

FREE AND OPEN SOURCE SOFTWARE FOR LIBRARIES

Issues and Problems in Nepal

**A thesis submitted to the Central Department of Library and Information Science,
Tribhuvan University, in partial fulfillment of the requirements for the degree of
Master of Arts in Library and Information Science**

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LETTER OF RECOMMENDATION

This is to certify that the thesis submitted by Pawan Thapa entitled “Free and Open Source Software for Libraries: Issues and Problems in Nepal” is an original work prepared under my supervision and guidance. I, hereby, recommend the thesis for final evaluation.

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LETTER OF ACCEPTANCE

The thesis prepared and submitted by Pawan Thapa entitled “Free and Open Source Software for Libraries: Issues and Problems in Nepal” has been evaluated and accepted as a partial fulfillment of the requirements for the degree of Master of Arts in Library and Information Science.

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ABSTRACT

The thesis entitled “Free and Open Source Software for Libraries: Issues and Problems in Nepal” has been carried out with an objective to investigate issues and problems regarding the use of free and open source software (FOSS) for libraries in Nepal. Different national and international literature has been reviewed during the study. Focus of the study is on the libraries in Nepal regarding the use of FOSS. The study has been conducted inside the Kathmandu Valley with a sample of 9 libraries taken purposively using non-probability sampling method. The study is chiefly based on primary data using questionnaire with few secondary data. The collected data have been presented and analyzed using frequency distribution tables and pie-charts with their detail interpretation. The study reveals that most of the libraries (88.89%) use library specific software for automating the library services and they (66.67%) do have staff with IT knowledge. Moreover, more than half of the libraries (55.56%) also use library specific FOSS. However, more than half of the libraries (55.56%) have never purchased any software and still majority of them (77.78%) are not in a position to purchase any software needed for the automation, so, the use of FOSS could be a viable solution to them. Furthermore, majority of libraries (66.67%) have heard about the FOSS licensing but only few (22.22%) have complete knowledge about it. Majority of libraries (55.56%) think that the cost of implementation of FOSS is very nominal compared to other proprietary software. More than half of the libraries (55.56%) have knowledge about the FOSS developed for library operations. This shows the positive inclination of libraries towards the use of FOSS but still there is a need to initiate different ways to make them informed regarding the FOSS. Also, the perception regarding the FOSS can be considered satisfactory because most of the libraries (66.67%) believe customizability while some (22.22%) believe cost savings as the main benefits of using FOSS. Majority of the libraries (44.45%) believe lack of technical human resources as the main barrier in using FOSS in libraries of Nepal while some (33.33%) opt for the lack of awareness/information about FOSS. Thus, availability of technical human resources along with increasing awareness/information about FOSS should be done at the earliest to make the libraries of Nepal use FOSS.

PREFACE

In today's world, library automation has become a serious urge for managing the library systematically and efficiently for both retrieval and dissemination of information. For the automation of library, generally, it requires adequate budget for proper infrastructure and proficient human-resources. And, most of the Libraries are concerned about cost because they often have more demands than resources, so, they have limited budget to run the library, resulting the lack of either proper infrastructure or proficient human resources. Thus, most of them are forced to operate the library operations manually. In such a situation, one of the viable solutions might be the use of free and open source software (FOSS) because unlike other proprietary software, it does not require huge amount of initial cost and also it enables libraries to have greater freedom in its use. Thus, this study focuses on the issues and problems regarding the use of free and open source software (FOSS) for libraries in Nepal.

The study has been organized into six different chapters. First chapter includes the background information along with statement of the problem, objectives, scope and limitations, significance of the study, definition of terms and organization of chapters. Second chapter reviews some related literature while third chapter includes different topics that are focused in the study. Fourth chapter describes the methodology used for the study. In fifth chapter, collected data has been presented and analyzed and finally in sixth chapter, summary, conclusions and recommendations has been presented.

Since this study has been carried out as a partial fulfillment of the requirements for the degree of Master of Arts in Library and Information Science (MLISc), it does possess some limitations. The study is about the libraries of Nepal but has been carried out inside the Katmandu Valley due to time and budget constraints. However, efforts have been made to make the study precise and clear. Thus, it is hoped that this study will help in assessing the possibility of using FOSS in libraries operating in Nepal so that they could get optimal benefit of the latest technologies.

Pawan Thapa

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TABLE OF CONTENTS

LETTER OF RECOMMENDATION	ii
LETTER OF ACCEPTANCE	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
PREFACE	vi
CATALOGUE	vii
TABLE OF CONTENTS	ix
LIST OF TABLES	xii
LIST OF FIGURES	xiii
ACRONYMS USED	xiv
Chapter 1: INTRODUCTION	
1.1 Background Information	1
1.2 Statement of the Problem	4
1.3 Objectives of the Study	4
1.4 Scope and Limitations of the Study	5
1.5 Significance of the Study	5
1.6 Definition of the terms	6
1.7 Organization of the Chapters	8
Chapter 2: REVIEW OF THE LITERATURE	
2.1 Meaning of ‘Free’ and ‘Open Source’	11
2.1.1 The Free Software Definition	11
2.1.2 The Open Source Definition	12
2.2 FOSS Licenses	13
2.2.1 GNU General Public License (GPL)	14
2.2.2 Lesser GNU General Public License (LGPL)	15
2.2.3 BSD-style Licenses	15
2.2.4 Mozilla Public License (MPL)	16
2.2.5 MIT License	16
2.2.6 Apache License	16

2.3 Brief History of FOSS	17
2.4 FOSS and Libraries	19
2.5 Existing Library Specific FOSS	21
2.5.1 Institutional Repository	21
2.5.2 Integrated Library Systems	22
Chapter 3: FOCUS OF THE STUDY	
3.1 Libraries in Nepal	27
3.2 Library Automation in Nepal	29
3.3 FOSS in Libraries of Nepal	30
Chapter 4: RESEARCH METHODOLOGY	
4.1 Research Design	33
4.2 Population and Sample	33
4.3 Data Collection Procedure	34
4.4 Data Analysis Procedure	34
Chapter 5: PRESENTATION AND ANALYSIS OF DATA	
5.1 Respondents' Profile	35
5.1.1 Nepal National Library	36
5.1.2 Kaiser Library	36
5.1.3 Dilliraman-Kalyani Regmi Memorial Library	36
5.1.4 Kathmandu Valley Public Library	36
5.1.5 Martin Chautari Library	37
5.1.6 Tribhuvan University Central Library	37
5.1.7 Kathmandu University Central Library	37
5.1.8 Social Science Baha Library	37
5.1.9 Madan Puraskar Pustakalaya	38
5.2 Current Status Regarding the Use of Software	39
5.2.1 Use of Software	39
5.2.2 Purchase of Software	40
5.2.3 Ready to Purchase Software	41
5.2.4 Staff with IT Knowledge	42
5.2.5 Use of FOSS	43

5.3 Knowledge about FOSS	45
5.3.1 Knowledge about Licensing of FOSS	45
5.3.2 Knowledge about cost for the Implementation of FOSS	46
5.3.3 Knowledge about FOSS for Libraries	47
5.4 Perception about FOSS	49
5.4.1 Main Benefit of Using FOSS	49
5.4.2 Main Barrier in Using FOSS in Libraries	50
5.4.3 Making Libraries Use FOSS	51
Chapter 6: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	
6.1 Summary	53
6.2 Conclusions	55
6.3 Recommendations	56
References	57
Appendices	62

LIST OF TABLES

Table 5.1:	Respondents' Profile	29
Table 5.2.1:	Use of Software	34
Table 5.2.2:	Purchase of Software	35
Table 5.2.3:	Ready to Purchase Software	36
Table 5.2.4:	Staff with IT Knowledge	37
Table 5.2.5:	Use of FOSS	38
Table 5.3.1:	Knowledge about Licensing of FOSS	40
Table 5.3.2:	Knowledge about Cost for Implementation of FOSS	41
Table 5.3.3:	Knowledge about FOSS for Libraries	42
Table 5.4.1:	Main Benefit of Using FOSS	44
Table 5.4.2:	Main Barrier in Using FOSS in Libraries	45
Table 5.4.3:	Making Libraries Use FOSS	46

LIST OF FIGURES

Figure 5.2.1: Use of Software	34
Figure 5.2.2: Purchase of Software	35
Figure 5.2.3: Ready to Purchase Software	36
Figure 5.2.4: Staff with IT Knowledge	37
Figure 5.2.5: Use of FOSS	38
Figure 5.3.1: Knowledge about Licensing of FOSS	40
Figure 5.3.2: Knowledge about Cost for Implementation of FOSS	41
Figure 5.3.3: Knowledge about FOSS for Libraries	42
Figure 5.4.1: Main Benefit of Using FOSS	44
Figure 5.4.2: Main Barrier in Using FOSS in Libraries	45
Figure 5.4.3: Making Libraries Use FOSS	46

ACRONYMS USED

ARPANET	Advanced Research Projects Agency Network
BSD	Berkeley Source Distribution
DKRML	Dilliraman-Kalyani Regmi Memorial Library
EULA	End User License Agreement
FOSS	Free and Open Source Software
FSF	Free Software Foundation
GNU	GNU's not UNIX
GPL	General Public License
ICT	Information and Communication Technology
ILS	Integrated Library Systems
IT	Information Technology
KL	Kaiser Library
KUCL	Kathmandu University Central Library
KVPL	Kathmandu Valley Public Library
LGPL	Lesser GNU General Public License
MARC	Machine Readable Cataloguing
MCL	Martin Chautari Library
MIT	Massachusetts Institute of Technology
MPL	Mozilla Public License
MPP	Madan Puraskar Pustakalaya
NNL	Nepal National Library
OS	Operating System
OSD	Open Source Definition
OSI	Open Source Initiative
OSS	Open Source Software
SSBL	Social Science Baha Library
TUCL	Tribhuvan University Central Library
WWW	World Wide Web

Chapter 1:

INTRODUCTION

1.1 Background Information

With the development in information and communication technology (ICT), libraries are also using their services for different works. One major change it has brought in libraries and information centers is the accessibility of library resources. Internet, a wonderful advent of ICT, has made the libraries accessible and searchable from a remote location and also helped in sharing of information including the information about the development and availability of different computer software for library use.

Internet is considered as a great information source to the academic and research community and also a great information tool to the library and information centers to supplement their information support to the user community (Jange & Sami, 2006). The Internet is a global network that links multiple networks, and through them, millions of individual computers around the world. It was developed from Advanced Research Projects Agency Network (ARPANET), a United States Department of Defense project in the late 1960s. Research, scientific, and academic communities around the world adopted the Internet first, with commercial use beginning in the late 1990s. Its history is short but the impact of the Internet has been enormous. The development of computers and Internet together produced the technological revolution of the late twentieth century. When the Internet became widely available in the early 1990s, libraries were already using computers for many daily activities (Wilson, 2006). Today, libraries are adapting to operate in a computerized environment. One of the most used Internet service is World Wide Web (WWW) by which the information in the Web's server is browsed. Now-a-days, different software and computer programs are available on the Web for the use in library for different purposes and works; for daily routine works as well as for information storage and retrieval.

Software is a generic term to describe the types of programmes or lists of instructions which are needed to enable computer system to carry out the necessary processing (Kawatra, 2000). Software carries the instructions that tell a computer how to operate. The human authored and human readable form of those instructions is called source code. Before the computer can actually execute the instructions, the source code must be translated into a machine readable (binary) format, called the object code (Sibisi, 2004).

Most software that we all use every day is known as “proprietary,” which, in a nutshell, means that it costs money and that the actual code of the software is restricted, in that the code of the software cannot be modified, copied, or changed from its original construction. The code is “unreadable” and pretty much is what it is (Randhawa, 2008). For most proprietary or closed source programs (such as Windows, WordPerfect, Oracle, Quicken, etc.), the source code is not available for users or programmers to alter. This means that if a user encounters a bug in the closed source program, they will not be able to fix it themselves but must rely on the software vendor to fix the error. As many frustrated users know, this can often take a very long time (Crawford, 2004). Unlike proprietary software, free and open source software (FOSS) is software for which the source code is freely available. Moreover, FOSS licenses the users not only to view the source code of the software but also to modify, distribute and use it for any purpose (Wheeler, 2007).

FOSS has grown tremendously in scope and popularity over the last several years (Altman, 2001), and is now firmly established itself as a viable alternative to proprietary software in many areas of ICT deployment (Hoe, 2006). The availability of FOSS without licensing fees and with source code, along with the fundamental freedom of being able to use, distribute, modify and redistribute the modifications made to a software released as FOSS, has been responsible for its widespread acceptance and adoption. There are wide range of FOSS projects from simple game to enterprise-level software applications for downloads (Altman, 2001). FOSS has been popular among the FOSS users and developer communities, who can use and tailor the software according to their requirements.

FOSS has become an international phenomenon, moving from relative obscurity to being an established movement. However, there is still a lack of understanding about what really constitutes FOSS. Most people not only don't understand the technical differences between proprietary and open software, they don't realize how those differences radiate outwards (Bollier, 2002). To be clear, there are several things FOSS is not – it is not shareware, public-domain software, freeware, or software viewers and readers that are made freely available without access to source code. Shareware, whether or not one registers it and pays the registration fee, typically allows no access to the underlying source code. Unlike freeware and public-domain software, FOSS is copyrighted and distributed with license terms designed to ensure that the source code will always be available. While a fee may be charged for the software's packaging, distribution, or support, the complete package needed to create files is included, not simply a portion needed to view files created elsewhere (Bretthauer, 2002).

FOSS is of potential interest to librarians because libraries might save money by using it, they may customize it, and most of all, FOSS community and librarians share the same values of equal access and freedom of information (Riewe, 2008). There are a number of reasons that libraries, in particular, may prefer to use FOSS over commercial software: preservation, privacy and auditing, community resources, and open standards. The most popular FOSS projects produce software that is quite often more stable, secure, auditable, and extensible than commercial alternatives. Using FOSS also makes the preservation of digital objects easier and less risky. Moreover, using FOSS guarantees that the standards and protocols used in the library will always be open to examination, and helps the library community to build upon previous successes (Altman, 2001).

There are a number of areas within libraries where FOSS tools are often used, and can be deployed or adapted to improve the quality of experience by librarians and patrons alike. These include the operating systems that run our computers, the desktop productivity applications that we use, our institutional repositories, library information systems, and various web and distributed applications (Keats, 2008).

Despite the case for open source solutions in libraries, and some heroic work on the part of some libraries and librarians to create, support, and propagate open source solutions, the movement has not caught on within our community. This is clearly demonstrated by the relative absence of open source products in libraries (Jaffe & Careaga, 2007). Most libraries that use computers probably use Microsoft Windows as their client-side operating system for library staff. Much of the word processing that is done in these libraries is probably done on Microsoft Word and library staff probably use Access or Excel to create small databases and spreadsheets for managing the library's expenses or monthly statistics. There are, of course, open source alternatives to all these but, as of yet, none have really made much inroads into the mainstream library (Clarke, 2000). The situation gets even worse in case of the libraries in developing countries including Nepal where most of the libraries are operating in the same traditional way due to the lack of proper infrastructure like adequate budget, human resources and awareness, etc.

1.2 Statement of the Problem

Library automation is fairly new in the context of Nepal where majority of the libraries, generally, lack adequate budget to run which restrict them from using the latest available technologies for the automation of library operations. Though, library automation has become a serious urge for managing the library systematically and efficiently for both retrieval and dissemination of information, most of the libraries in Nepal are still compelled to operate the library operations manually. In such a situation, the viable solution for libraries of Nepal could be the use of FOSS as it is generally thought to cost less than other proprietary software. However, libraries of Nepal, except some, lack adequate information and knowledge about the library automation along with new trends and standards in the field of library and information science. And the adoption of FOSS is never going to be easy for the libraries due to many impediments like less ease of use and more need for technical expertise. Many libraries simply do not have the in-house expertise to support FOSS development, and also don't have the ability to train staff on the use of the new technologies. The materials costs of FOSS are low, but the labor costs of FOSS might be higher. Thus, the study is mainly focused on the following research problems:

- i. What is the status of libraries in Nepal regarding the use of software?
- ii. What knowledge and awareness do the libraries in Nepal possess about FOSS?
- iii. What is the perception of libraries regarding the use of FOSS?

1.3 Objectives of the Study

The main objective of the study is to investigate issues and problems regarding the use of free and open source software (FOSS) for libraries in Nepal. Specifically the objectives of the study can be listed as follows:

- i. To be acquainted with the current status of libraries in Nepal regarding the use of different computer software.
- ii. To measure the knowledge and awareness of libraries of Nepal about the free and open source software (FOSS).
- iii. To identify the perception of libraries in Nepal regarding the use of free and open source software (FOSS) in libraries.

1.4 Scope and Limitations of the Study

This study is at most an exploratory investigation into the issues and problems of FOSS use in libraries of Nepal. The study has been conducted inside the Kathmandu Valley with only 9 libraries taken as a sample purposively. The study was conducted during the period of August – September, 2010.

There are some limitations that need to be acknowledged and addressed regarding the present study. The literature regarding the current status of FOSS use in Nepal is not extensive enough. Another limitation has to do with the extent to which the findings can be generalized beyond the samples studied. As, the study has been conducted inside the Kathmandu Valley with 9 libraries taken purposively as a sample, which may not reveal the true picture of the libraries operating in Nepal as a whole. Thus, the sample size is too small for broad generalizations.

1.5 Significance of the Study

Libraries are concerned about cost because they often have more demands than resources. Thus, majority of libraries have limited budget to run the library resulting the lack of either proper infrastructure or proficient human resources. To introduce ICT in the libraries, they generally need adequate budget, trained and proficient human-resources, awareness/information about current library trends, etc. And, most of the libraries in Nepal lack these indispensable pre-requisites; so, they can hardly use expensive automation systems. Thus, they are compelled to operate the library operations manually.

If libraries can serve their users' needs at a lower cost by using FOSS rather than proprietary software, it would be in their interest to adopt it. Minimally funded libraries, such as small libraries and libraries in rural areas and developing countries, may find FOSS affordable. Thus, this study would help in assessing the possibility of using FOSS in libraries so that they can get optimal benefit of the latest technologies.

Furthermore, it would also help to make understand the meaning of free and open source software (FOSS) by examining the specific meanings of free software and open source software (OSS) and their licenses. Libraries planning to migrate into automation could benefit from the findings. Further empirical evaluations, however, are needed to replicate the findings in different contexts and surroundings.

1.6 Definition of the terms

) **Closed-source software**

Closed-source software is software which source cannot be inspected or modified by other parties without negotiations with the holder of the copyright. Closed-source may be freely available for use (e.g., freeware software: you can use it, but source is not available).

) **Copyleft**

Describes the practice of using copyright law to offer the right to distribute copies and modified versions of a work. Copyleft requires the same rights be preserved in modified versions of the work.

) **Copyright**

Copyright is the exclusive privilege of an individual or of an organization to reproduce, distribute, perform, or display their creative works.

) **Free and open source software (FOSS)**

Software liberally licensed to grant users the right to use, study, change, and improve its design through the availability of its source code.

) **Free Software**

Free software is software that may be viewed, used, copied, modified, and redistributed. The source code is open to view. These freedoms are ensured by a reciprocal or “copyleft” license, which extends the freedoms to copies, identical or modified, of the software. Free software cannot be included in proprietary software. Any software that includes free software must also be free software. There is no restriction on what may be charged or not charged for free software; it may be and often is distributed at no cost. GNU/Linux is an example of free software.

) **Freeware**

Freeware, not to be confused with free software, is software that costs nothing. It is distributed in binary form without the source code, often available by download from the Web. Freeware may be proprietary software, copyrighted and licensed.

Users are restricted from modifying the software, although redistribution may be permitted. The Adobe Acrobat Reader is an example of freeware.

) **Open Source Software (OSS)**

Open source software (OSS) is for practical purposes the same as free software. Open source and free software are often licensed by the same licenses, such as the GNU General Public License. However, some open source licenses do not ensure all the freedoms that free software licenses do, such as the reciprocal clause. The difference between open source and free software is mostly one of emphasis. Free software emphasizes the user's right to freedom, and open source software emphasizes viewable source code. Sun Microsystem's Java is an example of open source software.

) **Proprietary software**

Proprietary software is owned by someone who has the exclusive right to distribute the software. The software is copyrighted. Transfer of use of the software is by a license, often called an End User License Agreement (EULA), which is a legal contract that specifies the terms of use. A license to use proprietary software generally does not permit copying the software. The software is distributed in compiled binary form and the source code is not revealed to users. Microsoft Word is an example of proprietary software.

) **Public Domain Software**

Public domain software is the simplest type of software as intellectual property. This software is not copyrighted and has no restrictions. Copies or modified copies of public domain software can be copyrighted. Thus public domain software can be taken out of the public domain and made proprietary.

) **Shareware**

Shareware is the same as freeware, except that shareware is available for a limited time period at no cost, after which it ceases to function unless a payment is made. WinZip file compression software, which has a 45-day evaluation period, is an example of shareware.

1.7 Organization of the Chapters

This study has been organized in six different chapters. The headings of each chapter are as follows:

Chapter one contains the introduction of the study. This chapter introduces with the background of the study including the problem, objectives, limitations and significance of the study along with the definition of terms and organization of the chapters.

Chapter two contains review of literature. Different books, articles, journals and past researches were collected during the study. Out of them, those literatures relating to the subject matter of this study have been reviewed in this chapter.

Chapter three, focus of the study, discusses the specific topics which are mainly focused by the study. Here, the topics and subjects which are the main focus of the study are explained so as to make clear their meanings.

Chapter four contains research methodology. Here, the methodology used in the study to meet the predefined objectives has been discussed in different subheadings like-research design, population and sample, data collection procedure, and data analysis procedure.

Chapter five contains presentation and analysis of data. This chapter is the main part of the study where the data collected during the study have been tabulated and analyzed with detail interpretation. The conclusions and recommendations are based on this chapter.

Chapter six contains summary, conclusions and recommendations. This chapter concludes the study with brief summary and conclusions. Then, recommendations developed from the study have been included followed by the References and Appendices.

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Chapter 2:

REVIEW OF THE LITERATURE

2.1 Meaning of ‘Free’ and ‘Open Source’

Free and open source software (FOSS) is a hybrid term comprising of two different terms namely “Free Software” and “Open Source Software.” Both the terms and their licenses have the common motive that the software may be freely modified and subsequently redistributed, and it must be available to anyone to use for any purpose. However, Wheeler (2007) argues that those who use the term “Open Source Software” tend to emphasize technical advantages of such software (such as better reliability and security), while those who use the term “Free Software” tend to emphasize freedom from control by another and/or ethical issues.

2.1.1 The Free Software Definition

The Free Software Foundation (FSF) maintains a formal definition of free software. “Free software” is a matter of liberty, not price, “free” as in “free speech,” not as in “free beer.” Free software is a matter of the users’ freedom to run, copy, distribute, study, change and improve the software. More precisely, it means that the program’s users have the four essential freedoms:

-) The freedom to run the program, for any purpose (freedom 0)
-) The freedom to study how the program works, and change it to make it do what you wish (freedom 1).
-) The freedom to redistribute copies so you can help your neighbor (freedom 2).
-) The freedom to distribute copies of your modified versions to others (freedom 3).

A program is free software if users have all of these freedoms. Thus, you should be free to redistribute copies, either with or without modifications, either gratis or charging a fee for distribution, to anyone anywhere. Being free to do these things means (among other things) that you do not have to ask or pay for permission to do so (FSF, 2010).

2.1.2 *The Open Source Definition*

The Open Source Initiative (OSI) maintains the open source definition (OSD). According to OSI, open source doesn't just mean access to the source code. The distribution terms of open-source software must comply with the following criteria:

) Free Redistribution

The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.

) Source Code

The program must include source code, and must allow distribution in source code as well as compiled form. Where some form of a product is not distributed with source code, there must be a well-publicized means of obtaining the source code for no more than a reasonable reproduction cost preferably, downloading via the Internet without charge. The source code must be the preferred form in which a programmer would modify the program. Deliberately obfuscated source code is not allowed. Intermediate forms such as the output of a preprocessor or translator are not allowed.

) Derived Works

The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.

) Integrity of The Author's Source Code

The license may restrict source-code from being distributed in modified form *only* if the license allows the distribution of "patch files" with the source code for the purpose of modifying the program at build time. The license must explicitly permit distribution of software built from modified source code. The license may require derived works to carry a different name or version number from the original software.

) No Discrimination Against Persons or Groups

The license must not discriminate against any person or group of persons.

) No Discrimination Against Fields of Endeavor

The license must not restrict anyone from making use of the program in a specific field of endeavor. For example, it may not restrict the program from being used in a business, or from being used for genetic research.

) Distribution of License

The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.

) License Must Not Be Specific to a Product

The rights attached to the program must not depend on the program's being part of a particular software distribution. If the program is extracted from that distribution and used or distributed within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.

) License Must Not Restrict Other Software

The license must not place restrictions on other software that is distributed along with the licensed software. For example, the license must not insist that all other programs distributed on the same medium must be open-source software.

) License Must Be Technology-Neutral

No provision of the license may be predicated on any individual technology or style of interface. (OSI, 2010).

2.2 FOSS Licenses

Software is a unique technology, in that it comprises rights that are protectable under copyright law, patent law, and trade secret law. These multiple protections arise because software can be both a work of authorship as well as a business process (Classen, 2007). Software licensing is a contract of agreement between the software publisher and the end user, sometimes referred to as the *End User License Agreement*, or EULA. Though software licensing can be a paper agreement, it is most often imbedded in the software itself as part of the installation process. Most notably, software licensing protects the copyright by placing restrictions on the end user in relation to the product (Kayne, 2010).

FOSS are programs whose licenses give users the freedom to run them for any purpose, to study and modify them, and to redistribute copies of either the original or modified programs without having to pay royalties to original developers (Wheeler, 2007). Thus, the easiest way to identify FOSS is by license. Both the Free Software Foundation (FSF) and the Open Source Initiative (OSI) maintains lists of licenses that they consider acceptable. These licenses have two chief concerns: specifying the rights of people to use and modify the software, and explaining how modified works based upon the software can be distributed -- whether under the same license or a different one (Byfield, 2010).

Furthermore, the Free Software Foundation (FSF) categorizes the FOSS licenses in the following ways:

- ***Public domain software*** – the copyright has expired, the work was not copyrighted or the author has released the software onto the public domain. Since public-domain software lacks copyright protection, it may be freely incorporated into any work, whether proprietary or free.

- ***Permissive licenses***, also called BSD-style because they are applied to much of the software distributed with the BSD operating systems. The author retains copyright solely to disclaim warranty and require proper attribution of modified works, and permits redistribution and any modification, even proprietary ones.

- ***Copyleft licenses***, the GNU General Public License being the most prominent. The author retains copyright and permits redistribution and modification provided all such redistribution is licensed under the same license. Additions and modifications by others must also be licensed under the same “copyleft” license whenever they are distributed with part of the original licensed product (Gonzalez, 2009).

There are many FOSS licenses, and they may differ from each other in major ways. However, the majority of FOSS falls under a small set of licenses. The most popular of these licenses are: GNU GPL, GNU LGPL, BSD-style Licenses, MPL, MIT License, and Apache License.

2.2.1 GNU General Public License (GPL)

The GNU’s General Public License, or GPL, is one of the foundation open source licenses. Created by the Free Software Foundation (FSF), which has made many contributions to open source coding, it is the preferred license for projects authorized by the FSF, including the GNU Emacs Editor and the GNU C Compiler, among literally scores of others, including the GNU/Linux kernel (St. Laurent, 2004).

GNU is a computer operating system composed entirely of free software. Its name is a recursive acronym for GNU's Not Unix; it was chosen because its design is Unix-like, but differs from Unix by being free software and by not containing any Unix code. The GNU GPL is the GNU Project's licensing implementation of the Copyleft concept, conceived by Richard Stallman in 1983. While copyright provides a monopoly on the right to create copies and derivative works, Copyleft grants unlimited permission to copy and modify the licensed source code. More importantly, Copyleft creates an obligation to distribute, without fee or additional license terms, the source code to all derivative works (Stallman, 1985).

2.2.2 Lesser GNU General Public License (LGPL)

Another popular GPL variant is the Lesser GNU General Public License (LGPL). Also available in versions 2 & 3, the LGPL differs from the GPL in that it allows the linking of software licensed under it to non-GPL software. Originally designed for use with programming libraries, the LGPL is also a popular choice for dual-licensed software by commercial companies. By contrast, the Free Software Foundation (FSF) considers the LGPL a compromise that should be used sparingly (Byfield, 2010).

The C-language library provided with Linux systems is an example of LGPL'ed software – it can be used to build proprietary programs, otherwise Linux would only be useful for free software authors. An instance of an LGPL-ed program can be converted into a GPL-ed one at any time. Once that happens, you can't convert that instance, or anything derived from it, back into an LGPL-ed program (Perens, 1999).

2.2.3 BSD-style Licenses

The BSD License is a class of extremely simple and very liberal licenses for computer software that was originally developed at the University of California at Berkeley. It was first used in 1980 for the *Berkeley Source Distribution* (BSD), also known as BSD UNIX, an enhanced version of the original UNIX operating system that was first written in 1969 by Ken Thompson at Bell Labs (LINFO, 2004a).

It is easy to follow the BSD License template to create one's own license by changing the values of owner, organization and year, which appear in the copyright notice and the license. Unlike the GNU GPL and the LGPL, BSD style licenses are not copyleft licenses. A BSD License allows people to freely distribute and modify the original work, but it does not require that the modified works be as free as the original work. BSD style licenses are relatively simple and have only limited restrictions on the use of the software.

The original BSD License (four-clause BSD) has an advertising clause. The revised BSD License (three-clause BSD) is very similar to the MIT License, but the latter does not have the “no endorsement for derivative works” clause. There is also the two-clause BSD, which has taken away the endorsement clause and is most similar to the MIT License (Chen, 2006).

2.2.4 Mozilla Public License (MPL)

MPL constitutes an interesting hybrid of the ideas of the GPL and the BSD licenses. While code that falls within the scope of what the license describes as “Covered Code” is subject to many of the restrictions present in the GPL, such as the requirement that it be made available in open source form. The MPL also permits the use of such “Covered Code” in “Larger Works,” meaning that MPL-licensed code can be combined with code licensed under another license which is expressly prohibited by the GPL and permitted by the BSD license. The MPL establishes something of a middle ground between the two licenses (St. Laurent, 2004).

2.2.5 MIT License

The MIT License is a very liberal software license that was originally developed at the Massachusetts Institute of Technology (MIT). It is similar to the BSD license, but the main difference is that BSD-style licenses sometimes contain a clause prohibiting the use of the name of the copyright holder in promotions without permission. According to the Free Software Foundation (FSF), the MIT License is more accurately called the *X11 license*, since MIT has used many licenses for software and this particular license is the same that was used for the X Window System. Because the MIT License is not copyrighted, in contrast to the GPL, other developers are free to modify it to suit their own requirements (LINFO, 2004b).

2.2.6 Apache License

The Apache License is a free software license authored by the Apache Software Foundation. The Apache License requires preservation of the copyright notice and disclaimer, but it is not a copyleft license — it allows use of the source code for the development of proprietary software as well as free and open source software.

Beginning in 1995, the Apache Group (later the Apache Software Foundation) released successive versions of their well-known httpd server. Their initial license was

essentially the same as the old BSD license, with only the names of the organizations changed. When Berkeley accepted the argument put to it by the Free Software Foundation (FSF) and retired their *advertising clause* from the BSD license, Apache did likewise and created the Apache License v1.1 - a slight variation on the modified BSD License. In 2004 Apache decided to depart from the BSD model a little more radically, and produced the Apache License v2 (Wilson, 2005).

2.3 Brief History of FOSS

In the early days of computing (approximately 1945 to 1975), computer programs were often shared among developers, just as FOSS practitioners do now (Wheeler, 2007). With the rise of commercial computing in the 1960s and 1970s, most software became proprietary, and sharing source code was largely restricted to computer science academics and students. Throughout the 1970s, publishing source code for educational purposes continued. AT&T's development of Unix was the next major event in FOSS. Initially, the source code for Unix, which was developed at AT&T's Bell Labs in 1969, was distributed to universities and research institutes for a nominal fee. The licensing terms allowed the software to be modified and redistributed to organizations who held an AT&T license. The University of California at Berkeley was able to use its experience with this to develop a freely-redistributable version of Unix (commonly known as BSD Unix for Berkeley Software Distribution). Licensing issues that occurred as a result of the commercial release of Unix following the breakup of AT&T in the 1980s, and a subsequent lawsuit, led to the Berkeley-based project being disbanded in 1995. BSD Unix lives on, though, in several variations, and is the foundation of the latest Macintosh operating system, Mac OS X (Chawner, 2005).

The idea of FOSS as we know it now began with the development in the early 1980's of the concept of "free software" by Richard Stallman. In 1983, Richard Stallman, longtime member of the hacker community at the MIT Artificial Intelligence Laboratory, announced the GNU project, saying that he had become frustrated with the effects of the change in culture of the computer industry and its users. Software development for the GNU operating system began in January 1984, and the Free Software Foundation (FSF) was founded in October 1985. An article outlining the project and its goals was published in March 1985 titled the GNU Manifesto. The manifesto also focused heavily on the

philosophy of free software. He developed The Free Software Definition and the concept of “copyleft,” designed to ensure software freedom for all (Serving History, n.d.).

In 1991 Linus Torvalds, then an undergraduate student at the University of Finland, was the initiator of what is commonly regarded as the FOSS community’s most significant achievement, the Linux operating system. Torvalds’ initial motivation for the project was personal—he wanted to run a Unix-like operating system on his new 386 computer, and started writing an operating system kernel. He gives two reasons for releasing it as free software: first, he disliked shareware, feeling guilty for not paying the fees, and second, he disliked the nominal fees charged for Minix, a Unix compatible operating system (Moody, 2002).

In 1997, Eric Raymond published ‘The Cathedral and the Bazaar,’ a reflective analysis of the hacker community and free software principles. The paper received significant attention in early 1998, and was one factor in motivating Netscape Communications Corporation to release their popular Netscape Communicator Internet suite as free software. This code is today better known as Mozilla Firefox and Thunderbird (Serving History, n.d.). In 1998, in response to Netscape’s release of its Netscape Navigator code as FOSS, a group of FOSS developers came together and the label “Open Source” was created. This led to the formation of the Open Source Initiative (OSI) and the Open Source Definition. The primary purpose of this initiative was to get the corporate world to pay attention to the FOSS development process and steer a path away from the “confrontational” attitude of the Free Software movement (Wong & Sayo, 2004).

By the end of the 1990s, the FOSS process had proved its viability as a means for building complex software packages that could compete successfully with proprietary products, and in an increasing number of IT market segments, from low-end embedded processing applications to grid-based supercomputing. Companies as diverse as GNU/Linux distributor Red Hat and traditional IT giant IBM have learned how to generate sustained profits by providing services using various kinds of FOSS. It is now clear that there are at least two discrete models for organizing the production of software. Both appear to be sustainable. Today Governments, businesses and almost anyone who uses software can make choices, and will need to make choices, between and among products generated through both processes of building software (UNESCO, 2004).

2.4 FOSS and Libraries

The library community has been a-buzz of late about FOSS. The air is thick with wildly divergent opinions of its value and utility for libraries even as wikis, blogs, conferences and journal articles about FOSS flood the library attention-economy. FOSS in libraries and information management has become popular since 1999 (Chawner, 2004). Open Source Software for Libraries (oss4lib) portal (<http://www.oss4lib.org>), originally set up in 1999, listed 80 software projects for the libraries in 2003 (Chawner, 2004), and listed some 90 software related to libraries around mid 2005 (Chawner, 2005). The growth of FOSS has gained the attention of research librarians (Frumkin, 2002) and created new opportunities for libraries. Many librarians are now considering FOSS because of its lower purchase costs than those for comparable commercial software (Altman, 2001). And thus, libraries can save large initial costs of the library systems and can save the recurring large subscription fees required for the proprietary library systems (Randhawa, 2008).

Not only cost is the major issue while using the proprietary software, but there exist many other issues such as vendor lock-in, lack of openness of source code of the software, and problems in migration of records from one system into another system. But it doesn't mean that using FOSS doesn't involve any cost. There involves other costs while using FOSS such as to train library staff to use the software, to customize or modify the software according to the needs of the library, to purchase servers, and to migrate the library records into open source library systems (Jaffe & Careaga, 2007). But, compared to proprietary or commercial software alternatives, deploying the FOSS projects get much cheaper, because users don't have to pay the initial software cost and recurring large subscription cost of the system to the vendors (Riewe, 2008) and start-up cost is usually low while using FOSS (Altman, 2001). Also, FOSS projects can be deployed into more than one machine without paying extra licensing cost of the software and FOSS can also be redistributed to others by modifying or updating the features of the software (Chawner, 2004). The main benefits of most of the FOSS being the free of cost, other benefits of FOSS are freedom to study, use, test, redistribute, and modify the software according to the needs of user (Wheeler, 2007).

Hence, apart from zero cost of software, the free in FOSS refers to freedom to use (Keats, 2008) and tailor the software according to the needs of users. Most of the FOSS projects are backed by large developer community and support for the software can be obtained from the active mailing lists and respective Internet Relay Chat (IRC) channels. There exists a wide range of quality FOSS projects which are available for downloads from

the SourceForge (<http://sourceforge.net/>) and freshmeat (<http://freshmeat.net/>). The most popular FOSS projects produce software that is generally stable, secure, auditable, and extensible compared to commercial alternatives, and by using the FOSS guarantees that the standards and protocols used in the libraries will always be open to examination and easy to migrate from one system to another easily (Altman, 2001). Open Source Integrated Library Systems (ILS) such as Evergreen and Koha are gaining popularity among the libraries around the world for their software quality and large communities supporting these FOSS projects and Open Source digital repository management software such as Fedora, DSpace, EPrints, Greenstone, etc. are also rapidly gaining popularity in the libraries.

Besides the cost of software, there exist some challenges while using the FOSS in libraries. As FOSS applications are hard to deploy as compared to proprietary systems, in order to test, deploy and modify the FOSS-ILSs, library must possess skilled IT personnel having expertise in system administrations, especially in Linux OS and database systems, and at least some knowledge of programming or shell scripting languages. But, these days, even if library doesn't have in-house expertise, the library can still benefit from FOSS by hiring consultant or experts from another library to modify the open source library system to customize according to the needs of the library. But, modification of proprietary software is not possible because the vendor of the software doesn't provide source code of the applications and if the library needs any crucial feature in the proprietary software, the library must wait until the vendor release the next version having that feature (Corrado, 2005).

Apart from some challenges, there are many good prospects while using FOSS in libraries, such as open data standards, sharing of expertise gained by libraries in solving problems, resource sharing, and support from developer communities (Morgan, 2003). Sharing the problems inside the library communities or mailing list can have quick response time than from the vendor of proprietary systems (Clarke, 2000). Also, creation or customization of library systems by or for the librarians can create software more attuned to the specific needs of libraries (Pyati, 2007).

2.5 Existing Library Specific FOSS

There are a number of areas within libraries where FOSS tools are often used, and can be deployed or adapted to improve the quality of experience by librarians and patrons alike. These include the operating systems that run our computers, the desktop productivity applications that we use, our institutional repositories, library information systems, and various web and distributed applications (Keats, 2008). However, the library specific software can be of following types where FOSS can be used:

2.5.1 Institutional Repository

An Institutional Repository (or Digital Repository) can be thought of an online system for collecting, preserving, and disseminating the research and other output of an institution in digital form. Assets lodged in such repositories include preprints of research articles, post publication prints, electronic theses and dissertations as well as other digital materials produced in the institution. FOSS tools to support institutional repositories are available, and excel over any proprietary alternatives. Some of the popular Institutional Repository FOSS are as follows:

) **Greenstone** <<http://www.greenstone.org>> is a suite of software for building and distributing digital library collections. It provides a new way of organizing information and publishing it on the Internet or on CD-ROM. Greenstone 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. It is open-source, multilingual software, issued under the terms of the GNU General Public License. The aim of the Greenstone software is to empower users, particularly in universities, libraries, and other public service institutions, to build their own digital libraries. Digital libraries are radically reforming how information is disseminated and acquired in UNESCO's partner communities and institutions in the fields of education, science and culture around the world, and particularly in developing countries.

) **DSpace** <<http://www.dspace.org>> is the software of choice for academic, non-profit, and commercial organizations building open digital repositories. It is free and easy to install "out of the box" and completely customizable to fit the needs of any organization. DSpace preserves and enables easy and open access to all types of digital content

including text, images, moving images, mpegs and data sets. And with an ever-growing community of developers, committed to continuously expanding and improving the software, each DSpace installation benefits from the next.

) **EPrints** <<http://www.eprints.org/>> is developed at the School of Electronics and Computer Science, University of Southampton, UK. It is the most flexible platform for building high quality, high value repositories, recognized as the easiest and fastest way to set up repositories of research literature, scientific data, student theses, project reports, multimedia artifacts, teaching materials, scholarly collections, digitized records, exhibitions and performances.

) **Fedora** (Flexible Extensible Digital Object Repository Architecture) <<http://fedora-commons.org/>> was originally developed by researchers at Cornell University as an architecture for storing, managing, and accessing digital content in the form of digital objects inspired by the Kahn and Wilensky Framework. Fedora defines a set of abstractions for expressing digital objects, asserting relationships among digital objects, and linking “behaviors” (i.e., services) to digital objects. The Fedora Repository Project (i.e., Fedora) implements the Fedora abstractions in a robust open source software system. Fedora provides a core repository service (exposed as web-based services with well-defined APIs). Fedora helps ensure that digital content is durable by providing features that support digital preservation.

2.5.2 Integrated Library Systems

Integrated library systems (ILS) are enterprise resource planning systems for libraries and are used to track information such as the items owned, orders made, bills paid, patrons and borrowings. As such they are the bread-and-butter of the business of running a library. The most widely used open source ILSs are Koha and Evergreen (Riewe, 2008).

) **Koha** <<http://koha.org>> is the first open-source Integrated Library System (ILS). In use worldwide, its development is steered by a growing community of libraries collaborating to achieve their technology goals. Koha’s impressive feature set continues to evolve and expand to meet the needs of its user base. Koha includes modules for circulation, cataloging, acquisitions, serials, reserves, patron management, branch

relationships, and more. It uses a dual database design that utilizes the strengths of the two major industry-standard database types (text-based and RDBMS). This design feature ensures that Koha is scalable enough to meet the transaction load of any library, no matter what the size. Koha is distributed under the open-source General Public License (GPL). It is an important part of the open-source promise that there is no vendor lock-in: libraries are free to install and use Koha themselves if they have the in-house expertise or to purchase support or development services from the best available source.

) **Evergreen** <<http://www.open-ils.org/>> is the highly-scalable software for libraries that helps library patrons find library materials, and helps libraries manage, catalog, and circulate those materials, no matter how large or complex the libraries. Evergreen, which first launched in September, 2006 in Georgia's PINES consortium, now powers over 544 libraries of every type -- public, academic, special, school, and even tribal and home libraries -- in over a dozen countries worldwide. Evergreen has an active community that participates in its coding, documentation, and direction of the project.

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Chapter 3:

FOCUS OF THE STUDY

3.1 Libraries in Nepal

A 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 goer and reader of books (Ranganathan, 1940). Thus, library is charged with the most enviable function of dispensing knowledge to the ignorant and the informed alike (Mittal, 1984). The use of the word library to denote a building, room, set of rooms in which a collection of books is housed and organized is also common (Khanna, 1994). The central mission of a library is to collect, organize, preserve, and provide access to knowledge and information. In fulfilling this mission, libraries preserve a valuable record of culture that can be passed down to succeeding generations. Thus, libraries are an essential link in this communication between the past, present, and future.

At one time, a library was regarded as a store house and books were meant for preservation (Kumar, 1987). During fifteenth and sixteenth centuries, it was not uncommon to have books actually chained to the shelves. Such chained books could not migrate from the shelves beyond the length of the chain. In fact, libraries were then regarded, not as organizations for furthering the use of books, but as institutions for preserving them (Ranganathan, 1931). A modern library, with a few exceptions is regarded as a service institution; its aim being to enable the users to make the most effective use of the resources and services of libraries. This type of library acquires material, processes it, and makes it available for use rather than preservation (Kumar, 1987).

The concept of library entered in Nepal only during 19th century. In 1812 A.D., King Girwanyuddha Bikram Shah promulgated the royal ordinance for the organization and management of archival materials and books, and established a library known as “Pustak Chitahi Tahabil Library;” it was the most remarkable event in the library development history of Nepal (Pangeni, 2008). In those decades, British Museum was very active and was giving lively service in the western world. Nepali librarians like Pandit Kedar Nath, Khadga Ram Joshi, Megh Nath Rimal were busy on copying and preserving manuscripts at that decade while western world had taken speed on disseminating printed books and

documents. Only after 1900, Nepal get modern library named after the Prime Minister Bir Shamsher called 'Bir Library.' The library was made rich in its collection by adding the books written by foreign writers. Bir Shamsher had appointed an Indian called Anikchandra Chatterjee as a librarian of the library. He consulted the manuscripts of the library and compiled catalogue of the books and classified them. The catalogue was printed in two volumes in 1905 A.D. Till the date; the western world had developed different cataloguing codes and indexing system too (Karki, 2002).

In Nepal, after the advent of democracy in 1951 A.D., along with other sectors, the library also started to develop to some extent (Dali, 1991). In 1957 A.D., Nepal National Library was established. Likewise, Tribhuvan University Central Library which is the largest library in Nepal was established in 1959 A.D. (Pangeni, 2008). Now, there are all types of libraries as public, government, academic, special, research, friendship and foreign mission, private libraries, etc. Compared to the libraries and information centers of other developed countries which have already revolutionized their services due to fast growing information technology, the libraries in Nepal are still working in traditional manners. They have not been able to provide even basic library services they are merely a store house of books (Dali, 1991).

We find many public/community libraries registered in Nepal; however, most of them exist only in name. Moreover, those which are functional are either poorly equipped and/or do not cater to the needs of a modern society. In fact, there is not a single modern public library in the country that caters the need of various sections of the society. Apart from different public and reference libraries which were established earlier, recently, schools, colleges, universities are also establishing their own academic libraries containing different text-books, reference books, and subscribed journals. New public libraries are being opened in the initiation of local people and assistance of NGOs. There are more than 600 public libraries in Nepal. There are many public/community libraries registered in Nepal, however, most of them exist only in name and are functioning poorly. "In fact, there is not a single modern public library in the country that caters the need of various sections of the society" (CDNLAO, 2008).

3.2 Library Automation in Nepal

Library automation refers to use of computers in library work including services (Sharma, 1990). Library automation can be of two types: stand-alone system and integrated system. Stand-alone system is basically meant to do only one specific function of the library such as cataloguing (i.e. creating the database of bibliographic records) where as integrated system can be used in the automation of different functions of library such as acquisition, cataloguing, circulation, etc.

Computers were engaged for working in library service in USA in 1950s in a very modest way. Dr. H. P. Luhn had organized computerized indexes in 1950s. Computers entered and found some place in American libraries during this decade. However, their use and application was very limited and restricted due to the high cost of hardware and non-availability of application software packages. During 1960s, the cost of hardware was slashed down and appreciable attempts were made towards development of library application packages. This led to increased use of computers in libraries and printing industries (Sharma, 1990).

Though the latest technology has already penetrated the communication sector and library field, Nepal has not been able to take full advantages of it due to lack of sufficient trained manpower and technical know-how (Dali, 1991). Also, the history of digitization in Nepal is not so old. German Research Council under Nepal German Manuscript Conservation Project initiated the microfilming step only in around 2030 B.S. This project opened a new arena of digitization in Nepal. Most of the manuscripts, rare books and documents in Department of Archaeology have been microfilmed (Bhandari, 2008). In 1988, Annotated Health Science Bibliography of Nepal was prepared by Health Learning Material Centre of Institute of Medicine using CDSISIS. In 1990, Royal Nepal Academy of Science and Technology (RONAST; now NAST) implemented library automation system (Pangeni, 2008). The concept of digital library is in initial stage in Nepal and the knowledge and qualification is not affluent enough to develop the concept. The limitations for digitization in Nepal have been enlisted as, technical architecture, building digital collection, copyright, preservation, government/authority, staff, and users (Aryal, 2008). In the digital libraries of Nepal, the digitized information is preserved and provided services to the users on request inside the library either by microfilm reader or by computer database. The information is not made accessible to the global users (Vaidya, 2008).

3.3 FOSS in Libraries of Nepal

FOSS has not been caught the interests of libraries in Nepal beside the buzz of few like Koha, Evergreen, DSpace, Greenstone, etc. Most of the libraries operating in Nepal are using CDS/ISIS only because it is freely available but still this is not a FOSS.

The year 2005 proved to be a landmark in the Information and Communication Technology sector of Nepal as for the first time in the history, two different localized operating systems in Nepali were released, respectively the Windows XP and MS Office 2003 by the Unlimited Nu Media Pvt. Ltd. in November 2005 and the NepaLinux 1.0 by the Madan Puraskar Pustakalaya in December 2005 (Bal, 2005). This was the starting point for the use of FOSS in Nepal. Currently, the use of FOSS is being promoted by FOSS Nepal community which is a team of volunteers who believe in the usage of Free/Open Source Software (FOSS). The primary objective of the community is to promote and diversify the usage of Free/Open Source Software in Nepal (FOSS Nepal, 2010).

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Chapter 4:

RESEARCH METHODOLOGY

4.1 Research Design

The study has tried to find the current status of the libraries operating in Nepal regarding the use of free and open source software (FOSS). There is not any detailed information available regarding the use of FOSS in libraries of Nepal, hence, an exploratory research design has been used for the study, using questionnaire as the instrument for eliciting relevant information. Respondents (representatives of the sample libraries) were contacted personally to fill the questionnaires. The data collected from the questionnaires have been analyzed using different statistical tools like frequency distribution and percentage; and conclusions were drawn on their basis.

4.2 Population and Sample

Since the study is focused on the libraries in Nepal, so the universe of the study comprises all the libraries operating in Nepal. Non-probability sampling method has been followed for the selection of sample. As per the nature of study, only those libraries using computers for some of their daily library tasks have been considered to be selected as a sample of the study. Hence, the sample was selected purposively from the Kathmandu Valley considering quick access to them. A total of 9 libraries were taken as the sample for the study, which are as follows:

- i. Nepal National Library
- ii. Kaiser Library
- iii. Dilliraman-Kalyani Regmi Memorial Library
- iv. Kathmandu Valley Public Library
- v. Martin Chautari Library
- vi. Tribhuvan University Central Library
- vii. Kathmandu University Central Library
- viii. Social Science Baha Library
- ix. Madan Puraskar Pustakalaya

4.3 Data Collection Procedure

The study is chiefly based on primary data with few secondary data. The secondary data collection covers intensive library and Internet search for national and international literature and has been carefully reviewed as a part of this study.

For the collection of primary data, questionnaire method has been used. Structured questionnaire (*see* Appendix A) was prepared with the questions designed to get precise and definite information. Questionnaire was e-mailed to the respondents (representatives of the sample libraries) and their responses were duly received and those who were unable to e-mail their responses were personally contacted and visited at their respective libraries.

4.4 Data Analysis Procedure

The data collected during the study have been analyzed using different statistical tools like frequency distribution and percentage. Likewise, frequency distribution tables and pie-charts have been used for the presentation with their detail interpretation. Each data has been analyzed and interpreted as per the objectives of the study so as to make the study precise and clear.

Chapter 5: PRESENTATION AND ANALYSIS OF DATA

5.1 Respondents' Profile

Table 5.1 (Respondents' Profile) gives brief description about the sample libraries taken for the study. All the selected libraries are from Kathmandu Valley established in different periods of time and also of diverse types and sizes.

**Table 5.1:
Respondents' Profile**

S.N.	Name of Library	Type	Estd. Year [A.D.]	No. of Staff	Avg. Users [per week]
1.	Nepal National Library	National	1957	23	150
2	Kaiser Library	Government	1969	20	600
3.	Dilliraman-Kalyani Regmi Memorial Library	Government	1980	11	105
4.	Kathmandu Valley Public Library	Public	2003	9	1200-1500
5.	Martin Chautari Library	Public	2006	6	15-20
6.	Tribhuvan University Central Library	Academic	1959	75	7000
7.	Kathmandu University Central Library	Academic	1991	15	1400
8.	Social Science Baha Library	Special	2002	7	28-30
9.	Madan Puraskar Pustakalaya	Special	1955	27	10

Source: Field Survey, 2010

5.1.1 Nepal National Library (NNL)

Nepal National Library is the National library of Nepal which was established by Government of Nepal in 1957 A.D. It is situated at Harihar Bhawan, Pulchowk, Lalitpur. In the early sixties the National Library produced an impressive series of publications, making ancient handwritten texts available in printed form. There are 23 staff in the library and the average number of users is 150 per week.

5.1.2 Kaiser Library (KL)

Kaiser Library is a public library operating under the Ministry of Education, Government of Nepal. It was established in 1969 A.D. with the donated of personal collection of Kaiser Shumsher Jang Bahadur. It is situated in the Kaiser Mahal, Kathmandu. Kaiser Library is one of the unique and oldest Libraries in Nepal. The Library has a total of 50,000 books, documents and pictures having historical importance. The library is currently operated by 20 staff with about 600 users visiting the library weekly.

5.1.3 Dilliraman-Kalyani Regmi Memorial Library (DKRML)

Dilliraman-Kalyani Regmi Library is a public library run by Government of Nepal established in 1980 A.D. It is situated at Lazimpat, Kathmandu. The library was a private collection of Late Dr. Dilliraman Regmi. According to the will made by Dr. Regmi, all the property including the library transferred to the hands of the Government of Nepal, Ministry of Education. The library has transformed from a closed private library to public library. It possesses about 31,000 books and journals. Currently the library has 11 staff and the average users visiting the library is 105 weekly.

5.1.4 Kathmandu Valley Public Library (KVPL)

Kathmandu Valley Public Library is a public library established in 2003 A.D. This library is situated at Bhrikutimandap, Kathmandu which has now amassed over 50,000 books through the sheer effort of donation from members of the Society for Kathmandu Public Library and the public. Most books are non-fiction as the books received are from government offices and research centers. There are only 9 staff in the library and about 1200-1500 users visit the library weekly.

5.1.5 Martin Chautari Library (MCL)

Martin Chautari Library is a public library run under Martin Chautari, a non-profit organization. The library was established in 2006 A.D. It is situated at Thapathali, Kathmandu. It has over 15,000 books on different subjects (out of which about 4500 are on media), 245 seminar papers, 137 theses, 200 unpublished reports, and magazines and audio-video materials. The library has 6 staff and about 10-15 users visit the library weekly.

5.1.6 Tribhuvan University Central Library (TUCL)

Tribhuvan University Central Library is a university library run under Tribhuvan University of Nepal and was established along with the University in 1959 A.D. It is situated at the university's premises in Kirtipur. It began with a collection of 1200 volumes of books. Now, the collection exceeds 350000 volumes of books. In addition, there are more than 25000 back volumes of periodicals. The library has about 75 staff and 7000 users visit the library per week.

5.1.7 Kathmandu University Central Library (KUCL)

Kathmandu University Central Library is a university library run under Kathmandu University of Nepal. The library was established in 1991 A.D. It is situated within the premises of the University in Dhulikhel. Being a university library, focus is on the reference collection with less priority for text books. Thus the collection has proved to be a best collection in the respective field. Currently, there are 15 library staff and about 1400 users visit the library weekly.

5.1.8 Social Science Baha Library (SSBL)

Social Science Baha Library is a public library run by Social Science Baha, an independent, non-profit organization. The library was established in 2002 A.D. It is located at Battispatali, Kathmandu. The library is solely a reading and reference collection. The library's collection has been built up through purchases as well as substantial donation from a number of individuals and institutions. The library has 7 staff and about 28-30 users visit the library weekly.

5.1.9 Madan Puraskar Pustakalaya (MPP)

Madan Madan Puraskar Pustakalaya is a special library for the collection of materials in Nepali language and was established in 1955 A.D. with the objective to collect and preserve resources in the Nepali language, as well as manuscripts, photographs, audio-visual materials and other artifacts of national, historical and cultural significance. The library now holds a unique collection of monographs, periodicals and ephemera which describes different aspects of Nepalese society, culture, history and Nepali literature of different periods. The collections comprises newsletters, posters, pamphlets, banners, calendars, manuscripts, reports, manifestos, letters, sketches, photographs, negatives, film-footage, speeches, press releases, images of wall paintings, invitations, audio-records etc. There are 27 library staff and about 10 users visit the library weekly.

5.2 Current Status regarding the Use of Software

With the development in IT, libraries are also adapting to operate in a computerized environment. Different software and computer programs are available for use in library. To know the current situations regarding the use of software in the library, the respondents were asked some questions, which are presented in the following sections:

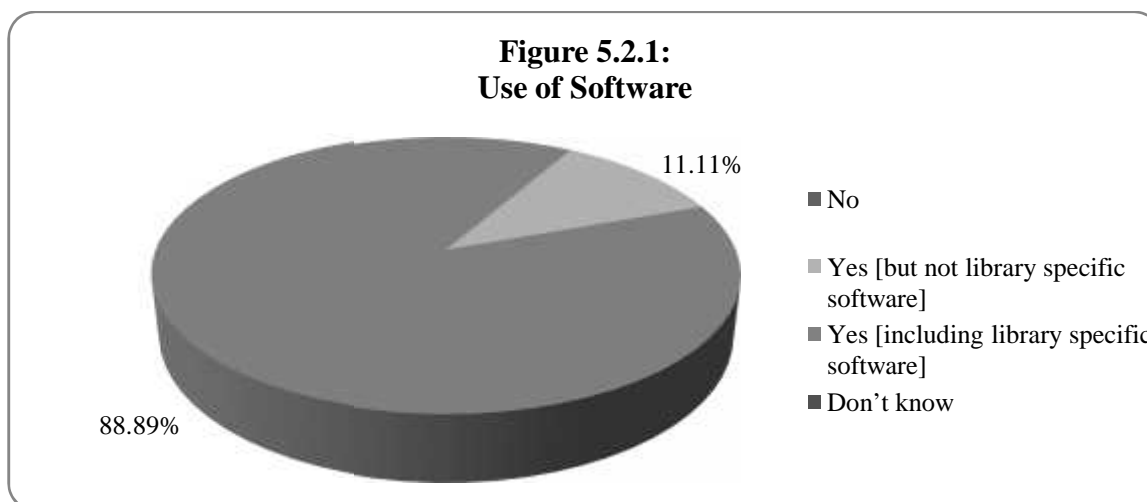
5.2.1 Use of Software

Regarding the use of software in the library, the respondents were asked whether they use any software in the library, the responses are as follows:

**Table 5.2.1:
Use of Software**

Name of Library	Responses				Grand Total
	No	Yes [but not library specific software]	Yes [including library specific software]	Don't Know	
NNL			✓		
KL		✓			
DKRML			✓		
KVPL			✓		
MCL			✓		
TUCL			✓		
KUCL			✓		
SSBL			✓		
MPP			✓		
Total Responses	-	1	8	-	
Percentage (%)	-	11.11%	88.89%	-	100%

Source: Field Survey, 2010



Out of total, 88.89% libraries are using the library specific software while only 11.11% of them are using software for other general purpose. This shows that the use of the software in most of the libraries (88.89%) is for library specific purposes for automating the library services. This seems expected because with the development in IT, the libraries are also beginning to use its services for the automation of different services.

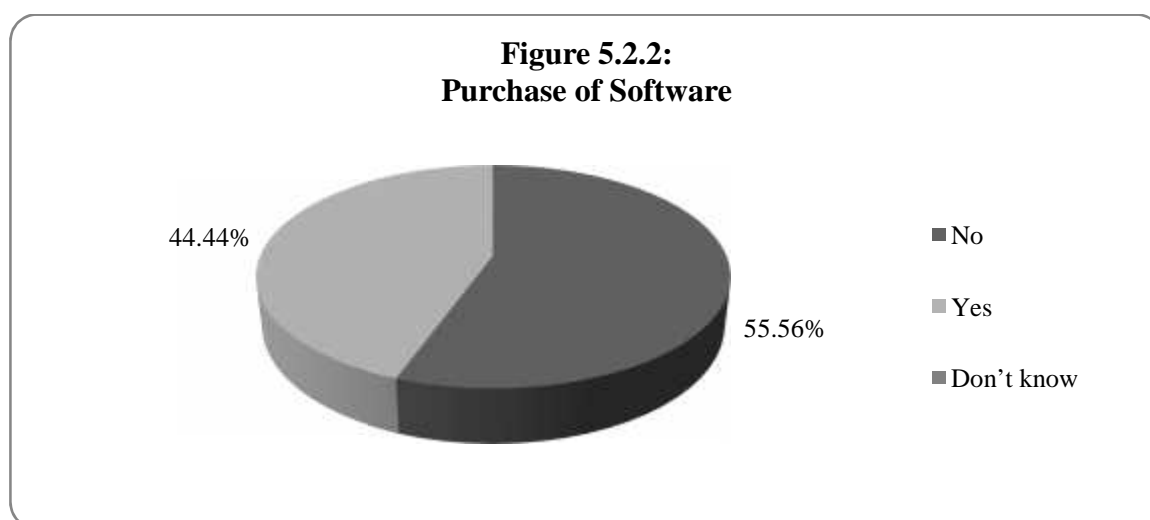
5.2.2 Purchase of Software

The respondents were asked whether they have purchased any software to use in their libraries, the responses are as follows:

**Table 5.2.2:
Purchase of Software**

Name of Library	Responses			Grand Total
	No	Yes	Don't Know	
NNL		✓		
KL		✓		
DKRML		✓		
KVPL	✓			
MCL	✓			
TUCL	✓			
KUCL		✓		
SSBL	✓			
MPP	✓			
Total Responses	5	4	-	
Percentage (%)	55.56%	44.44%	-	100%

Source: Field Survey, 2010



Regarding the purchase of software, 55.56% libraries have never purchased any software whereas the remaining 44.44% have purchased the software. This shows most of the libraries (55.56%) have never purchased the software. It may be because libraries in a country like Nepal are often hindered with lack of budgets.

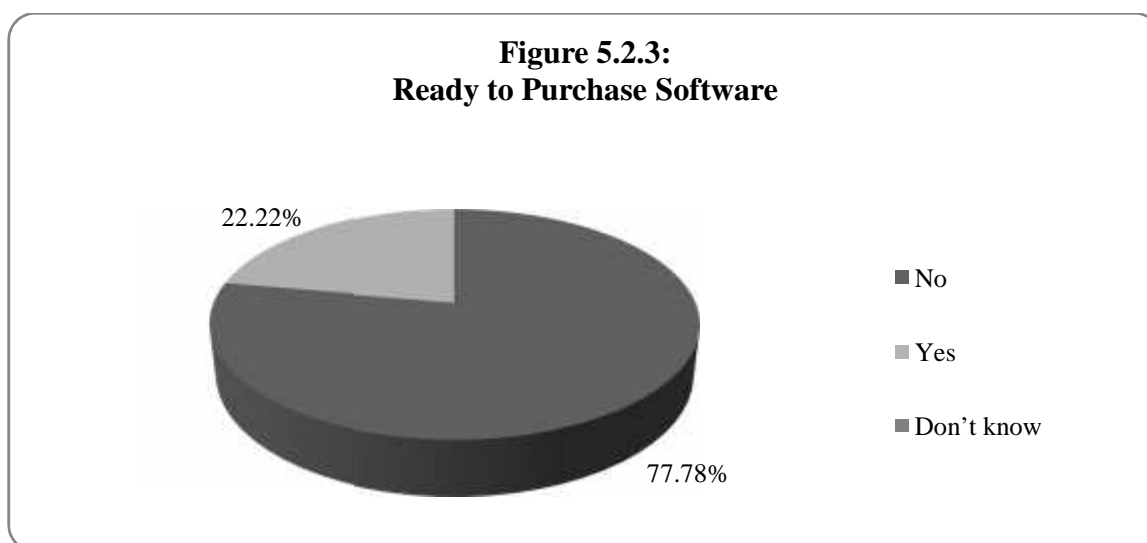
5.2.3 Ready to Purchase Software

The respondents were asked if they are in a position to buy any software needed by their libraries, the responses are as follows:

**Table 5.2.3:
Ready to Purchase Software**

Name of Library	Responses			Grand Total
	No	Yes	Don't Know	
NNL	✓			
KL	✓			
DKRML	✓			
KVPL	✓			
MCL	✓			
TUCL	✓			
KUCL		✓		
SSBL		✓		
MPP	✓			
Total Responses	7	2	-	
Percentage (%)	77.78%	22.22%	-	100%

Source: Field Survey, 2010



Out of the total, only 22.22% libraries are in a position to purchase new software needed for the automation of the library activities while 77.78% libraries are still not in a position to purchase any software. This further shows the condition of the libraries of Nepal that they are hindered with the lack of adequate budget as needed.

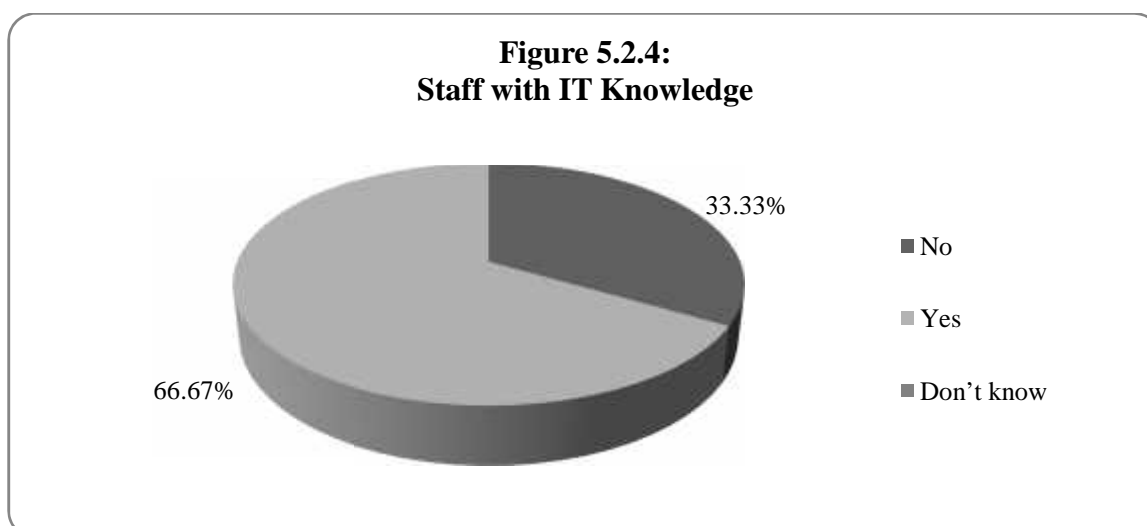
5.2.4 Staff with IT Knowledge

The respondents were asked whether they possess any staff with IT knowledge who can evaluate, install, and customize the software as needed by the library; the responses are as follows:

**Table 5.2.4:
Staff with IT Knowledge**

Name of Library	Responses			Grand Total
	No	Yes	Don't Know	
NNL	✓			
KL	✓			
DKRML		✓		
KVPL		✓		
MCL		✓		
TUCL	✓			
KUCL		✓		
SSBL		✓		
MPP		✓		
Total Responses	3	6	-	
Percentage (%)	33.33%	66.67%	-	100%

Source: Field Survey, 2010



Out of total, 33.33% libraries don't have any staff with IT knowledge whereas 66.67% have staff with IT knowledge. This shows the presence of system librarian (i.e. library staff for IT jobs) in most of the libraries, thus we can expect the potential of development of library automation in Nepal.

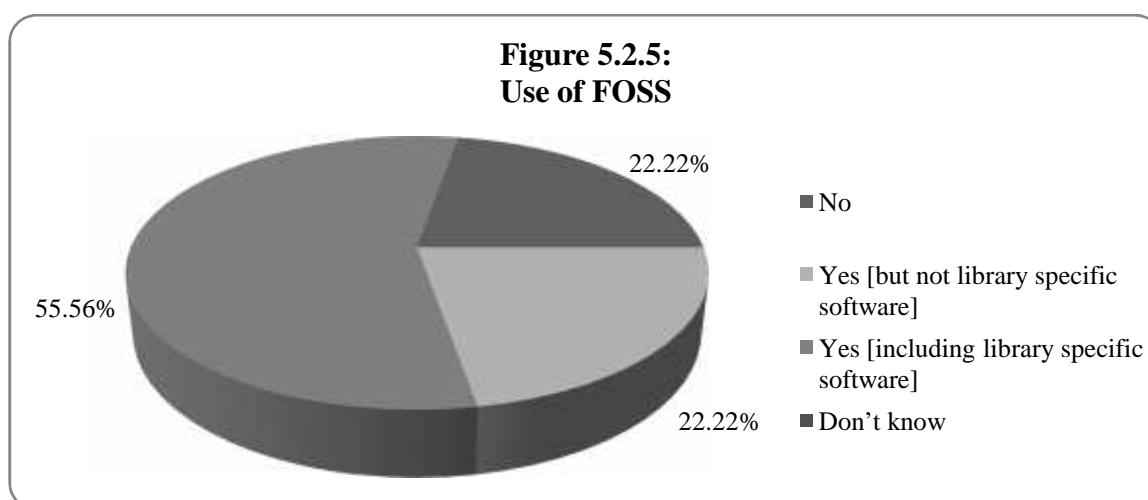
5.2.5 Use of FOSS

Respondents were asked whether they use any free and open-source software (FOSS) in their libraries; the responses are as follows:

**Table 5.2.5:
Use of FOSS**

Name of Library	Responses				Grand Total
	No	Yes [but not library specific software]	Yes [including library specific software]	Don't Know	
NNL			✓		
KL	✓				
DKRML		✓			
KVPL	✓				
MCL			✓		
TUCL			✓		
KUCL		✓			
SSBL			✓		
MPP			✓		
Total Responses	2	2	5	-	
Percentage (%)	22.22%	22.22%	55.56%	-	100%

Source: Field Survey, 2010



Regarding the use of any FOSS, 22.22% libraries have never used the FOSS while others have used it. However, only 55.56% have used library specific FOSS while the remaining 22.22% use FOSS other than library specific software. Since the use of FOSS in library is increasing in the scenario of world, the libraries in Nepal are also starting to use them.

5.3 Knowledge about FOSS

Knowledge about the FOSS is a prerequisite for its implementation. To know the current knowledge regarding FOSS, the respondents were asked some questions which are presented in the following sections:

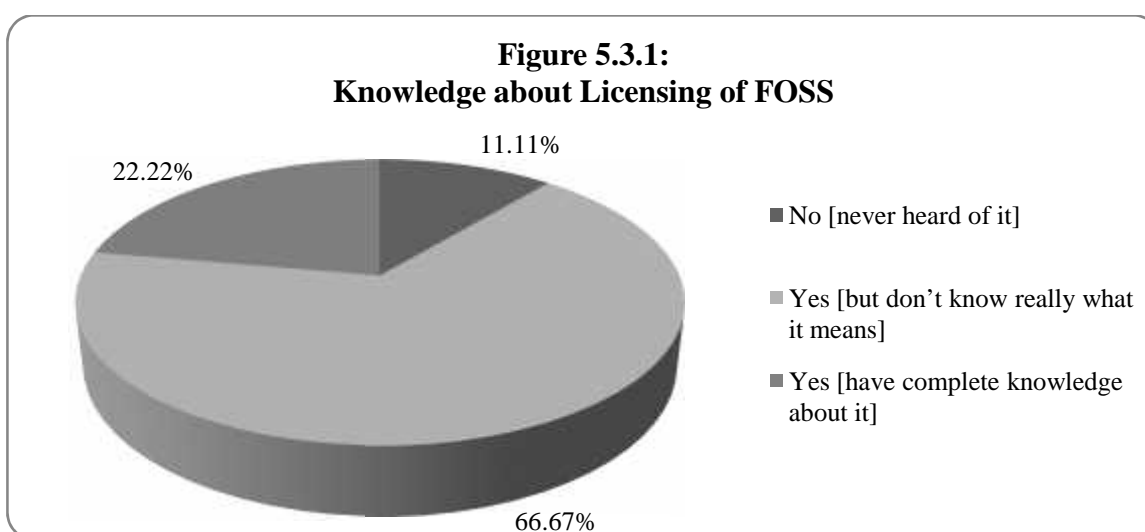
5.3.1 Knowledge about Licensing of FOSS

Respondents were asked whether they have knowledge about the licensing of FOSS; the responses are as follows:

**Table 5.3.1:
Knowledge about Licensing of FOSS**

Name of Library	Responses			Grand Total
	No [never heard of it]	Yes [but don't know really what it means]	Yes [have complete knowledge about it]	
NNL		✓		
KL		✓		
DKRML	✓			
KVPL			✓	
MCL		✓		
TUCL		✓		
KUCL		✓		
SSBL		✓		
MPP			✓	
Total Responses	1	6	2	
Percentage (%)	11.11%	66.67%	22.22%	100%

Source: Field Survey, 2010



Out of total, 11.11% libraries have never heard about the licensing of FOSS while the remaining has heard about it. However, only 22.22% have complete knowledge about it while 66.67% libraries have heard about the FOSS licensing but they don't have complete knowledge about it. It shows the lack of awareness/information about the FOSS because it is the licensing that differentiates FOSS from other proprietary software.

5.3.2 Knowledge about Cost for the Implementation of FOSS

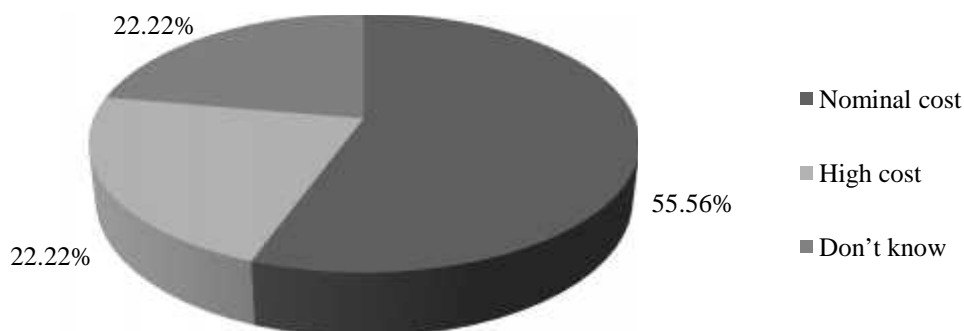
Respondents were asked what they know about the costs for the implementation of FOSS; the responses are as follows:

Table 5.3.2:
Knowledge about Cost for Implementation of FOSS

Name of Library	Responses			Grand Total
	Nominal cost	High cost	Don't Know	
NNL		✓		
KL			✓	
DKRML		✓		
KVPL	✓			
MCL	✓			
TUCL	✓			
KUCL			✓	
SSBL	✓			
MPP	✓			
Total Responses	5	2	2	
Percentage (%)	55.56%	22.22%	22.22%	100%

Source: Field Survey, 2010

Figure 5.3.2:
Knowledge about Cost for Implementation of FOSS



Out of total, 55.56% believe that the cost of implementation of FOSS is very nominal and can be thought that they are in favor of implementing FOSS instead of other proprietary software. Moreover, 22.22% believe that there can be high cost if FOSS is implemented as there may be many hidden cost associated with FOSS while the remaining 22.22% are ignorant regarding the cost of implementing FOSS.

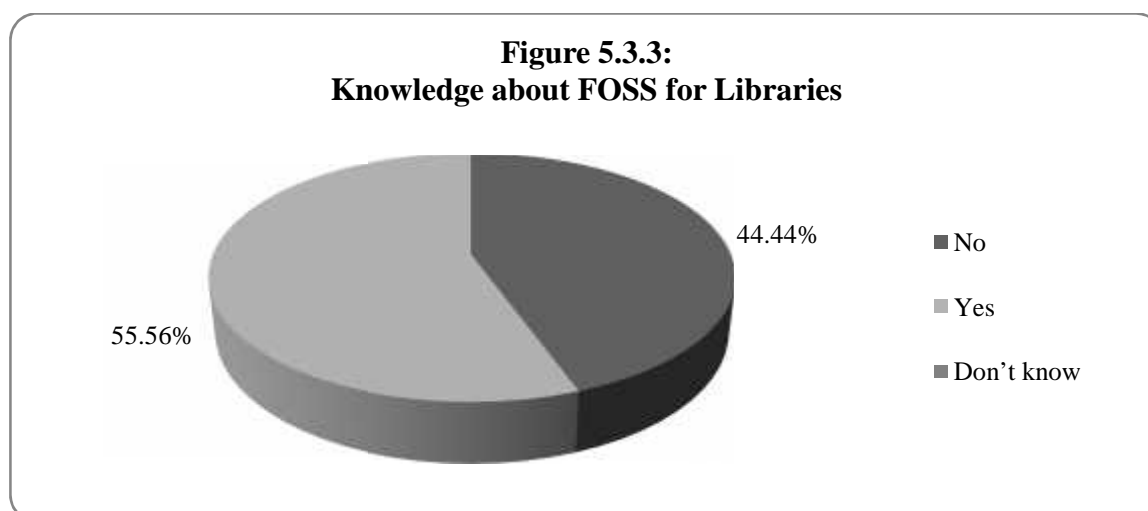
5.3.3 Knowledge about FOSS for Libraries

Respondents were asked if they know about the FOSS developed for library operations; the responses are as follows:

**Table 5.3.3:
Knowledge about FOSS for Libraries**

Name of Library	Responses			Grand Total
	No	Yes	Don't Know	
NNL		✓		
KL	✓			
DKRML	✓			
KVPL	✓			
MCL		✓		
TUCL		✓		
KUCL	✓			
SSBL		✓		
MPP		✓		
Total Responses	4	5	-	
Percentage (%)	44.44%	55.56%	-	100%

Source: Field Survey, 2010



Out of total, 55.56% libraries know about the FOSS developed for library operations while other 44.44 % are still ignorant regarding library specific FOSS. The libraries using library specific FOSS is also 55.56% (*see* Table 5.2.5) and here it shows the same 55.56% having the knowledge about FOSS for library operations. Thus, it can be expected that by increasing the awareness/knowledge, the use of FOSS for libraries can be increased.

5.4 Perception about FOSS

To know the perception regarding FOSS, the respondents were asked some questions which are presented in the following sections:

5.4.1 Main Benefit of Using FOSS

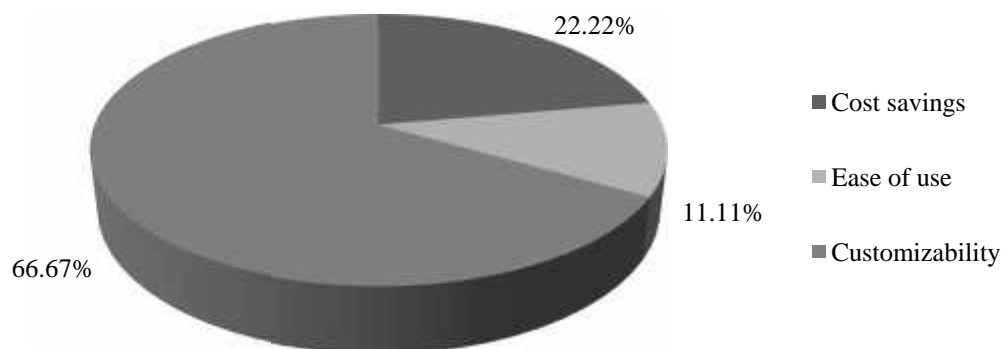
Developers and users of FOSS often claim many benefits of using it, like cost savings and customizability. Hence, the respondents were asked about their perception regarding the foremost benefit of using FOSS in library automation; the responses are as follows:

**Table 5.4.1:
Main Benefit of Using FOSS**

Name of Library	Responses			Grand Total
	Cost savings	Ease of use	Customizability	
NNL			✓	
KL			✓	
DKRML		✓		
KVPL	✓			
MCL			✓	
TUCL			✓	
KUCL	✓			
SSBL			✓	
MPP			✓	
Total Responses	2	1	6	
Percentage (%)	22.22%	11.11%	66.67%	100%

Source: Field Survey, 2010

**Figure 5.4.1:
Main Benefit of Using FOSS**



Out of total, 22.22% libraries think cost saving as the main benefit of using FOSS. The majority i.e. 66.67% believe customizability as the main benefit of using FOSS while 11.11% opt for ease of use. As most of them think cost saving and customizability as the main benefits of using FOSS in libraries, it be considered satisfactory regarding the perception of FOSS.

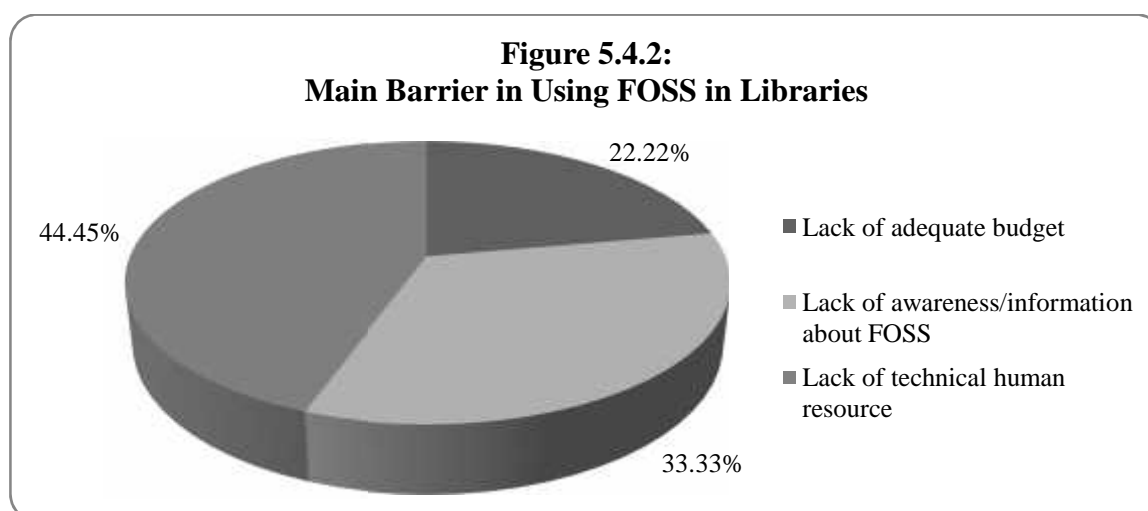
5.4.2 Main Barrier in Using FOSS in Libraries

Adoption of FOSS may be hindered by many impediments, so the respondents were asked regarding the main barrier in using FOSS in libraries of Nepal; the responses are as follows:

Table 5.4.2:
Main Barrier in Using FOSS in Libraries

Name of Library	Responses			Grand Total
	Lack of adequate budget	Lack of awareness / information about FOSS	Lack of technical human resource	
NNL	✓			
KL		✓		
DKRML	✓			
KVPL		✓		
MCL			✓	
TUCL			✓	
KUCL		✓		
SSBL			✓	
MPP			✓	
Total Responses	2	3	4	
Percentage (%)	22.22%	33.33%	44.45%	100%

Source: Field Survey, 2010



Out of total, 33.33% believe lack of awareness/information as the main barrier in using FOSS in libraries of Nepal while 44.45% go with the lack of technical human resource. However, 22.22% still believes lack of adequate budget as main barrier in using FOSS just as 22.22% libraries consider high cost in implementing FOSS (*see* Table 5.3.2)

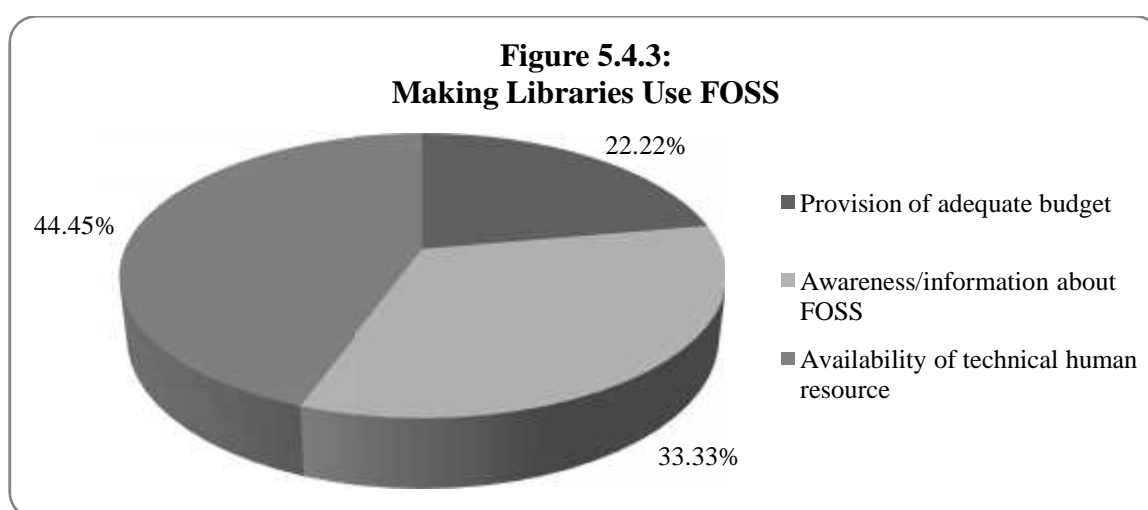
5.4.3 Making Libraries Use FOSS

Respondents were asked about what should be done at the earliest to make the libraries in Nepal use FOSS; the responses are as follows:

**Table 5.4.3:
Making Libraries Use FOSS**

Name of Library	Responses			Grand Total
	Provision of adequate budget	Awareness / information about FOSS	Availability of technical human resource	
NNL	✓			
KL		✓		
DKRML	✓			
KVPL		✓		
MCL			✓	
TUCL			✓	
KUCL		✓		
SSBL			✓	
MPP			✓	
Total Responses	2	3	4	9
Percentage (%)	22.22%	33.33%	44.45%	100%

Source: Field Survey, 2010



As expected, 33.33% libraries believe awareness/information about FOSS should be initiated at the earliest to make libraries in Nepal use FOSS just as 33.33% libraries believe lack of information as the main barrier in using FOSS (*see* Table 5.4.2). Similarly, 44.45% of them believe availability of technical human resource as the most important step to make libraries in Nepal use FOSS just like 44.45% libraries believe lack of technical human resource as the main barrier in using FOSS (*see* Table 5.4.2). Moreover, 22.22% who believe the lack of adequate budget as the main barrier in using FOSS still believe that the provision of adequate budget as the first major step in making libraries of Nepal use FOSS.

Chapter 6:

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary

Free and open source software (FOSS) are computer programs whose licenses give users the freedom to run them for any purpose, to study and modify them, and to redistribute copies of either the original or modified programs without having to pay royalties to original developers. FOSS has grown tremendously in scope and popularity over the last several years, and is now firmly established itself as a viable alternative to proprietary software in many areas of information and communications technology (ICT) deployment. The growth of FOSS has gained the attention of research librarians and created new opportunities for libraries. Many librarians are now considering FOSS because of its lower purchase costs than those for comparable commercial software. Moreover, FOSS community and librarians share the same values of equal access and freedom of information. There are a number of reasons that libraries, in particular, may prefer to use FOSS over commercial software: preservation, privacy and auditing, community resources, and open standards. There are a number of areas within libraries where FOSS tools are often used, and can be deployed or adapted to improve the quality of experience by librarians and patrons alike.

Despite the case for open source solutions in libraries, and some heroic work on the part of some libraries and librarians to create, support, and propagate open source solutions, the movement has not caught on within our community. This is clearly demonstrated by the relative absence of open source products in libraries. The situation gets even worse in case of the libraries in developing countries including Nepal. Most of the libraries are at the starting point in the use of computers for the automation of library tasks. Thus, here, it becomes necessary to find out the real situations of libraries operating in Nepal regarding the issues and problems of using FOSS. Thus, this study was carried out to investigate issues and problems regarding the use of free and open source software (FOSS) for libraries in Nepal. The study aimed at observing the current status of libraries operating in Nepal regarding the use of computer software including the knowledge, awareness and usage of FOSS by the libraries and also identifying key challenges in using FOSS and their possible solutions.

Only 9 libraries from Kathmandu Valley were taken as the sample purposively following non probability sampling method. The selected libraries represent various types like national, public, academic and special libraries. The study was mainly based on primary data with few secondary data. Questionnaire was used for primary data collection. The data thus collected were presented on the tables and pie charts and then analyzed thoroughly. The findings of the study are as follows:

) Current status regarding the use of software

- i. The use of the software in most of the libraries (88.89%) is for library specific purposes for automating the library services.
- ii. More than half of the libraries (55.56%) in Nepal have never purchased any software.
- iii. Most of the libraries (77.78%) are still not in a position to purchase any software needed for the automation.
- iv. Libraries having staff with IT knowledge is 66.67% whereas 33.33% libraries don't have any staff with the IT knowledge.
- v. More than half of the libraries (55.56%) have used library specific FOSS while some of them (22.22%) have never used any FOSS.

) Knowledge about FOSS

- i. Majority of libraries have heard about the FOSS licensing but only few (22.22%) have complete knowledge about it whereas 11.11% libraries have never heard about the licensing of FOSS.
- ii. Majority of libraries (55.56%) think the cost of implementation of FOSS is very nominal compared to other proprietary software while few (22.22%) think it is costly.
- iii. More than half of the libraries (55.56%) have knowledge about the FOSS developed for library operations while some (44.44 %) are still unaware about it.

) Perception about FOSS

- i. Most of the libraries (66.67%) believe customizability as the main benefit of using FOSS while some libraries (22.22%) favors cost saving.

- ii. Most of the libraries (44.45%) believe lack of technical human resource as the main barrier in using FOSS in libraries of Nepal while 33.33% opt for the lack of awareness/information.
- iii. Most of the libraries (44.45%) believe availability of technical human resource should be initiated at the earliest to make libraries in Nepal use FOSS. Similarly, 33.33% of them believe awareness/information about FOSS as the most important step to make libraries in Nepal use FOSS.

6.2 Conclusions

Based on the findings, the conclusions drawn from the study are as follows:

- i. Though most of the libraries that are using software use library specific software for automating the library services, the current status of libraries in Nepal cannot be considered satisfactory regarding the use of computer software because majority of the libraries have never purchased any software and also they are still not in a position to purchase any software needed for the automation. Some libraries do have staff with IT knowledge which can be good for the library but still only half of the libraries have used library specific FOSS.
- ii. Regarding the knowledge of FOSS, majority of libraries have heard about the FOSS licensing but only few have complete knowledge about it. Majority of libraries think that the cost of implementation of FOSS is very nominal compared to other proprietary software and only about half of the libraries have knowledge about the FOSS developed for library operations. Thus, the libraries still lack the complete knowledge about the philosophy and use of FOSS.
- iii. The perception regarding the FOSS can be considered satisfactory because most of the libraries believe customizability and cost savings as the main benefits of using FOSS which is true. Most of the libraries believe lack of technical human resource as the main barrier in using FOSS in libraries of Nepal while some opt for the lack of awareness/information. Therefore, availability of technical human resource along with awareness/information about FOSS is the most important task to make libraries in Nepal use FOSS.

6.3 Recommendations

The study shows that some libraries are using FOSS for automating the library operations. However, there is a lot to be done to make the libraries use FOSS. Hence, the recommendations developed from the study are as following:

- i. As the current status of libraries in Nepal cannot be considered satisfactory regarding the use of computer software, there is a need of increasing the use of computers for the purpose of library services because the libraries around the world are increasingly using the services of IT and successfully getting the benefit in giving prompt and sophisticated services to the users. Also, most of the libraries are not in a position to purchase any software needed by the library, so, the use of FOSS could be a viable solution to them.
- ii. Since, libraries still lack the complete knowledge about the philosophy and use of FOSS, there is a need to acquire the complete knowledge about FOSS license by the libraries. Moreover, they should be well informed regarding the cost of implementing FOSS along with the cost required for running it successfully. Also, there is a need to initiate different ways to make them informed regarding the FOSS developed for library so that they could evaluate and choose the right FOSS for themselves.
- iii. As there still lacks the availability of technical human resource along with awareness/information regarding FOSS, so availability of human resources should be made along with increasing the awareness/information about FOSS in library community of Nepal. For example, orientation seminars, exhibitions, workshops, national campaign demonstrating the benefits of free and open source software to libraries could be performed.

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