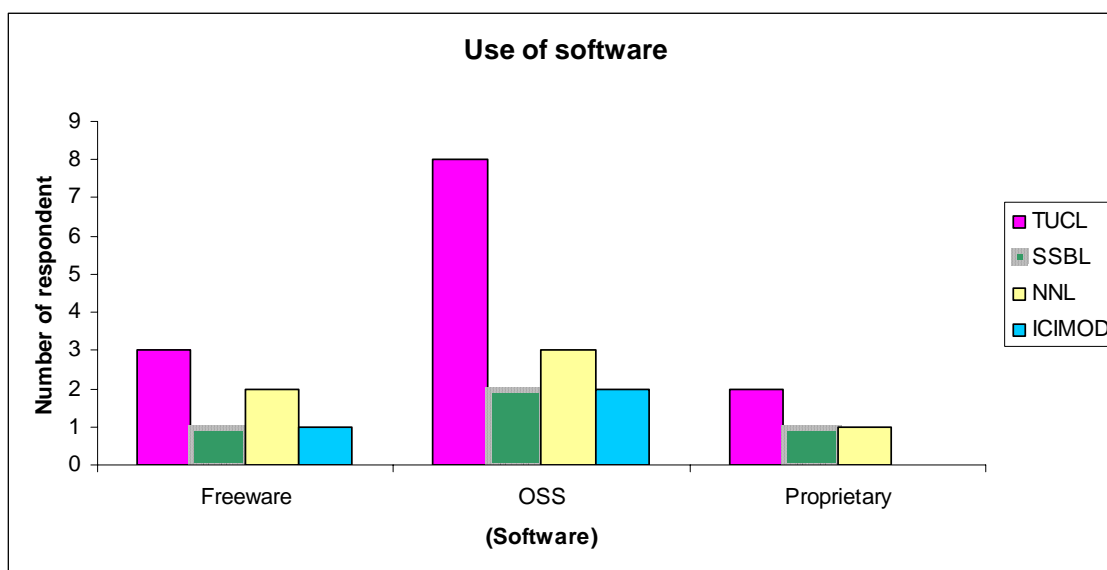
Table No. 6.3

Details of Library Automation Software

SN.	Name of Library	Software			Total	Percent
		Freeware	OSS	Proprietary		
1.	TUCL	3	8	2	13	50
2.	SSBL	1	2	1	4	15
3.	NNL	2	3	1	6	23
4.	ICIMOD	1	2	0	3	12
Total		7	15	4	26	100
Percent		27%	58%	15%	100	

Source: Field survey

Figure - 3



In the question “What type of software the libraries want to use for library automation” the librarians replied they want OSS and Freeware. The response shows that 27% want freeware where as 58 % want OSS, 15% want Proprietary software.

The respondent's interest towards Free/OSS is given below:

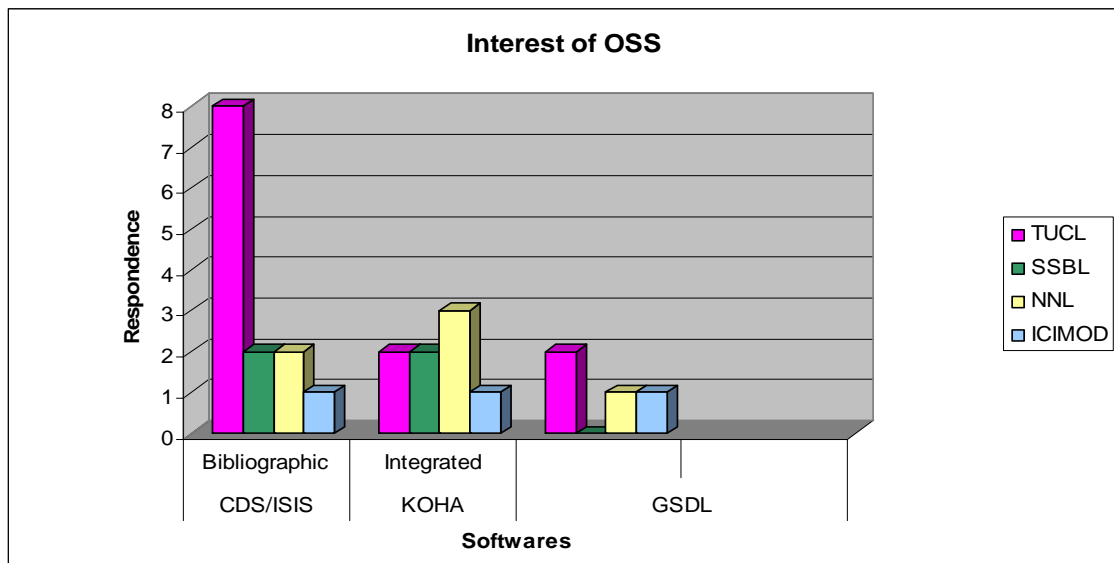
Table No. 6.4

Interest of F/OSS software

SN.	Name of Library	Interest of F/OSS software use type				Total	Percent
		CDS/ISIS Bibliographic	KOHA Integrated	GSDL DL	Other Proprietary		
1.	TUCL	8	2	2	1	13	50
2.	SSBL	2	2	0	0	4	15
3.	NNL	2	3	1	0	6	23
4.	ICIMOD	1	1	1	0	3	12
Total		13	8	4	1	26	100
Percent		50%	31%	15%	4%	100	

Source: Field survey

Figure - 4



The table shows only very few i.e 4% want for proprietary software because the companies provide insurance and care for the software. None of the respondent opted for other type of software than the given option. 15% of respondent want to use Digital Library(DL) software as GSDL, as integrated software 31% of respondent want to use KOHA and 50% of the total respondent want to use CDS/ISIS which is maximum of all the above.

From the questionnaire, the options given on modules are given in Table 6.5

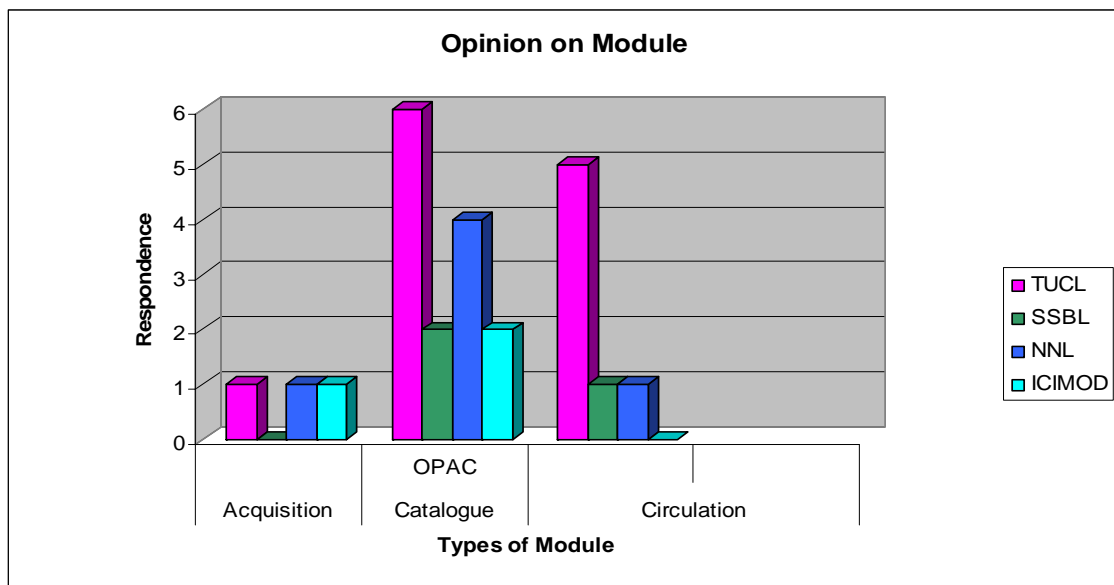
Table No. 6.5

Opinion on Modules

SN.	Name of Library	Opinion on Modules				Total	percent
		ACQ.	CAT. OPAC	Circulation	Other		
1.	TUCL	1	6	5	1	13	50
2.	SSBL	0	2	1	1	4	15
3.	NNL	1	4	1	0	6	23
4.	ICIMOD	1	2	0	0	3	12
Total		3	14	7	2	26	100
Percent		11%	54%	27%	8%	100	

Source: Field survey

Figure - 5



From the four libraries respondent, replied that they want to use four modules such as Acquisition, Cataloguing /OPAC, Circulation and as in other option full text and serial model. 11% wants to apply acquisition module, 54% wants to apply cataloguing / OPAC module, 27% want to use circulation and other (full text and serial) want to use only 8%.

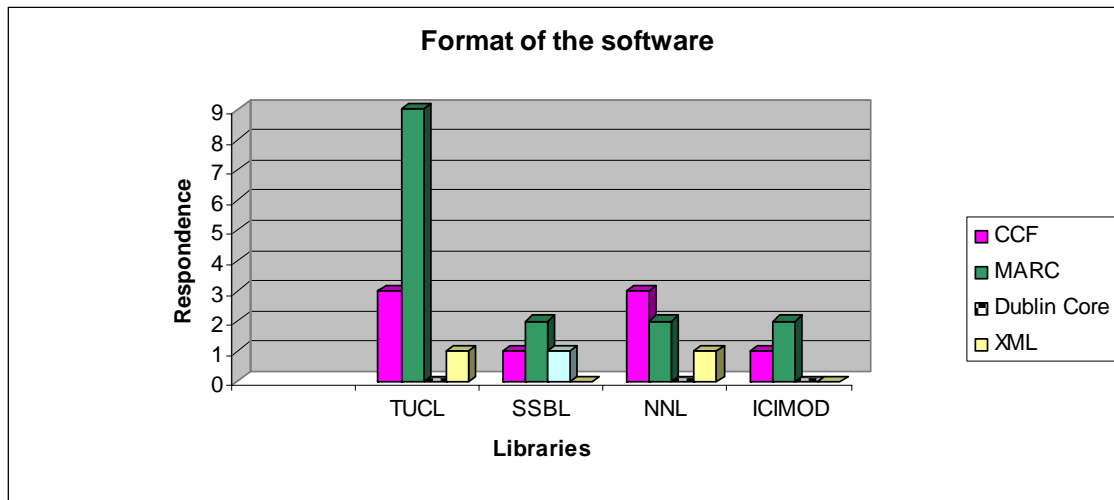
It was found from the questionnaire that the usages of format by the professionals are given below:

Table No. 6.6
Standard formats used

SN.	Name of Library	Format				Total	percent
		CCF	MARC	Dublin Core	XML		
1.	TUCL	3	9	0	1	13	50
2.	SSBL	1	2	1	0	4	15
3.	NNL	3	2	0	1	6	23
4.	ICIMOD	1	2	0	0	3	12
Total		8	15	1	2	26	100
Percent		30%	58%	4%	8%	100%	

Source: Field survey

Figure - 6



A question was requested to the respondents about their thinking on the format of the data structure. Their response shows that the most popular is MARC i.e. 58% which is followed by CCF i.e. 30%. Very few (8%) wants to use XML and the thought about Dublin core is very poor, only 4% thought that Dublin Core according to reply.

In the query of multilingual support of the OSS library operation are showing below Table and Pie-chart.

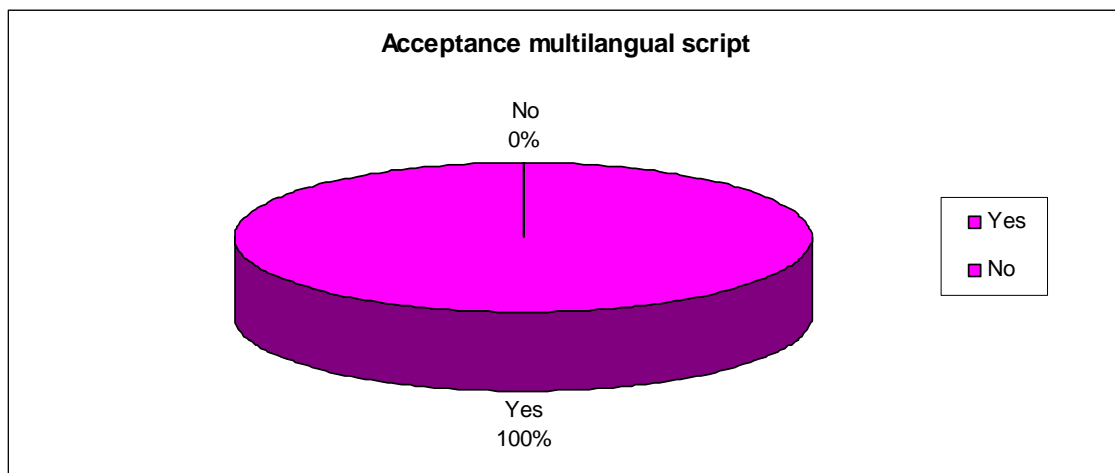
Table No. 6.7

Acceptance of multilingual script

SN.	Name of Library	Yes	No	Total	percent
1.	TUCL	13	0	13	50
2.	SSBL	4	0	4	15
3.	NNL	6	0	6	23
4.	ICIMOD	3	0	3	12
Total		26	0	26	100
Percent		100%	0%	100%	

Source: Field survey

Figure - 7



In the query of multilingual support of the OSS for library operations, the 100% respondents opined that any OSS must support the multilingual script. They also opined to incorporate Unicode compatible OSS.

Regarding searching strategy survey was done in following libraries through questionnaire mode as depicted in Table 6.8

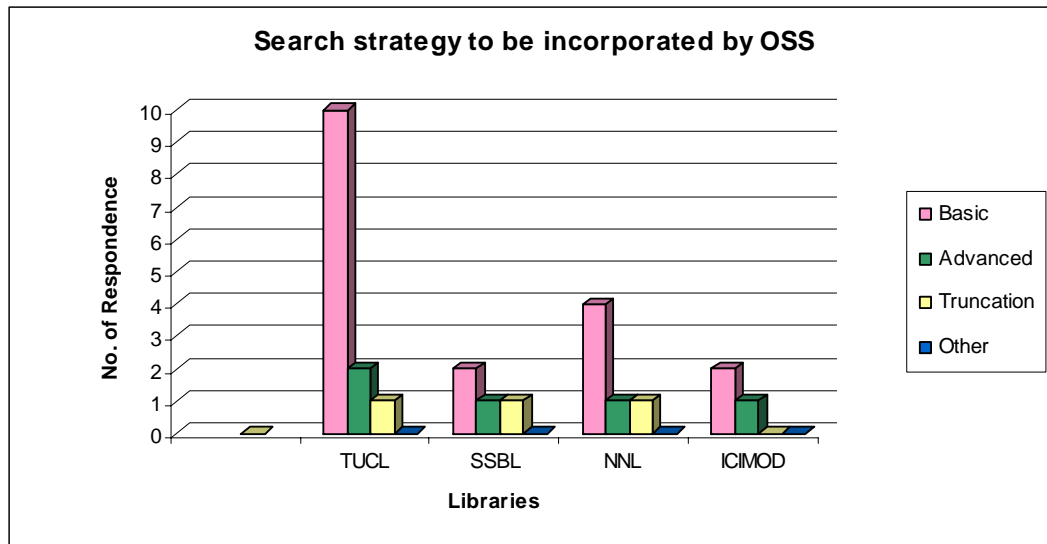
Table 6.8

Search strategy to be incorporated by OSS

SN.	Name of Library	Search strategy			Total	percent
		Basic	Advanced	Truncation/wildcard		
1.	TUCL	10	2	1	13	50
2.	SSBL	2	1	1	4	15
3.	NNL	4	1	1	6	23
4.	ICIMOD	2	1	0	3	12
Total		18	5	3	26	100
Percent		68%	20%	12%	100%	

Source: Field survey

Figure - 8



A question was raised the respondents about their thinking on the search strategy to be incorporated of the OSS. Their response shows that the most desire is Basic Search i.e. 68% followed by Advanced Search i.e. 20%. Very few desires (12%) want to use Truncation/Wildcard and no one desire in other option.

Analyzed data regarding facility of modification and checking is shown in the given below table.

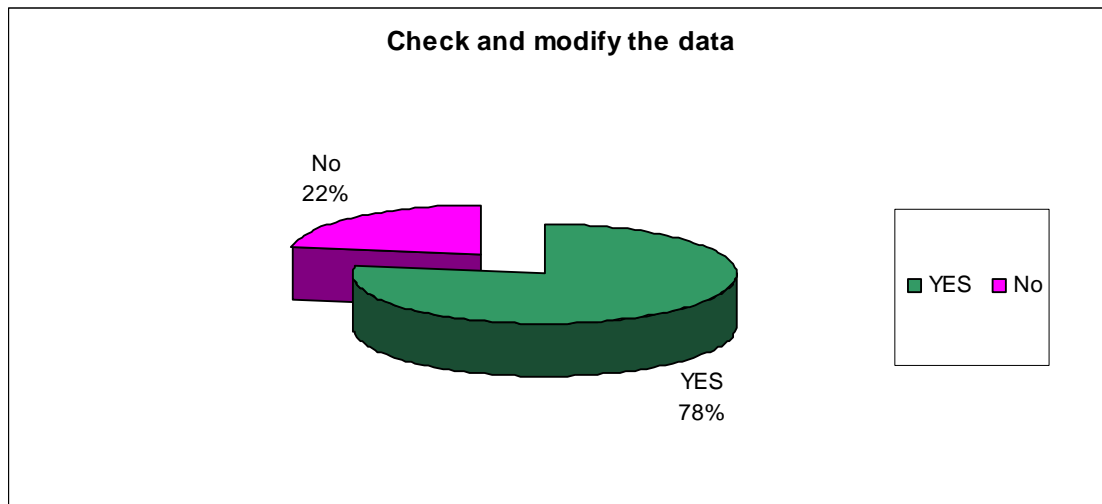
Table No. 6.9

Facility to check and modify the data

SN.	Name of Library	Check and modify the data		Total	percent
		Yes	No		
1.	TUCL	10	3	13	50
2.	SSBL	3	1	4	15
3.	NNL	6	0	6	23
4.	ICIMOD	2	1	3	12
Total		21	5	26	100
Percent		81%	19%	100	

Source: Field survey

Figure - 9



In a query whether the OSS should have check and modify data option, the respondents replied that the OSS should have the provision by 81% whilst 19% opined OSS should not have the option to check and modify the data.

In order to find out the knowledge regarding exporting and importing facility of OSS following data was collected and shown in Table and Pie Chart.

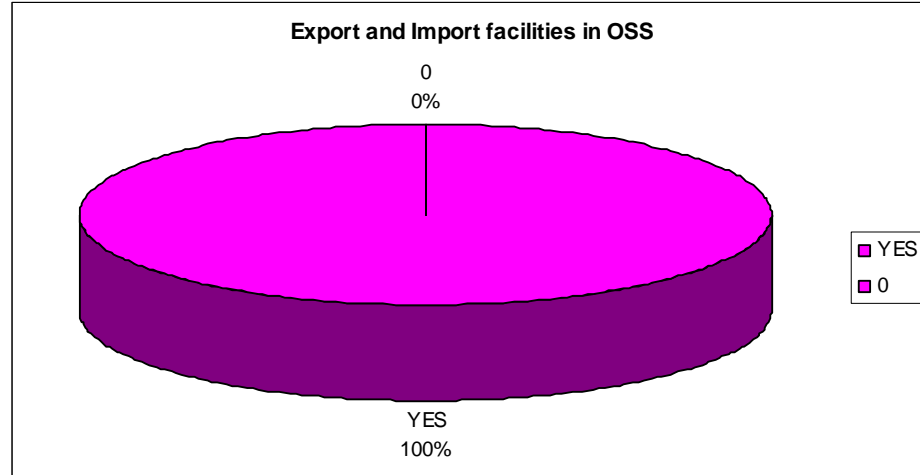
Table No. 6.10

Export and Import facilities in OSS

SN.	Name of Library	Import export provision		Total	percent
		Yes	No		
1.	TUCL	13	0	13	50
2.	SSBL	4	0	4	15
3.	NNL	6	0	6	23
4.	ICIMOD	3	0	3	12
Total		26	0	26	100
Percent		100%	0%	100%	

Source: Field survey

Figure - 10



The researcher has enquired the importance of export and import feature in the OSS from any proprietary and freeware software. The 100% respondents opined any OSS must have Import and Export feature to any software.

Data regarding different customer support services of OSS collected through survey is shown in below Table and Bar Diagram.

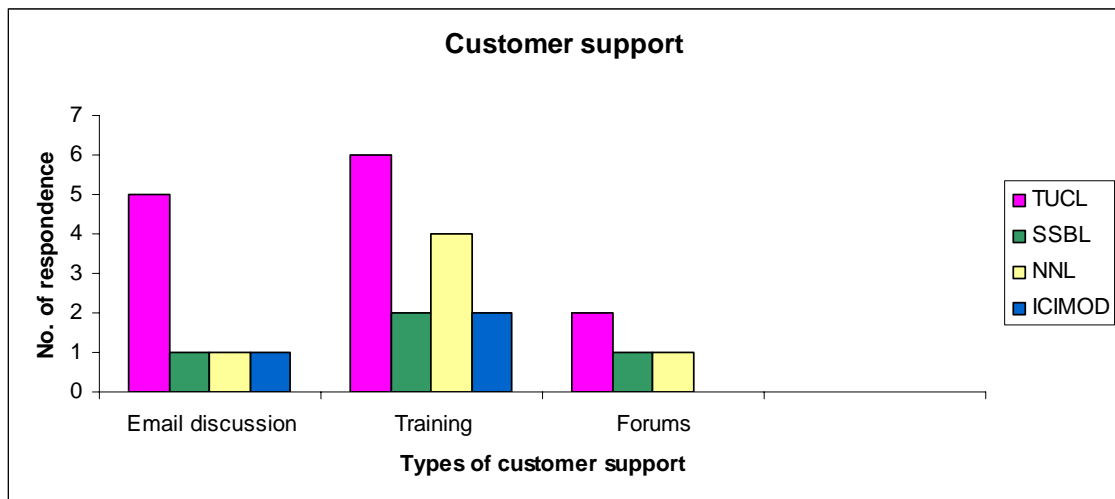
Table No. 6.11

Customer support of OSS

SN.	Name of Library	Customer support			Total	Percent
		Email discussion	Training	Forums		
1.	TUCL	5	6	2	13	50
2.	SSBL	1	2	1	4	15
3.	NNL	1	4	1	6	23
4.	ICIMOD	1	2	0	3	12
Total		8	14	4	26	100
Percent		31%	54%	15%	100%	

Source: Field survey

Figure-11



The above table shows that most of the libraries respondent regarding customer support. Highest number of respondent 14 (54%) wants to train on OSS, 8(31%) wants from E-mail discussion, and 4 (15%) forums were ticked.

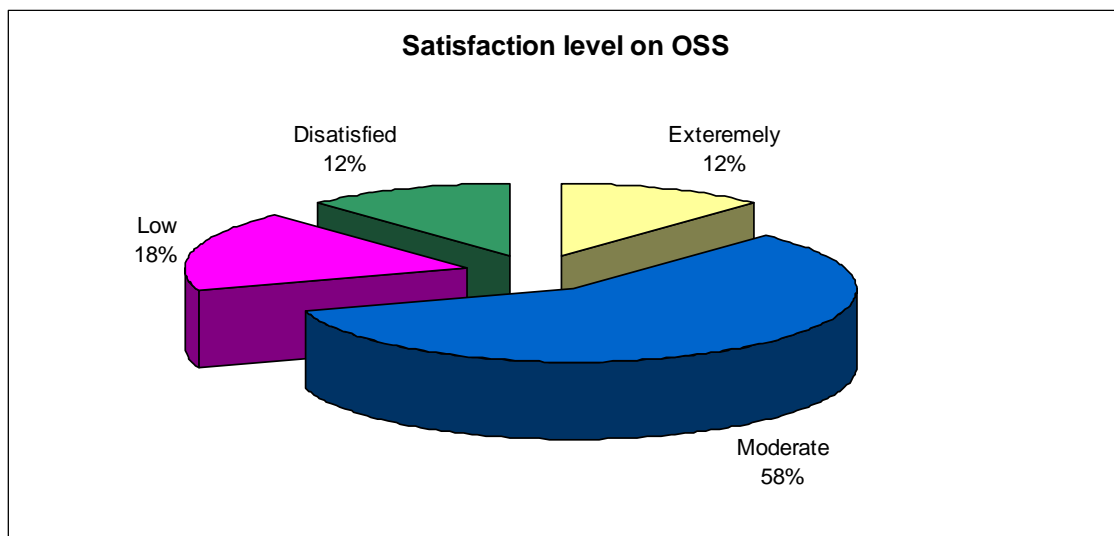
Different level of customer satisfaction with support services of OSS is collected through survey data are given below.

Table 6.12
Service satisfaction level on OSS

SN.	Name of Library	Satisfaction level				Total	percent
		Extremely	Moderate	Low level	dissatisfied		
1.	TUCL	2	7	2	2	13	50
2.	SSBL	1	2	1	0	4	15
3.	NNL	0	4	1	1	6	23
4.	ICIMOD	0	2	1	0	3	12
Total		3	15	5	3	26	100
Percent		12%	58%	18%	12%	100%	

Source: Field survey

Figure - 12



From the questionnaire by respondents about their thinking on satisfaction level using OSS, their response shows most of them are moderately satisfied (58%) with the use of OSS, 12% of total response were extremely satisfied, 18% of total were minimal level and 12% were not satisfied at any case with the use of OSS in there library.

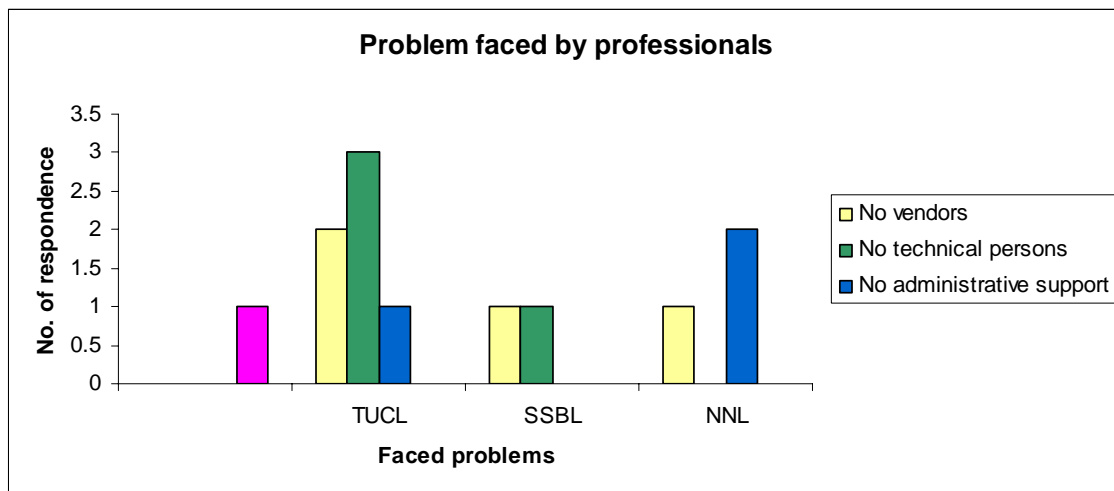
To find out the evaluation of OSS, survey was conducted and collected data is given Table 6.13 and Figure 13.

Table 6.13
Problems faced by library professionals

SN.	Name of Library	Problems faced			Total	Percent
		No vendors	No technical persons	No administrative support		
1.	TUCL	2	3	1	6	55
2.	SSBL	1	1	0	2	18
3.	NNL	1	0	2	3	27
Total		4	4	3	11	100
		36.5%	36.5%	27%	100%	

Source: Field survey

Figure – 13



The researcher has enquired with the respondents whether they are facing with the problems with the OSS. 36.5% showed the problem of lack of vendor and lack of technical human resources where as 27% expressed that their administrative support is poor. They also expressed that they have faced other problems such as software migration (up gradation), customer services, additional plug-ins and purchases, training, lack of user friendliness etc.

6.14 Suggestions of the respondent

The respondents provided suggestions to improve the environment for OSS in Nepal. These are follows:

- OSS should focus normal user and non-techno-savvy (i.e. laymans)persons as well
- High speed internet connectivity should be installed
- OSS should be compatible with proprietary software
- Cost of customization should be nominal
- Software should be user friendly for customization
- Highly technical skilled human resource are requested to manage and for use of OSS.

Chapter – Seven

7. Findings and Conclusion

7.1 Findings

It has been identified from the study that Open Source Software (OSS) is being used in libraries in Nepal. The following OSS software are being used in Nepal:

1. CDS/ISIS, WINISIS
2. KOHA
3. GSDL
4. Open Journal System

Libraries and Open Source both believe that information should be freely accessible to everyone and make the world a better place. Open access is the main philosophy behind both libraries and OSS and sharing information freely with no restriction. Some of the OSS, software which are playing a great role in library automation and management.

- Koha (Library Automation and Management)
- Greenstone (Digital Library)
- OJS (Open Journal System) for Nepali Journal Online (NepJOL)

Koha in Nepal

More than 10 libraries are using Koha. A good number of training and workshop have been conduct to promote Koha by HealthNet Nepal and Tribhuvan University Central Library. Academic, research and special libraries are also using Koha for their library management.

Following libraries are using KOHA in Nepal (arranged alphabetically):

- Health Science Bibliography of Nepal
- Kaisher Library
- Kathmandu Medical College
- Maharajgunj Nursing Campus

- Martin Chautari
- National Academy of Medical Sciences
- Nepal National Library
- Social Science Baha Library
- Tribhuwan University Central Library
- TU IOM Maharajgunj Campus Library
- Nepal Health Resource Council

GSDL in Nepal

The above libraries are also using Greenstone digital library software for the management of e-thesis, dissertation, report, images and also bibliographic record except ICIMOD Library.

OJS in Nepal

Open Journal Systems are using for Nepali Journal Management (Journals publishing online), TUCL are playing vital role to publish online (www.nepjol.info) with the support of INASP/PERI. Now, 51 journals are uploaded and full text open access worldwide.

Authors can upload their papers through the journal's Submissions section. On uploading their submission, they are helped to index their papers and data to ensure the widest possible readership of their work. They can submit their papers, figures, and appendices in a variety of file formats, including Microsoft Word, WordPerfect, or RTF (Rich Text Format). And they can track the progress of their paper through the editorial process.

After setting the options for the journal, the editors manage and track the journal sections and structure, editorial and review process, and the ordering and publishing of each issue. The journal management system helps editors guide a submission through the normal sequence of journal publishing, while providing a complete record of all transactions, as well as prompts and help boxes to guide editors. Each step includes notification and acknowledgement emails that can be edited and sent directly from OJS.

From the study, it has been observed the following:

- TUCL library has more collection and uses CDS/ISIS, KOHA, GSDL and OJS for library management activity.
- Most of the users opt for OPAC and Full Text access in comparison with reservation and circulation activity.
- It has been noticed that CDS/ISIS and KOHA are mainly used by all the libraries under the study.
- It is found that less number of professionals are interested to use the proprietary software. For bibliographic database, most of them are using CDS/ISIS only.
- More number of professionals are interested to use the OSS for OPAC (54%), circulation (27%), Acquisition module (11%) and other modules (8%) only.
- Formats used like CCF, MARC, Dublin core, XML by the professionals for using the OSS for library management activities.
- All the OSS are supporting the multilingual support.
- The search strategy is to be adopted by library professionals for OSS basic (68%), advanced (20%) and truncation / wildcard (12%).
- All the OSS are having the facility to modify, edit and Import /Export facility for the data.
- Customer supports are provided through e-mail discussions, training and by Forums.
- It is found that service satisfaction level is moderate 58%, and dissatisfied 12% only.
- The LIS professionals informed that the problems faced for using the OSS are as lack of vendors, non availability of administrative and technical support.

7.2 Conclusion

With the development of ICT, number of sophisticated software are developed and concepts like LibraryThing, Library2.0, Web2.0, Learning 2.0, Flickr, Facebook and many more are coming up, which will be very useful to satisfy not only the end users but also to make the library operations fast, easy and transparent. Library automation is very much needed in any library. Librarians must aim for integrated software for library automation for their respective libraries. Because there is a strong need to provide web based library and information support services to end users by integrated library software.

More over, during the visit to many libraries of Katmandu Valley, it has been observed that Librarians/information professionals are aware of many professional activities related to library management - library software, library automation, digital library software and their use and also they are interested to digitize their important materials for preservation and remote access. All are interested to build digital library to access every thing at one place and 24*7. But there is lack of IT infrastructure, technically skilled professionals, IT staff, and administrative support. Therefore library professionals are not interested to apply new technology immediately.

The open source software's has brought the revolution in the all the fields of human being and also in the field of libraries/information centers. OSS's given the way for the free flow of information to the end users. Koha is one such software available for free; definitely it fulfills the requirement of any kind library house keeping operations. OSS are becoming more and more user friendly through incorporating various features like easy and integrated access interface, searching and self service facilities.

However, the selection of right OSS is always a difficult task for library managers. Before using any kind of software a requirement analysis should be done in the respective library, as the needs are different levels. The present need, long term requirements, hardware and software requirements, service provided with and customer support from the vendors are important aspects for the evaluating the software.

It is suggested that a consortium may be formed to implement the OSS for library management which will facilitate for co-ordination and co-operation among the LIS professionals. Also the training and the support by the professionals will be better, when it is under consortia. It will also save time, money, staff of the nation and easy to share, access national and worldwide library management activities.

Bibliography

- Airy, Chet Bhadur (1999). *Preparing thesis bibliography with reference to health literature 1995-1998*. Kirtipur: Central department of Library and information science
- Anuradha, K.T. and Sivakaminathan (2009). *Enhancing Full text Search Capability in Library Automation Package: A Case Study with Koha and Greenstone Digital Library Software*, Proceedings of 2009 International Conference on Computer Science and Information Technology, Singapore
- Baitha, Ganesh. (2065). *Kaiser library: New Section and its Services*. In "Kaiser Library: a century (1908-2008)". Kathmandu: Kaiser Library.
- Bretthauer, D. (2002, March). *Open source software: A history*. *Information Technology and Libraries*, 21(1), 3–10. Retrieved May 15, 2008, from <http://www.lita.org/ala/lita/litapublications/ital/2101bretthauer.cfm>
- Chudnov, D. (1999, August). *Open source software: The future of library systems?*
- Cohn, John M. et. all(1998). *Planning for Library Automation: A Practical Handbook*, London, Library Association Publishing.
- DELNET (2008). *An Interactive Workshop on Koha An Open-Source Integrated Library System (ILS): An ideal opportunity for Indian Libraries*, New Delhi
- Dhungana, Janardan (2008). *Application of Digital System for conventional knowledge management in ICIKM*. Kathmandu: Healthnet Nepal and TUCL, Kathmandu.
- Dongarra, J., Golub, G., Grosse, E., Moler, C., & Moore, K. (2006, April). *Twenty-plus years of Netlib and NA-Net, Part I*. *SIAM News*, 39(3), pp. 1, 4. Retrieved May 16, 2008, from

<http://siam.tekdevelopment.com/old-issues/2006/april-2006/twenty-plus-years-of-netlib-and-na-net-part-i>

- Feather, John and Sturge, Paul (ed.) (1997). *International encyclopedia of information and library science*. New Delhi: Routledge, p. 254
- Gautam, Bishwa Raj (2008). *Digital libraries in Nepal: Relevance of digital contents for users and technological competence of the librarian*, Department of Library and Information Science, Tribhuvan University.
- Hornby, A.S. (2005). *Oxford advanced learner's dictionary of current English* (7th ed.). New Delhi: OUP, p. 884.
- Hutchings, F.G.B. (1969). *Librarianship; A Short Manual*. Oxford: Oxford University Press.
- Indira Gandhi National Open University School of Social Sciences, *Computer Basics and Applications*. – New Delhi : Univesity, 1989
- ISO. (1982). *Information transfer* (2nd ed). Geneva: ISO
- Joint, Nicholas, editor. (2006). *Evaluating library software and its fitness for purpose*. *Library Review*, vol. 55 (7) pp. 393-402 (www.emeraldinsight.com accessed on 20.03.2009).
- Khanna, J. K. (1994). *Library and Society*. (2nd ed.). New Delhi: Ess Ess Publication
- Krishnamurthy, M. (2008) *Open access, open source and digital libraries: A current trend in university libraries around the world*: Electronic library and information systems Vol. 42 No. 1, 2008.
- Kumar, P S G *Computerization of Indian Libraries*. – Delhi: B. R. Publishing, 1987.
- Malik, Khalid Mahmood (1994). *The Status of Library Automation in Pakistan*. *Library Review*, vol. 45
- Malwad, NM (March 1995). *Selection criteria for Library Automation Software*. *DESIDOC Bulletin of Information Technology*, vol. 15, (2), pp.17-26

- Mittal, Rekha and G. Mahesh (2008). *Digital libraries and repositories in India: an evaluative study*. Emerald Group Publishing Limited, *electronic library and information systems* Vol. 42 No. 3, 2008 pp. 286-302
- Moczar, L. (2005). *The economics of commercial open source*. Retrieved April 6, 2008, from <http://www.galatea.com/economics.html>
- Morgan, Eric Lease(2003), *Open Source Software in Libraries: A Workshop*
- Muir, S.P. (2005), *An introduction to the open source software issues*, *Library Hi Tech*, Vol. 23 No. 4, pp. 465-8.
- Muir, Scott P (2005). *An Introduction to the Open Source Software Issue*. *Library Hi Tech*, vol. 23 (4), pp. 465-468, (Online resources accessed on 11, 05, 2009).
- Nah Soo Hoe (2006) *Breaking Barriers: The Potential of Free and Open Source Software for Sustainable Human Development: A Compilation of Case Studies from Across the World*, UNDP-APDIP
- Pokheral, Pravas. (2007). How to use a library. In "INFOLIB" Vol.1. No. 1. Kathmandu: LISSA.
- Pokhrel, Reju. (2008). Digital libraries and society. In "International conference on information and Knowledge management (ICIKM-2008)". Kathmandu: Health Net Nepal & TUCL
- Pradhan, Mohan Raj (2008). *Converting CDS/ISIS database records to KOHA in ICIKM*. Kathmandu: HealthNet Nepal & TUCL, p.71
- Pradhan, Mohan Raj, (1995). *Library Automation with Reference to CDS/ISIS Pascal*, Dharan: B.P. Koirala Institute of Health Sciences.
- Pyati, Ajit (2008) his article on "OPEN SOURCE SOFTWARE AND LIBRARIES"
- Randhawa, Sukhwinder(2008) *Open Source Software and Libraries*, *Centre for Research in Rural and Industrial Development (CRRID)*, Chandigarh, India.
- Ranganathan, S.R. (1940). *Reference service and bibliography* (vol. 1). Madras: Madras Library Association

- Rao, Ravichandra I K (1996) *Library Automation*, New Delhi: New Age International
- Raymond, E. S. (2001). *The cathedral and the bazaar*. Sebastopol, CA: O'Reilly.
- Rhyno, A. (2004), *Using Open Source Systems for Digital Libraries*, Libraries Unlimited, London.
- Sharma, S.K. (1993). *Library Computerization; Theory and Practice*. New Delhi: Ess Ess Pub.
- Sharma, Sabitri Devi (2007). Library automation software packages used in academic libraries of Nepal : comparative study, New Delhi, NISCAIR.
- Smecher, Alec. (2008). *Online journal publishing: Global issues*. In "International conference on Information and Knowledge Management (ICIKM-2008)". Kathmandu: Health Net Nepal & TUCL, p. 361.
- Sonker, Sharad Kumar (2000-2001) *Implementation of Koha – An Open Source Library Management Software*, National Center for Science Information Indian institute of science Bangalore, India
- SSBL. (2009). *Social Science Baha Library: An introduction [Leaflet]*. Kathmandu.
- Stallman, R. (2002). *No sir, no monopoly*. Hyderabad, India: Prajasakti Book House.
- Suku, J. and Pillai, Mini G (2005). *Perspectives on Automation of University Libraries in Kerala, Status Problems and Prospects*. (Online Resources Accessed on 06 05, 2007).
- Trainor, Cindi (2009) *Open source, crowd source: harnessing the power of the people behind our libraries*, Emerald Group Publishing. (www.emeraldinsight.com/0033-0337.htm)
- TUCL (2009). *Tribhuvan University Central Library: An introduction [Leaflet]*. Kathmandu.

Venkatarama Reddy, C.S. *KOHA (Integrated Library Management Software): An Open Source Solution for Library Automation*, Librarian, CMR Institute of Technology

Wright, K.C (1996). *Computer Related Technologies in Library Operation*. Vermont: Gower, pp 5-7

Webliography

<http://fossnepal.org/>

<http://opensource.org/history>

<http://sourceforge.net/>

<http://www.emeraldinsight.com>

<http://www.fsf.org>

<http://www.healthnet.org.np/oakn/>

<http://www.ibiblio.org/faq/?sid=1>

<http://www.koha.org>

<http://www.koha.rwjr.com/>

<http://www.kohadocs.org/usersguide/index.html>

<http://www.liblime.com/open-source>

<http://www.newgenlib.com>

<http://www.opensource.org>

<http://www.oss4lib.org>

<http://www.sigb.net/>

http://www.smecc.org/library_automation_tools_for_you.htm

<http://www.unesco.org/cgibin/>

<http://www.verussolutions.biz/http://www.verussolutions.biz/>

http://www.vuw.ac.nz/staff/brenda_chawner/biblio.html

<http://www.unesco.org>

<http://www.doaj.org>

<http://www.icimod.org/library>

<http://www.jstor.org>

<http://www.librarything.com>

<http://www.oaresciences.org>

<http://www.phpmylibrary.org>

<http://www.tucl.org.np>

<http://www.wikipedia.org/>

Appendix – 1

Questionnaires

Dear Librarians/Information professionals,

I am pleased to mention that I am writing my dissertation on “**Open Source Software (OSS) for Library Management- a Study**” for the partial fulfillment of my AIS Course Master Degree. The main objectives of this research are:

- a) To identify and use of different OSS for Library management
- b) To identify the features and capabilities of different OSS for Library Automation and why OSS is existing opportunity for libraries?

I shall be grateful to you for your valuable information, views, and ideas on selected questionnaires including recommendation of OSS for library automation.

Lal Bahadur Chouhan
Student

(AIS-2008-2009), NISCAIR, New Delhi, India.

1. Personal Data

- | | |
|---------------------|----------------|
| a) Your Name(Opt.): | Qualification: |
| b) Designation: | Sex(M/F) |
| c) Address: | |

2. Institutional Information

- a) Name:
- b) Type of Library: Academic/Public/National/Private:
- c) Year of Establishment:
- d) Library Budget (2009/2010 in NRs.):

3. Library Resources:

Categories	No of Items	Categories	No. of Items
Books	Journals
Dissertation	Thesis/ Report
CD-ROMs	Reports

- a) What kind of services users expects from the automated library?
 1. OPAC
 2. Book reservation
 3. Fast circulation
 4. Remote full text access

7. Customer support

- a) How customer should be supported?
 - 1. Email Discussion
 - 2. Training
 - 3. Forums
 - 4. Others
- c) As a customer, are you satisfied with the support service:
 - a. Extremely
 - b. Moderate
 - c. Low level
 - d. Dissatisfied

8. Evaluation

- a) What kind of problems do you face with the library software?
 - 1. Lack of vendors's readability
 - 2. Non availability of technical exports/software specialists?
 - 3. Difficult to use
 - 4. Lack of administrative support

9. If you have any further suggestion for the improvement, development and recommendation of OSS for library automation, please mention briefly.

.....

.....

.....

.....

.....

Thank you