

**LIBRARY MANAGEMENT SOFTWARE IN TRIBHUVAN
UNIVERSITY CONSTITUENT CAMPUSES:
PROBLEMS AND SOLUTIONS**

A Thesis

Submitted to The

Central Department of Library and Information Science

For the Fulfillment of the Requirements for the

Masters of Arts in Library and Information Science

Submitted by

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I declare that my thesis has been prepared by me. It has not been submitted for any other degree of professional qualification. The data, analysis, and research work are almost solely my work. Due references have been provided on all supporting literature and resources wherever required. I am aware of and understand the university's policy on plagiarism.

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LETTER OF RECOMMENDATION

This is to certify that the thesis submitted by Mahendra Prasad Adhikari entitled “Library Management Software in Tribhuvan University Constituent Campuses: Problems and Solutions” is an original work prepared under my supervision and guidance. I recommend this thesis for final approval and acceptance.

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LETTER OF APPROVAL

The thesis entitled “Library Management Software in Tribhuvan University Constituent Campuses: Problems and Solutions” Prepared and submitted by Mahendra Prasad Adhikari in partial fulfillment of the requirements for the Master’s Degree in Library and Information Science is hereby accepted and approved.

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ABSTRACT

This thesis entitled "Library Management Software in Tribhuvan University Constituent Campuses: Problems and Solutions" focuses on the challenges faced by Tribhuvan University (TU) campus libraries in managing their library management software. It highlights the lack of uniform software and limited awareness among executives and librarians, which hinder data availability and effective management.

Among the 62 TU constituent campuses libraries only 35 campuses libraries have installed library management software and other has not installed till the time of data collection. So, this research includes only 35 libraries using library management The findings revealed open-source software like Koha was chosen by 8 campuses, while 25 campuses opted proprietary software such as Cosmos, Mumolas, E-Library, and Mitra ERP.

Difficulties in accessing technicians for software maintenance were reported by 71% of the campuses. Moreover, only 28% of the campuses had the capability to import/export MARC data, and among them, only 23% utilized this provision. Lack of uniformity in data management and limited import/export capabilities were common issues across campuses. The variation in software choices and scarcity of technicians available for software maintenance evolved as major problems.

The study emphasizes the need for staffing adjustments and comprehensive training programs to enhance the skills of the workforce in campus libraries. It recommends investing in technology and to understand the factors influencing automation.

In conclusion, this study highlights the challenges faced by TU campus libraries in managing their library management software and proposes solutions to improve data management and operational efficiency. It underscores the importance of addressing issues related to software uniformity, awareness, and training while investing in technology and conducting further research for continuous improvement in TU campus libraries.

Keywords: automation, integrated system, digital library, academic library

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LIST OF ABBREVIATIONS

CDLIS	: Central department of Library and Information Science
CDS/ISIS	: Computerized Documentation Service/Integrated Set of Information Systems
DL	: Digital Library
ELMS	: Electronic Library Management System
EMIS	: Educational management information system
ERP	: Enterprises resources planning
FOSS	: Free and open -Source software
ICIMOD	: International Centre for Integrated Mountain Development
ICT	: Information and Communication Technology
ILMS	: Integrated library management system
ILS	: Integrated Library System
ISO	: International standard organization
LMS	: Library management system
MARC	: Machine readable catalogue
OCLC	: Ohio College Library Center
OPAC	: Online Public Access Catalogue
OS	: Operating System
OSS	: Open-Source Software
PMB	: Php My Bibli
RFID	: Radio Frequency Identification
RMS	: Research Management System
SDI	: Selective dissemination of information
SPSS	: Statistical package for social sciences
UNIMARC	: Universal Machine-readable catalogue format
TUCL	: Tribhuvan University Central Library

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CHAPTER - I

INTRODUCTION

Library is an indispensable organization of educated and civilized society. The increased growth, use and value of information generated the concept of information society or information-oriented society “Libraries may not create civilization; but a civilization cannot exist without them.” (Hutchings, 1969). In other words, libraries are treated as the temple of learning where users can find out relevant information from the collection and services to satisfy the thrust of knowledge. But in present era the library has been define as an organization which identifies selection, collection, management, process and dissemination at the right time to the right person. Now libraries are perceived as places where information is retrieved through sources like electronic catalog listings, full-text periodicals and internet access.

A library is an organized collection of information sources which is made accessible to the people. The library usually contains the information physically or in a digitized format. In the olden period the access was usually in the library room as the technology grew up the access that was made online (Dinesh et al., 2015). Library is a fast-growing organism. The ancient methods to maintain it are no longer dynamic and efficient. For expeditious retrieval and dissemination of information and better service for the clientele, application of modern techniques has become absolutely indispensable (Lakshmipathi, 2019)

1.1 Background of the Study

Library management is a specialized sub-discipline of institutional management that deals with specific issues faced by libraries and library management professionals. In addition to typical management tasks, library management also includes concerns related to intellectual freedom, anti-censorship, and fundraising. Several of the difficulties faced in library administration are akin to those encountered in the governance of not-for-profit organizations(Sharma). A Library Management System is a software that represents a library system, typically of modest or moderate scale

Since the beginning of civilization, man's desire for knowledge has led to the creation and accumulation of vast amounts of information. This thirst for knowledge has continued to the present day, and the knowledge and information that has been amassed

is valuable for all of humanity and therefore must be preserved. Libraries have been established for the systematic collection, organization, preservation, and dissemination of this knowledge and information.

As time passes, we and our environment are constantly changing. The advent of computer applications has brought about significant developments in the field of information technology in the current era. Libraries, which have been witnesses to each era of civilization, have also been impacted by these changes. The emergence of new information and communication technologies has had a profound effect on all types of libraries and information resource centers. The swift acceptance and utilization of these emerging technologies have revolutionized conventional libraries into automated, electronic, virtual, and digital libraries(Peer et al., 2013).

A computerized system is used by librarians to efficiently manage the library, allowing for the recording of various transactions such as the issue and return of books, addition of new books, addition of new students, and more. This system enables librarians to categorize and organize the library in a structured manner, allowing for better management and easier access to information for library users etc. (Tripathi & Srivastava, 2012)

The Library Management System is a software for overseeing and managing the transactions within a library(Tripathi & Srivastava, 2012).

The Library Management System caters to the fundamental needs of the library, including the procurement, classification, circulation, and other departments. A library management system generally consists of a relational database, software to interact with the database, and two graphical user interfaces - one for users and one for staff. Integrated library systems often divide software functions into distinct programs known as modules, which are integrated with a unified interface. This approach allows for better organization and easier management of the library's resources and services. Examples of modules might include:

- i. Acquisitions for ordering, receiving, and invoicing materials.
- ii. Cataloguing for classifying and indexing materials.

iii. Circulation for lending materials to patrons and receiving them back.

iv. Serials for tracking magazine and newspaper holdings.

v. The OPAC for public interface to library holdings.

Prior to computerization, library tasks were performed manually and independently from one another. Selectors ordered materials with ordering slips, cataloguers manually catalogued items and indexed them with the card cataloguing system (in which all bibliographic data was kept on a single index card), and users signed books out manually, indicating their name on cue cards which were then kept at the circulation desk.

Books and user maintenance modules are also included in this system which would keep track of the users using the library and also a detailed description about the books a library contains. With this computerized system there will be no loss of book record or member record which generally happens when a non-computerized system is used. In addition, report module is also included in Library Management System. If user's position is admin, the user is able to generate different kinds of reports like lists of users registered, list of books, issue and return reports. All these modules can help librarian to manage the library with more convenience and in a more efficient way as compared to library systems which are not computerized.

Library service in its modern sense is a recent development in Nepal (Amatya, July 2005). During that period, the British Museum was highly active and providing vibrant services in the Western world, while Nepali librarians such as Pandit Kedar Nath, Khadga Ram Joshi, and Megh Nath Rimal were diligently engaged in copying and preserving manuscripts. Meanwhile, the Western world had already accelerated the dissemination of printed books and documents. It was only after 1900 that Nepal witnessed the establishment of a modern library called Bir Library, named after Prime Minister Bir Shamser. The progress in education and the establishment of schools and colleges played a crucial role in fostering the development of libraries in Nepal. In 1946, local public libraries were finally made accessible to the general public for the first time.

In order to ensure utmost user satisfaction and effectively carry out library activities and functions, libraries must choose capable and appropriate software that aligns with their requirements. This software can be procured through a contracted arrangement with a software company or developed in-house by skilled professionals within the institution, taking into consideration the specific needs of the library (Bhardwaj & Shukla, 2000). The growing presence of numerous library software companies and their enticing advertising campaigns has created confusion among libraries regarding which software best aligns with their needs. Software selection is a complex matter, and experts recommend that a selection committee engages in discussions to identify the most suitable option based on criteria such as flexibility, capacity, scalability, security, cost-effectiveness, user-friendly modules, and compatibility with the latest technology. Consequently, conducting evaluations of suitable software packages becomes crucial in academic or other library settings to ensure user-friendliness, efficiency, and cost-effectiveness.

This overwhelming flow of information has made difficult to control and dissemination of library materials. Therefore, in order to avoid obsolescence of information; a library professional should apply the advanced technologies in order to meet the information requirements of the user community. The innovation of computer itself is the pioneer of radical changes in almost all fields. It would be better to say that the librarian and library services are assisted by computer hardware and software now. Library automation has become a burning issue, with pros and cons, among librarians throughout the world.

Because of its outstanding efficiency, performance and ability to handle large volumes of documents, the computer is gaining popularity in the field of librarianship and information services. Many library and information routines are being performed proficiently by computers. The computer has proved its success in the fields of library acquisition, cataloguing, classification, circulation, serials control, and information storage and retrieval activities. Many new services like SDI and current contents service also have been initiated with the help of the computer.

A collection of commands is referred to as a program, and a collection of programs is referred to as software. The functioning of hardware is reliant on a set of software programs (Sharma Pandey, 1993).

Basically, software is the program that runs the computer to produce the required results. It is said that “A computer without software is similar to a man without his brain, or a library with neither books nor librarians”. Therefore, on principle, the selection of software comes before hardware (Mahmood Malik, 1996).

Software selection is a very complicated issue, on the observation of experts, a discussion should be made by the selection committee and most suitable in regard of flexibility, capacity, expandability, security, economic, user-friendly modules based and updated with the latest technology is to be procured. Therefore, an evaluation of appropriate software packages is very much needed in any academic or other libraries for user friendliness, efficiency and cost effectiveness.

Different types of library information management software are used in the Tribhuvan University affiliated campuses for library data management. Globally the use of technical skills in library software has been considered useful in campus libraries to manage the library data and information. TU has 62 constituent campuses in all over the country, there has been a lack of using uniform information management software among these campuses. The lack of proper systematic information management software has created a problem in the timely and easy availability of data in the time of necessity. This study aims to identify the solution of the issues in information management in the campus libraries. The outcomes will help to address the problem in library management software and resource sharing

Tribhuvan University Library was established in 1959. The Central Library and the Tribhuvan University Library were merged as Tribhuvan University Central Library (TUCL) in 1961. In the Tribhuvan University, there are five institutes and four faculties under which 40 central departments, 62 constituent campuses, and 1062 affiliated colleges in different disciplines are running. Each campuses have their own libraries. There were four research centres in TU. Being one of the largest universities in the world in terms of its size and the diversity of programmes, it has been able to fulfil the requirements of large number of students. All constituent campuses have their own library, most of the libraries are called academic library and special libraries are running under institutes. Students, teachers, and staffs were the users of all these libraries.

The existing libraries and the information centres in Nepal are providing information services based on their own rules and regulations. There is no single national body to control, supervise, monitor, suggest and recommend for authentic, exhaustive, pinpointed and timely information services to the heterogeneous users of different libraries and the information centres. Libraries are provided to all citizens on the basis of acts, rules and regulations. However, Nepalese are unable to get such library and information services on the legal basis. Role of recurrent and retrospective information acquisition, collection, process, circulation and dissemination, preservation, data management and transfer services or import / export to the public and scholarly communication to the library users have not been well defined. Tribhuvan University and Nepalese Government have not properly mentioned the subject in any of its national plan. No policies and programs have been formulated for the effective implement of library services (Karki, 2012).

The integration of computer software packages and ICT is crucial in delivering information effectively in university teaching and learning, enabling libraries to provide their community with access to their own collections and catalogs of other libraries to expand the scope of available resources(Sarkar, 2012).

Though Tribhuvan University has recently initiated to create web-portal to provide access to all aspirants, the availability of data and information was still not warranted. The discrepancy in the software choices among the affiliated campuses and lack of knowledge as well as skilled library officers has been the hurdle for the uniformity. So, this study targets to find the nature and types of software under use in different institutions through questionnaire survey, in order to find the best among them with respect to uniformity, effective properties and efficient with ease of use to solve the existing problems.

1.2 Statement of the Problem

TU has 62 constituent campuses situated at different parts of the country; there has been a lack of using uniform information management software among these campuses. The lack of proper systematic information management software has created a problem in the timely and easy availability of data in the time of necessity.

Library management software is the new phenomenon in the software development practices. Many libraries in Nepal are focusing their use. The major trend of the libraries and librarians is to purchase the proprietary software such as Mumolas, PMB, Cosmos, Libra etc. or use the freeware software such as CDS/ISIS. The executives, makers and librarians do not have updated knowledge about the problems and its solution.

1.3 Objectives of the Research

The overall objective of the study focusses the problems and solution of using library management software in the Tribhuvan University constituent campuses. The objective of the study are as follows:

To explore problems of using library management software in TU constituent campus libraries in Nepal.

To identify the solution of the problems in using library management software.

1.4 Research Questions

The research based on following research questions:

- What are the problems faced using library management software in TU constituent campus libraries?
- How could the problems be solved regarding library management software?

1.5 Significance of the Study

The significance of the study is to grasp comprehensive ideas in the extent of library management system initiatives and projects in Nepal.

- The study reveals the type of library management software being used in different TU constituent libraries. The study contributes to find out the factors that had influenced to their success.
- The study incorporates electronic sources that can be easily looked and read out for relevancy, appropriateness and usefulness of the topics.

1.6 Limitations and Delimitations of the Study

This study is limited to thirty-five TU constituent campus libraries using software for library management. The study was highlighted to assess the problems and possible solution of software used for library management in TU constituent campus library.

1.7 Definition of Literary Terms

Free and open-source software (FOSS)

Free and open-source software is collaboratively built software that is shared by developers and users and can be ‘freely’ downloaded with or without the source code for use, modification and further distribution (Sowe et al., 2007).

Library Management:

Classification, cataloguing, indexing, database construction, and database indexing are all library management practices that would certainly benefit from the use of these rapid ICT advances Library

Library Networking:

Library networking refers of the interconnection of a community of libraries and information centers in order to create a shared pattern or design for information sharing and communication, with the goal of increasing performance.

Free software:

Open-source software is software that can be utilized, modified, and shared freely, with the sole condition that any redistributed version must adhere to the original terms of open use, modification, and distribution. Open-source software grants explicit permission for individuals to use, copy, and distribute it, either in its original form or with alterations, at no cost or for a fee. Crucially, open-source software necessitates the availability of its source code.

Open-source software

Open-source software refers to code that is intentionally made available to the public, enabling anyone to view, modify, and distribute the code according to their preferences.

The development of open-source software follows a decentralized and collaborative approach, relying on peer review and community participation in its production.

Concept of Library Automation

Automation is the use of technology to perform tasks with minimal human intervention, improving efficiency and reducing costs. It can help to streamline workflows, increase productivity, and control business processes in real time. In libraries, automation is used to organize databases and perform housekeeping activities.

Electronic Library Management System (ELMS):

The Electronic Library Management System (ELMS) is a software application that automates various library processes. It helps librarians organize, catalog, circulate, and track library materials while providing enhanced services to library users. Key features of ELMS include cataloging and classification, circulation management, an online public access catalog (OPAC), digital resource management, reporting and analytics, interlibrary loan (ILL) capabilities, administration and workflow management, and integration with other systems. ELMS improves operational efficiency, enhances resource discovery, and offers a better user experience. It modernizes library management practices, empowers librarians, and provides convenient access to information and resources in the digital age.

Library Management Software

Library management software is a specialized application used by libraries to automate their operations and manage various tasks such as cataloging, circulation, acquisitions, and more. It provides a centralized system for organizing and accessing library resources, as well as improving efficiency in managing library operations. Library management software typically includes features like cataloging and classification, circulation management, user management, reporting, and integration with online public access catalogs (OPACs).

1.8 Organization of The Study

The thesis consists of five chapters. The outline of the respective chapters with summary is discussed below:

The first chapter contains the introduction which includes background of the study, statement of problem, aims and objectives, research questions, scope of the study, significance, limitations, and rationale for the study, outline of the thesis.

This second chapter presents literature review of the related literature. It describes library software, digital library software, library management system, status of ICT, automation and digitization initiatives in general in constituent campus libraries in Tribhuvan University in Nepal.

Similarly, the third chapter discusses the whole research methods with the research design of the study. It elaborates the research paradigm, research methodology and methods, data collection instruments (e.g. questionnaire), advantages and disadvantages of these methods, conduct of the study, data analysis techniques.

The chapter four dealt with analysis of data and details of the presentation of data. It describes the analysis of quantitative data collected through semi-structured in-depth questionnaire of librarian, experts. The chapter also provides a summary of findings. The findings of the study have been presented through tables created by Microsoft excel.

At the end of the thesis, the chapter five is under the headings finding, summary, conclusion and recommendations. In this chapter, the researcher discussed the problems faced by the library and also giving suggestions for improving campus and university libraries status and implications of the study. Library automation have presented us easy access to information and taught us how to utilize library resources properly.

CHAPTER - II

LITERATURE REVIEW

2.1 Review of Literature and Research Gap

A literature review entails providing an overview of the literature pertaining to a specific field or subject. It serves the purpose of comprehending and critically examining previous research conducted in the background, as well as identifying and locating the sources of information essential for contextualizing the current research (Ramdhani et al., 2014). This chapter covers literature review related to software, library management software and library automation software, digital library software in both terms of national and international. Secondary data were searched from print and online resources. Literatures on this topic were very limited, though foreign literatures on digitization of public or private universities were many but literature on the status of software program in Tribhuvan University campus libraries is very little.

This section encompasses a comprehensive review of literature regarding digital library initiatives and the global state of automation and digitization, specifically focusing on the digitization efforts of public and private university libraries at national, regional, and international levels. The chapter accentuates a wealth of knowledge and considerations regarding automation, digitization, and related facets, examining diverse perspectives and contextual variations. While certain ideas are drawn from technologically advanced countries, this literature aids in establishing a framework or set of guidelines for assessing the level of library automation and digitization in university campus libraries.

During the research, multiple keywords were employed to conduct the search, including terms like software, library software, library management software, ICT (Information and Communication Technology), digital library, digital library initiatives, challenges in digital libraries, library automation, digital library software, automation software, open-source and proprietary software, and constituent campus library of TU.

A list of related literature has been mentioned below which have been reviewed during the research:

To acquire a more comprehensive grasp of the subject, it is imperative and beneficial to conduct a thorough examination of pertinent literature and studies concerning the topic. Reviewing such relevant literature serves as the foundation for establishing the rationale behind the hypothesis and findings. The objective of this chapter is to enable a comparative analysis between the current investigation's findings and those of previous studies conducted on the same subject matter.

Library Management Software (LMSs) have become indispensable tools for facilitating efficient customer service, stock management, and the administration of library services. These systems have evolved over centuries, drawing upon the knowledge and experience of library professionals. The rapid advancements in hardware, software, and connectivity, coupled with reduced costs, have propelled the development of LMSs to new heights. Modern LMSs are comprehensive, integrated systems built upon a relational database architecture. This architecture allows for interconnected files, enabling seamless updates, additions, and modifications across related files. In India, the market for LMSs has matured significantly, with nearly all special libraries and larger academic libraries adopting computer-based systems (Mukhopadhyay, 2002).

Hartson (1998) mentioned that software can be regarded as the fundamental component of a computer system, encompassing a wide range of programs utilized for operating computers and associated devices.

According to Agha (1986) shows that library automation has been a topic of focus since the 1970s, capturing significant attention. Nigerian libraries have encountered numerous obstacles and limitations in their pursuit of developing library automation systems. These challenges encompass a range of issues, including unstable power provision, insufficient qualified librarians to undertake the project, lack of maintenance and support personnel, inadequate information and communication technology (ICT) infrastructure, limited funding, and insufficient ICT proficiency among library staff (Egunjobi & Awoyemi, 2012).

The development of effective information delivery is a key component of university teaching and learning and modern technology. Computer software packages are designed to perform specific functions for computers or information communication technology (ICT) operations. The use of ICT enables the library not only to offer their

community the appropriate information available within it but also to gain access to catalogues of other libraries(Singh & Loncar, 2010).

Librarians make diligent efforts to stay updated with the ever-evolving technologies employed to facilitate access to knowledge and ensure a user-friendly gateway to essential information. The current global trajectory involves utilizing information and communication technology (ICT) to deliver library services. In Nigeria, academic libraries embarked on the automation of their systems in the 1980s, implementing library management systems(MUHAMMAD, 2021).

With the advent of computers, the focus shifted towards the establishment of extensive bibliographic databases and the development of familiar online retrieval and public access systems, now integral to modern libraries. As computers became interconnected within vast networks, forming the Internet, the concept further evolved, leading to research on building digital information libraries accessible to individuals worldwide. Terms such as "virtual library," "electronic library," "library without walls," and more recently, "digital library," have been used interchangeably to describe this expansive notion(Cleveland, 1998).

Preliminary investigations conducted in India highlight the requirements for library automation, comprehension of software, and the implementation of computerization practices in diverse information systems. These studies were conducted approximately a decade ago, Ravichandra Rao and Abideen Sainul (1999) discussed the necessity for automating libraries was emphasized, along with a comprehensive examination of the attributes and functionalities of library automation software. Furthermore, the discussion encompassed supplementary capabilities that library automation software should possess, particularly in relation to the internet. Moreover, their article scrutinized the requirement for assessing library automation software, the factors that should be taken into account, and the checklists utilized for the selection and evaluation of such software(Rai & Kumar, 2011).

Open-source software solutions that are accessible for both organizations and individuals to establish Digital Libraries (DL) are available. To assess these digital software packages, the authors devised a 12-point checklist categorized into 12 distinct areas. Prior to creating the checklist, the authors familiarized themselves with the

desirable attributes of effective DL software packages through a thorough review of existing literature. Subsequently, the checklist was employed to evaluate four well-known DL software packages: Greenstone, Fedora, Eprints, and CDSware. Based on their analysis, the authors concluded that Greenstone was the sole software package that predominantly met the major criteria outlined in the checklist(Rai & Kumar, 2011).

Koha was initially launched online in 2000, and numerous open-source software (OSS) projects were subsequently developed with the objective of serving the library and information science field. Several of these projects, including Greenstone, DSpace, and VuFind, have garnered a substantial user community worldwide. They have demonstrated continuous enhancement of features and valuable exchange of ideas through the collective knowledge gained from shared experiences.

Apart from the philosophical similarity, there are financial motives for libraries to seek cost-effective yet high-quality technological solutions that enable them to efficiently cater to their users. With library budgets diminishing, the expenses associated with library resources escalating, and user demands consistently on the rise, open-source software (OSS) serves as a valuable aid for librarians. It allows them to economically and efficiently automate their operations and services, while also serving as a constant evaluation of user requirements.

A comprehensive library management system (LMS) is typically anticipated to encompass all standard library operations, including procurement, cataloging, circulation, administration, serials management, online public access catalog (OPAC), interlibrary loan (ILL), and generation of statistical reports. Moreover, it should offer the convenience of accessing any sub-module within these primary functional modules directly(Giri, 2012).

Regarding the difficulties and disappointments associated with software implementation in Nigerian libraries, particularly in university libraries, literature reviews reveal that the presence of unsuitable projects in library settings has significantly contributed to the failures of automation initiatives. As a result, there is substantial evidence of frequent changes in software usage within university library automation projects, compelling these institutions to undergo migrations from one

software solution to another. Hudron Kari and Emmanuel Baro (2014) enumerated the major challenges in the University of Lagos Library automation program:

1. Lack of adequate finance; shortage of manpower.
2. Lack of skills by some professional librarians.
3. Power outages; occasional system failures.
4. Staff attitudes toward automation; and
5. Inadequate training.

It has been argued that the failure rate of ICT projects in the least industrialized countries is 75 per cent higher than in developed countries, mainly due to the lack of appropriate skills and knowledge.

Pressman (2005) suggested and affirmed that the success of computer software hinges on its ability to fulfill the requirements of its users, exhibit reliable performance over an extended duration, offer ease of modification, and ensure user-friendly interaction. It is crucial to acknowledge that the primary objective of implementing library automation in a university library is to bolster the library's capacity to meet the needs of its user community. This includes facilitating organized and efficient access to information stored within the library, enabling local access as well as potential global accessibility. To accomplish this objective, it is imperative to exercise caution in establishing an information and communication technology (ICT) infrastructure and software management system that can ensure efficient administration of library automation, leading to the effective provision of services(Baro et al., 2014).

The advent of information technologies has revolutionized library services, replacing conventional practices like card catalogs, printed materials, and face-to-face reference with modern services and delivery methods. These include electronic collections such as e-books, e-journals, and databases, as well as virtual reference services and other online offerings. The contemporary trend in electronic libraries involves the introduction of innovative services specifically designed for the online and web-based environment(Nfila, 2008).

Malwad (1995), said that in the publication titled "Criteria for Choosing Library Automation Software" explored various software packages accessible in the market that cater to a broad spectrum of applications, encompassing library management tasks and information storage and retrieval. These software solutions possess distinct features, exhibit diverse pricing structures, and undergo continuous updates. The process of selecting an appropriate software package holds significant importance in the implementation of a library automation system. The selection process takes into account the specific requirements of the institution, its operating environment, financial considerations, and the intended goals and objectives of the users. Joint (2006), suggested in his article "*Evaluating library software and its fitness for purpose*" Presents a conceptual article that draws on established software evaluation models to develop a tailored framework for assessing the quality of software in information retrieval and educational applications within library settings. The primary objective is to adapt overarching principles of software quality assessment to address the unique requirements and characteristics of library environments. The article proposes a comprehensive software quality model encompassing key factors such as functionality, reliability, usability, efficiency, maintainability, and portability. Muir (2005), suggested in his article "*An introduction to the open-source software issue*" Explores the topic of open-Source Software (OSS) by examining its characteristics and usage, as well as its prevalence in universities and libraries in Western countries such as the United States, Canada, and New Zealand. The article highlights how OSS enables programmers to modify and share the software, with the condition that these modifications are accessible to fellow developers, as outlined in the article.

Despite the existence of numerous publications that offer details about the names, features, availability, and costs of library software packages, they fail to adequately assist librarians or information managers in the selection process due to their lack of comprehensive coverage. In order to address this literature gap, this study aims to examine books, journal articles, and other publications pertaining to library automation, specifically focusing on the global aspects of library automation. While a majority of the articles are centered around the Indian perspective, they contribute valuable insights to the research. For instance, (Mukhopadhyay, 2005)In "*Progress of Management software: an Indian scenario*" discusses the author explores the evolution of library management software in recent decades, examining the distinctive features and

advancements in library automation software, particularly focusing on the options available in the Indian context. Adeniran (1999), "*Library software in use in southern Africa: a comparative analysis of search engines, database fine-tuning and maintenance tools*" The researcher conducted a comprehensive study encompassing various types of libraries in Botswana, Lesotho, Mozambique, Namibia, South Africa, Swaziland, and Zimbabwe. The study identified 29 software packages based on 22 percent of usable survey responses. It thoroughly examined the search engines, customization options for database structure, import/export capabilities, and other tools provided by commercially available packages in the region. The study also investigated the operating environments and modes of these software packages. In response to the high costs associated with software development and maintenance, particularly in developing countries, the Netherlands government took the initiative to create a library software package tailored to the specific needs of libraries in such regions.

Ramesh (1998), said that in this article "*Technical problems in University libraries on Automation-An overview*" The author emphasized the importance of organizing the technical services of a library efficiently in order to provide effective service to modern-day readers. They discussed the conventional approaches used for managing technical services before automation and highlighted the significant changes brought about by information technology in the infrastructure and challenges faced by university libraries. The aim is to adopt recent applications that facilitate fast and efficient service to users, including acquisition, cataloguing, circulation, and other related tasks.

Aryal (2005), suggested in his article "*Library automation in Kathmandu University*" the author provided an overview of the implementation of SOUL (Software for University Libraries) in Kathmandu University, emphasizing its adaptability and versatile features for automating libraries of various types. They also highlighted the efficiency and speed achieved in circulation and transaction processes through the utilization of barcodes across the library's collections.

Airy (1999), focuses in "*Preparing Thesis Bibliography with Reference to Health Literature 1995-1998 using the software CDS/ISIS*" the author suggests that the current trend in the library profession is shifting towards a paperless and digitally advanced environment, prioritizing accessibility to information over an extensive collection of physical books. They emphasize that the implementation of efficient library software

on computer systems is crucial for achieving this goal. Automating all library services is seen as a favorable decision, as it leads to improved precision, faster processing, enhanced networking capabilities, efficient sorting and printing, optimal utilization of reading materials, user-friendly interface, effective bibliographic controls, high-quality service, and enhanced reputation of the library.

Shrestha (2000), focuses on presents a cursory assessment of the CDS/ISIS software in "*Preparation of bibliographic index on serial article of health science literature with reference to CDS/ISIS software package*". The paper emphasizes the creation of a bibliography specifically focused on theses at the bibliographic level. Additionally, it underscores the significance of library automation. Pradhan (1995) explores data files, data elements, and provides examples of CDS/ISIS Pascal for the acquisition, cataloguing, and circulation systems of libraries. It also discusses the required programs for developing these systems and includes checkpoints for reference.

Regarding this research, the primary objective of the literature review is to gain a comprehensive understanding of the global initiatives and projects related to library management systems, along with the factors and conditions that influenced their success.

The chosen approach for the literature review is the browsing method, which involves examining and analyzing both print and electronic sources to identify their relevance, appropriateness, and usefulness to the given topic.

Software is a vital element of the computer system, serving as the primary component that enables data manipulation. It comprises a collection of programs that govern the operations of the computer. The absence of software renders the computer merely a machine, as software acts as the crucial intermediary between the machine and human. It assumes the responsibility of processing both numerical and logical data. Presently, there exists a diverse array of software options tailored for various library applications.

Minkova (2018) define that Open-source software refers to computer software that is accompanied by its source code, made available under a license that grants users the freedom to examine, alter, and distribute the software without restrictions. Typically, open-source software is developed in a collaborative and transparent manner, engaging a wide community of contributors.

Anuradha and Sivakaminathan (2009) described ILAP, an indispensable library software, streamlines and automates various functions and processes within libraries, encompassing acquisitions, cataloging, circulation, serials management, and an online public access catalog (OPAC). Serving as an enterprise resource planning system, ILAP facilitates the monitoring of library holdings, purchase orders, payment records, and borrower information.

Ahmad (1993) defined digital library software refers to a comprehensive package of software tools designed for constructing and disseminating collections of digital resources. It offers a novel approach to organizing information and making it accessible through the Internet or portable storage devices.

Haji et al. (2021) defined software plays a vital role in maximizing the utilization of hardware, and Library Management Software (LMS) has become indispensable for delivering excellent customer service, efficient stock management, and effective service management in libraries. This recognition is built upon the accumulated wisdom and expertise of library professionals throughout history.

Tramboo et al. (2012) cited in according to O'Mahony, the concept of open source represents an approach to software development that leverages the collective expertise of a distributed network of reviewers and the transparent tracking of progress.

Rahman (2014) define the majority of commonly used software is proprietary, implying that it involves a cost and the code is limited, prohibiting modifications, copying, or alterations from its original form.

Tramboo et al. (2012) mention that open-source software for digital libraries simplifies the creation and display of information collections, offering search functionality and browsing capabilities based on metadata. These software solutions are user-friendly, require minimal maintenance, and support automatic augmentation and reconstruction. Greenstone is an example of such open-source software, designed to empower users, particularly in educational institutions and libraries, to develop their digital library collections encompassing diverse domains such as education, science, and culture.

Randhawa (2013) described Evergreen is a library management software that provides assistance for user/patron administration, automated email notifications for overdue or

pre-due items, generation of statistical reports, web browser-based remote access, and support for the session initiation protocol (SIP).

Rafiq and Ameen (2009) the study primarily examined Koha as a robust library management system that encompasses extensive capabilities and remarkable attributes (About Koha, 2008). Koha serves as a software solution for various facets of library functions including circulation, cataloging, acquisitions, and others. It adheres to established library norms and protocols (MARC21, UNIMARC, Z39.50, etc.), accommodates diverse database formats, and operates across multiple operating systems. Moreover, Koha boasts seamless integration, multilingual capabilities, and supports concurrent user access.

Müller (2011) the study concentrated on Integrated Library Systems (ILS), which are software applications responsible for the management and circulation of library resources to patrons. The research emphasized the significance of flexibility as a crucial aspect to evaluate when selecting an ILS software, as it should possess the capacity to adapt to the evolving needs of patrons in the future.

Müller (2011) the study centered on Koha as an Integrated Library System (ILS) that stands out for its extensive international options. These options include the flexibility to choose different date formats (US, metric, ISO), the ability to select between UNIMARC or MARC21 MARC record types, and support for 25 languages. Koha distinguishes itself by offering features related to FRBR (Functional Requirements for Bibliographic Records), OAI (Open Archives Initiative), event logs, and reporting based on OPAC (Online Public Access Catalog) usage.

Warr and Hangsing (2009) define that Greenstone is a software solution designed for constructing libraries, providing users with the ability to create extensive distributed collections of digital resources. While the precise number of installations is not known, it is evident that there is a significant volume of software downloads for Greenstone.

Müller (2011) suggested that, opting for open-source software in libraries not only decreases expenses but also fosters autonomy in selecting service providers and software vendors, reinforcing the objective of information dissemination and justifying the utilization of technology within the realm of public service.

Warr and Hangsing (2009) describe that article outlined that Fedora excels in its preservation capabilities and adherence to standards, receiving top scores in these areas. It also garnered the highest ranking in the metadata category, showcasing its extensive support for various metadata standards. Aside from the absence of Z39.50 support, Fedora emerges as a viable choice for meeting long-term digital preservation requirements.

Rahman (2014) defined an all-in-one library management system (ILMS) is typically anticipated to encompass a comprehensive range of library operations, including procurement, cataloging, lending, administration, periodicals management, online public access catalog (OPAC), interlibrary loan (ILL), and generation of statistical reports. Moreover, it should offer seamless access to specific sub-modules within these primary functional areas.

Singh and Sanaman (2012) reported that Koha made its initial online debut in 2000, paving the way for numerous other open-source software (OSS) initiatives in the field of library and information science. Notable examples such as Greenstone, DSpace, and VuFind have garnered widespread adoption worldwide, benefiting from continuous enhancements driven by collaborative insights and shared knowledge.

Warr and Hangsing (2009) found out that Greenstone emerged as the sole software package that consistently met the majority of criteria across multiple categories, earning top marks in five out of twelve areas. These five aspects, including reporting and querying, user interface, automated tools, adherence to standards, and support and maintenance, received full scores. It is evident that Greenstone prioritizes delivering robust functionality to end-users.

Pruett and Choi (2013), As referenced by Pruet, Integrated Library Systems (ILS) encompass both software applications and hardware components that efficiently manage, monitor, and provide convenient access to various informational resources within a library.

Alam and Islam (2011) Examined reports indicate that the state of digitization and automated library systems in Bangladesh is currently at a nascent stage, with limited progress observed. Nonetheless, a handful of initiatives have been observed in recent times, initiated by various institutions.

Rahman (2014) explored in the discussion was the functionality of DSpace, which primarily revolves around the management of a digital repository. DSpace is designed to facilitate the handling of diverse digital content, encompassing articles, books, theses, multimedia files, and bibliographic records. Moreover, it offers multilingual support to cater to a wider user base.

2.2 Conceptual Framework of the Study

Initially, the research will ascertain the libraries affiliated with TU constituents. The various software utilized in the libraries of TU constituent campuses will be classified by the researcher. A questionnaire form will be employed to collect data from relevant individuals, ensuring adherence to a comprehensive checklist. Subsequently, the gathered data will be organized into distinct categories and thematic areas, followed by a qualitative and quantitative analysis of the data.

Witten and Bainbridge (2005) emphasized was the role of digital library management systems in offering a structure for creating and managing digital libraries. These systems encompass fundamental functionalities and facilitate the incorporation of supplementary software to enhance capabilities and provide advanced features.

CHAPTER - III

RESEARCH METHODOLOGY

This chapter delves into the research methodologies and approaches employed in this study, encompassing aspects such as research design, target population, data collection methods, and data analysis procedures. Research, being an intellectual pursuit rooted in a particular approach, strives to identify the most appropriate solution for the problem at hand. The primary emphasis of this study revolves around the examination of library management software in TU Constituent Campus Libraries. The research design and population sampling procedure the data collection techniques and procedures as well as data analysis techniques are described in details.

Research is a methodical and structured approach, accompanied by diligent efforts, to examine a particular issue that necessitates a resolution. According to Mouly, " Research is simply the process of arriving at dependable solutions to problems through the planned and systematic collection, analysis and interpretation of data" (Kumar, 1992). Research is a process of collecting and analyzing data to find solutions to problems. It generates new ideas and knowledge that can be used for various purposes. Methodology refers to the system or way of doing research, including systematic procedures and techniques.

3.1 Research Design

A research design is strategy for the collection of information or data. It comprehends to make a planned sequence of the entire process involved of a fruitful problem. The design may be a specific presentation of the various steps in the research process. So, research design is conceptual structure within which the research is conducted. quantitative data collection through googles questionnaire survey and analysis them with purposive sampling methods. In case of this study, the researcher visited and observed that the libraries used various types of software. These software's are Koha, Mumolus, PMB, EMIS Mitra ERP, Libra etc., the above-mentioned software is user friendly and information of the library's collections which could be easily retrieve using this software.

3.2 Sources of Data

The major source of data is primary which has been used for this study. The primary data were collected through emailing, using the questionnaire. Survey research was conducted for the completion of objective of the study. One set of questionnaires was prepared for the purpose of the study. The set of questionnaires was targeted to that Libraries Management software in TU Constituent Campus Libraries.

3.3 Study Population

The study was covered within the 62 TU constituent campus libraries staffs including the numbers 273. Each and every campus library one of them participants of this study were the Librarian, head of library section of Tribhuvan University Constituent Campus Libraries. There were both female and male participants took part in this survey.

3.4 Study Sampling Procedure

For the study, the researcher prepared a set of questionnaires and distributed to the library professionals/ head of library section of Tribhuvan University Constituent Campus Libraries where attempt have done for automation of library.

The researcher personally requested to fill the questionnaire to all concerned library staffs.

In this study, out 62 constituent campuses libraries of TU 35 have been taken where library software is being used for library management. The libraries were excluded for this study where library is not using any kind of software for automation purpose.

3.5 Study Area

Tribhuvan University Constituent Campus Libraries all over the Nepal was the main area for this study which is located at different district and places of Nepal.

3.6 Data Collection Procedure

The researcher prepared the questionnaire to collect data relating to the subject topic. One set of questionnaires was prepared for the librarians/ head of the library which include 33-questionnaire The questions were both closed ended and open-ended. The questionnaire was sent to the libraries after confirmation about the use of library software.

3.7 Data Analysis Procedure

In order to determine the current status of use and application of library software in Tribhuvan University constituent campus libraries, collected data have been analyzed. The data analysis carried out using Microsoft excel.

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

CHAPTER - IV

DATA ANALYSIS AND PRESENTATION

4.1 Campus Email and website

Table 1 Availability of official email and website of the Campus(n=35)

Question	Responses	Number of Campuses	Percentage
Has Official Email	Yes	35	100%
	No	0	0%
Has Campus Website	Yes	32	91%
	No	3	9%
Grand Total		35	100%

Source: Online survey, 2022

Table-1 Based on the given data, we have information regarding the presence of official email and campus websites in a total of 35 campuses. All 35 campuses have an official email, which accounts for 100% of the total campuses.

This indicates that every campus in the dataset has established a communication channel through official email addresses. Out of the 35 campuses, 32 (91%) have a campus website, while 3 (9%) do not. The majority of the campuses (91%) have created an online presence through a dedicated website, allowing them to provide information, resources, and updates to their community.

Overall, the data suggests that having an official email is a standard practice among the 35 campuses. Additionally, the majority of the campuses have established a campus website, indicating a recognition of the importance of an online presence for communication and information dissemination.

4.2 Collections of Information

Table 2 Collections status of books on library

Collections books of Campuses libraries	Number of Campuses	In Percentage(%)
Below 50000	20	57%
50000-100000	8	23%
100000-150000	5	14%
400000-450000	1	3%
550000-600000	1	3%
Grand Total	35	100%

Source: Online survey, 2022

Based on the provided data, we have information about the number of campuses and the number of books in their libraries, divided into different ranges.

The data includes a total of 35 campuses libraries. The majority of campuses (57%) have library collections with less than 50,000 books. The next significant group consists of campuses (23%) with library collections ranging from 50,000 to 100,000 books. A smaller proportion of campuses (14%) have collections between 100,000 and 150,000 books. Only two campuses (3% each) have collections in the higher ranges of 400,000-450,000 and 550,000-600,000 books.

The data suggests that a significant number of campuses have relatively smaller library collections, with less than 50,000 books. This could be due to various factors, such as the size of the institution, available resources, or the focus of the curriculum.

It's important to note that the number of books in a library does not necessarily indicate the quality or effectiveness of the library. Other factors, such as the relevance of the collection to the curriculum, digital resources, and access to interlibrary loan programs, also contribute to the overall value of a library.

Overall, this analysis provides insights into the distribution of book collections in the libraries of the 35 campuses. It highlights the varying sizes of collections and emphasizes that library quality goes beyond the sheer number of books.

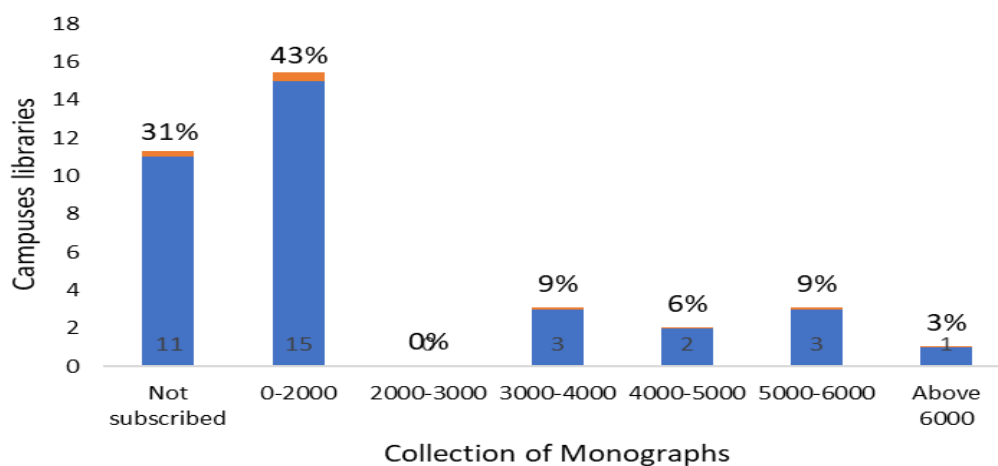


Figure 1 Collection monographs

Source: Online survey, 2022

The provided research data presents information on the number of campus libraries and the range of monographs they have subscribed to.

The data includes a total of 35 campuses. Not subscribed: 11 campuses (31%). The majority of campuses (43%) have subscribed to a range of 1-2000 monographs. A significant portion of campuses (31%) have not subscribed to any monographs. A smaller proportion of campuses have subscribed to monographs in various ranges, with 3 campuses falling in the 3000-4000 and 5000-6000 categories, 2 campuses falling in the 4000-5000 category, and 1 campus having subscribed to above 6000 monographs. The data reveals that a considerable number of campuses (31%) have not subscribed to any monographs. This could be due to various factors, such as limited resources or a focus on other types of resources.

The most common range of monograph subscriptions is between 1 and 2000 monographs, indicating that a significant proportion of campuses have relatively smaller monograph collections. Only a small number of campuses have larger monograph collections, with a few campuses falling into the 3000-6000+ monograph ranges. The data does not provide information about the specific subject areas or disciplines covered by the monographs, which could impact the overall usability and value of the library collections.

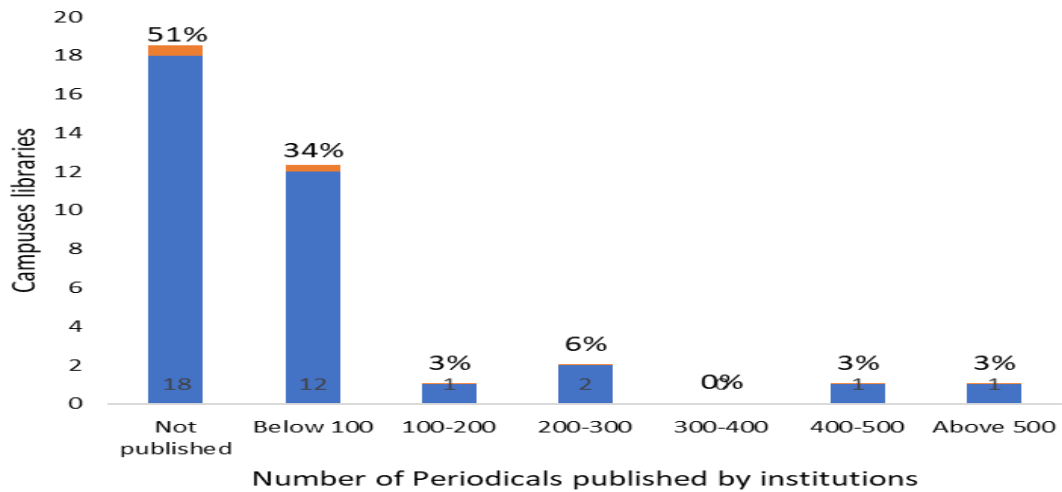


Figure 2 Number of periodicals published by institutions

Source: Online survey, 2022

Figure 2 shows that, based on the provided data on the number of journals and periodicals published by institutions across 35 campuses:

51% of the campuses do not publish any journals or periodicals. 34% of the campuses publish below 100 journals or periodicals.

A smaller proportion of campuses have publication outputs in various ranges, with 2 campuses in the 200-300 category, 1 campus each in the 100-200 and above 500 categories, and 1 campus in the 400-500 range. There are no campuses in the dataset that fall within the 300-400 range of publication outputs.

The data does not provide information about the nature, quality, or subject areas covered by the published journals or periodicals.

It's important to consider factors such as the reputation of the journals, peer-review processes, and citation metrics when evaluating the impact and significance of a campus's publication output.

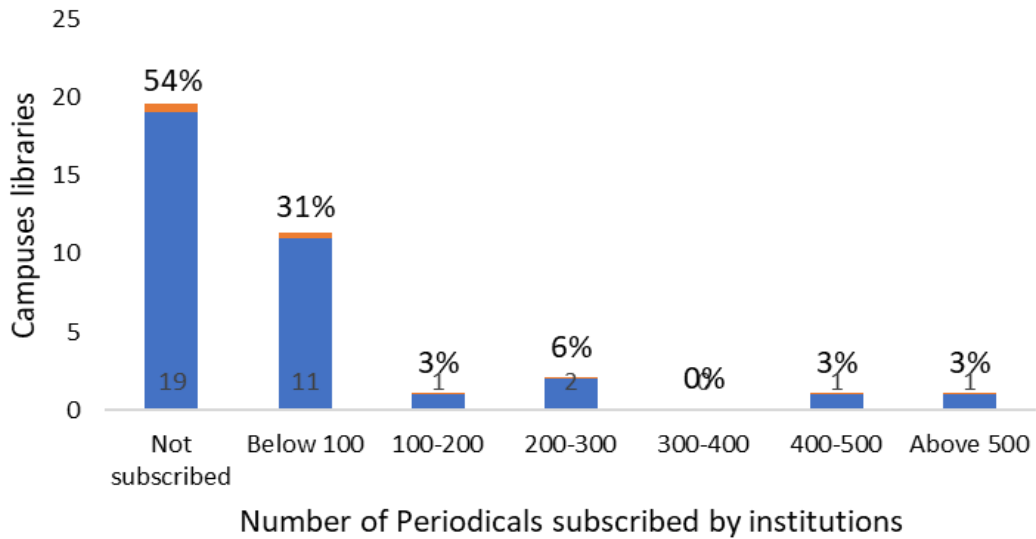


Figure 3 Periodicals subscribed by institutions

Source: Online survey, 2022

Data shows that 54% of campus libraries do not subscribe to journals/periodicals, while 31% have less than 100 subscriptions. Only 3% of libraries have subscriptions ranging from 100-500, and 2% have subscriptions exceeding 500. None of the libraries have subscriptions between 300-400. This suggests a potential lack of emphasis on journal/periodical subscriptions, but individual campus resources and priorities should be considered. More research is needed to understand the reasons for this variation.

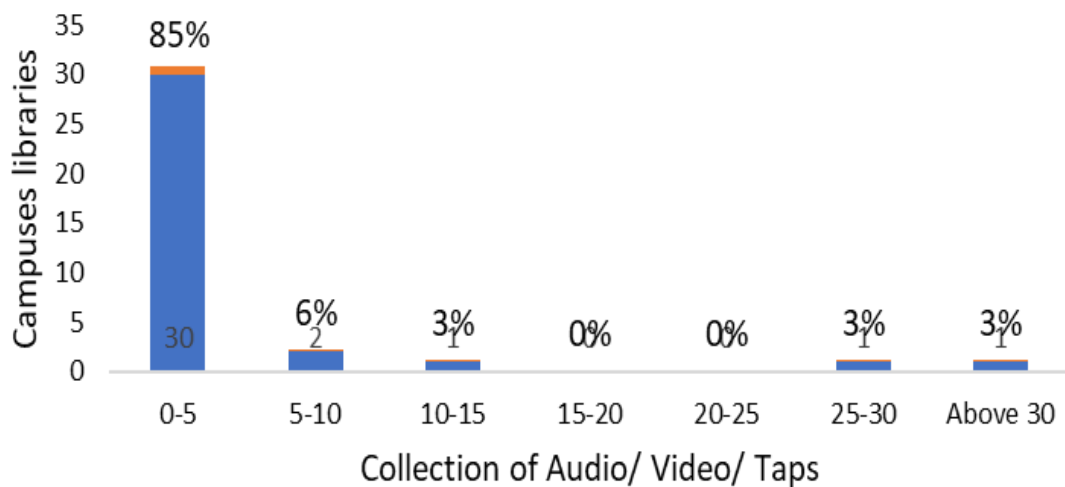


Figure 4 Collection of video/video/tapes

Source: Online survey, 2022

Figure 4 shows, on the given data on the number of campuses library and the presence of audio-video tape collections:

85% of campus libraries do not have any audio-video tape collections. 15% of campus libraries have audio-video tape collections.

Among libraries with audio-video tape collections, 85% have 0-5 collections, while a few libraries have 5-10 collections.

Only two libraries have more than 25 collections. Audio-video tape collections may not be a priority for many institutions, likely due to the prevalence of digital media.

While not widely popular, audio-video tape collections can still hold value in specific fields, such as the arts or history.

Overall, the data indicates that audio-video tape collections are not extensively maintained by campus libraries, with the majority of libraries not having any such collections.

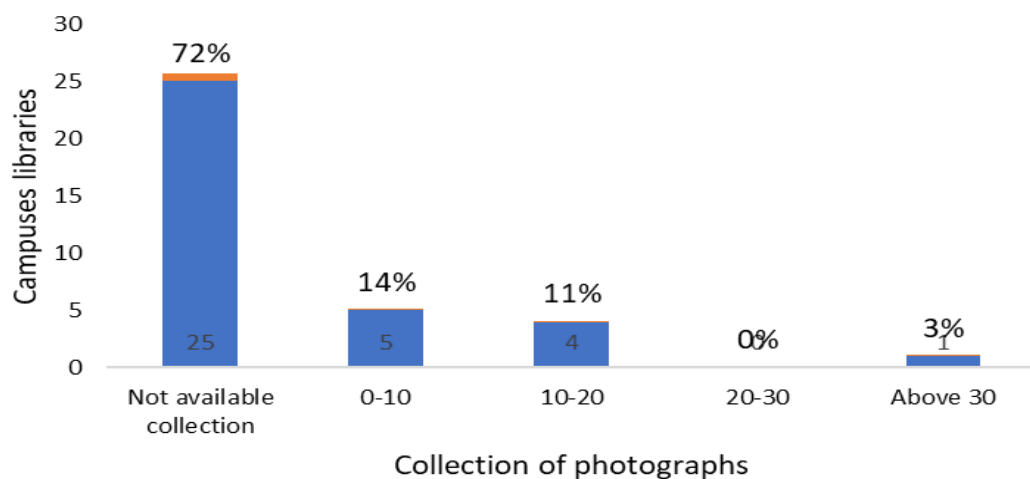


Figure 5 Collections of photographs

Source: Online survey, 2022

The provided data shows the number of campus libraries and the percentage of libraries that have collections of photographs, categorized based on the number of collections. A large majority of campus libraries (72%) do not have any collection of photographs, while only a few libraries (14%) have a small collection of 1-10 photographs, and even fewer libraries (11%) have collections of 10-20 photographs. It is noteworthy that none

of the libraries have collections ranging from 20-30 photographs. Only one library (3%) has a collection exceeding 30 photographs. These numbers suggest that the majority of campus libraries do not prioritize the collection of photographs, possibly due to limited resources or a focus on other media formats. However, it is crucial to consider the specific needs and priorities of individual campuses when interpreting this data.

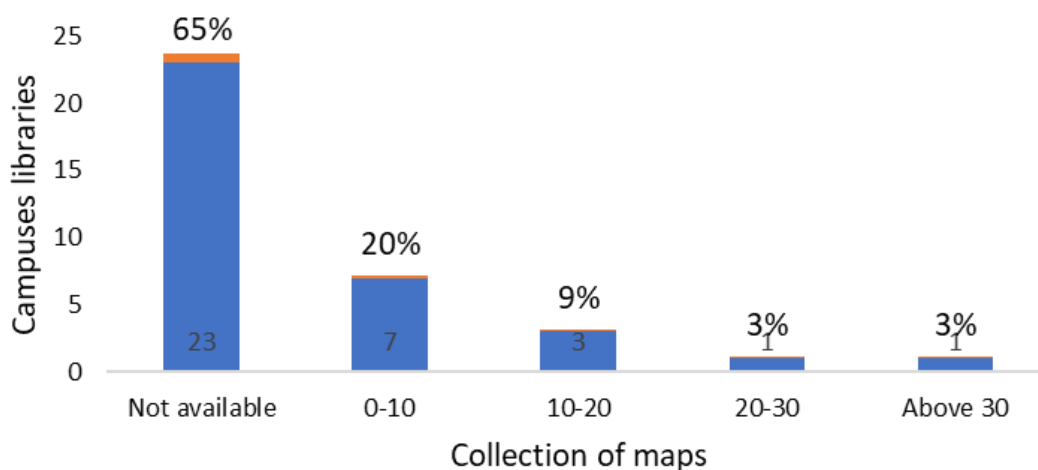


Figure 6 Collections of maps

Source: Online survey, 2022

Out of 35 campuses with libraries, information on the availability of maps is not provided for most (65%). Among the campuses that do report this information, the majority have a small number of maps (0-20) and few number of maps in 4% as (20-30). Only one campus has reported having over 30 maps. Overall, the data suggests that the availability of maps in campus libraries is not well-documented.

Collections no. of Microfiches

Microfiches are not commonly used or valued by academic institutions, with 97% of the campuses reporting not having collected any. Only one campus (3%) has a small collection of five microfiches, and it is the Central Library of TU, making this technology obsolete. Overall, the data indicates a clear lack of interest and usage of microfiches in Nepal's academic institutions.

Table 3 CD-ROM/DVD collection status on the campus library

CD-ROM/DVD	Number of Campuses	Percentage
Not available	24	68%
0-200	7	20%
200-400	1	3%
400-600	1	3%
600-800	1	3%
800-1000	0	0%
1000-1200	1	3%
Grand Total	35	100%

Source: Online survey, 2022

Out of 35 campuses, 68% did not provide any information on the availability of CD-ROM/DVDs in their libraries. Among those that did report, the majority had a small number of CD-ROM/DVDs, with only a few having more than a few hundred. Notably, no campus reported having between 800-1000 CD-ROM/DVDs.

Table 4 Digital collection e-resources (e-books, e-journals) status on the library

Digital collection	Number of Campuses	Percentage
Not available	30	85%
Below 1000	3	9%
1000-2000	0	0%
2000-3000	1	3%
above 3000	1	3%
Grand Total	35	100%

Source: Online survey, 2022

Data from Table 4 indicates that 85% of the 35 campuses have not provided information on the size of their digital collections, suggesting that digital collections may not be widely used or reported. Among those that did report, only a few campuses had more than a few thousand items in their digital collections, with the majority having less than 1000 items.

4.3 ICT Introduced in library

Table 5 Status of ICT introduced in library

ICT introduced on Libraries	No. of respondents/ campuses	Percentages
2035-2040 B.S.	1	3%
2040-2045 B.S.	0	0%
2045-2050 B.S.	0	0%
2050-2055 B.S.	1	3%
2055-2060 B.S.	1	3%
2060-2065 B.S.	5	14%
2065-2070 B.S.	4	11%
2070-2075 B.S.	15	43%
After 2075 B.S.	8	23%
Grand Total	35	100%

Source: Online survey, 2022

Based on the data provided, there are a total of 35 campuses that have responded to the question about when ICT was introduced on their campus libraries.

Among the campuses that responded, the largest percentage (43%) reported that ICT has been introduced in their campus libraries before 2060 B.S. This suggests that there may be a significant number of campuses that have yet to adopt ICT in their libraries. All of the campuses that have introduced ICT, the majority (91%) introduced it between the years 2060-2075 B.S. This suggests that there has been a relatively recent trend towards adopting ICT in campus libraries. only 6% of the campuses reported introducing ICT in the years 2035-2055 B.S., while 18% reported introducing it after 2075 B.S.

Overall, the data suggests that while the adoption of ICT in campus libraries has been relatively recent, the majority of campuses have introduced ICT in the past 15-20 years. However, a significant percentage of campuses have yet to adopt ICT in their libraries.

4.3.1 Used of Electronics Library Equipment's

Use of Computers on Libraries

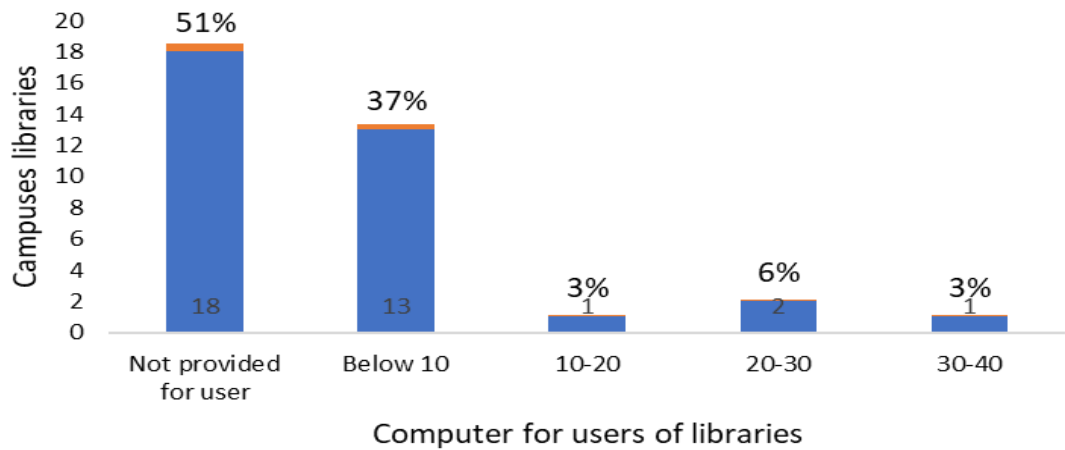


Figure 7 Status of computer for users on libraries

Source: Online survey, 2022

The data shows that more than half (51%) of the campuses do not provide computers in their libraries for users. Only 37% of campuses have fewer than 10 computers available for users, while the remaining 12% have 4 or more computers available. Specifically, 3% of campuses have between 10 and 20 computers, 6% have between 20 and 30 computers, and 3% have between 30 and 40 computers.

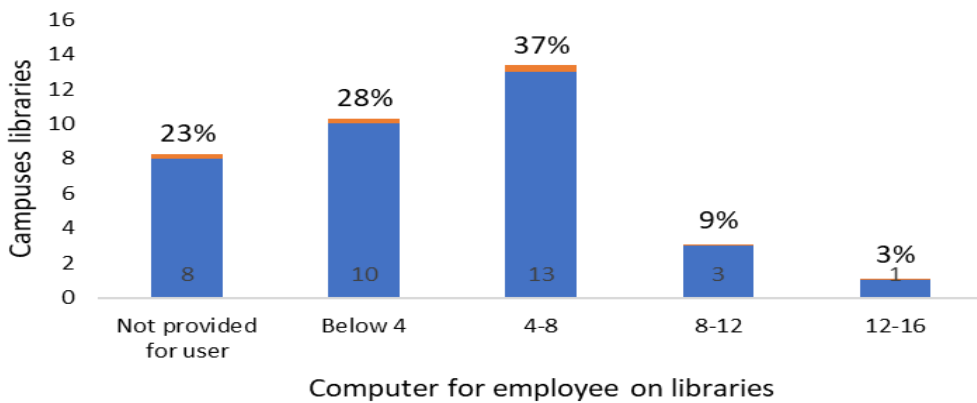


Figure 8 Computer for employee on libraries

Source: Online survey, 2022

According to the data, 23% of campuses surveyed do not provide computers in their libraries for employees. Out of those that do, 28% have less than 4 computers, while 37% have between 4 and 8. Only 9% have between 8 and 12 computers, and none have more than 16. A total of 23% of the campuses surveyed did not offer any computers.

These findings suggest a need for increased investment in technology infrastructure in campus libraries, given the limited resources available in most institutions.

Used of Scanner

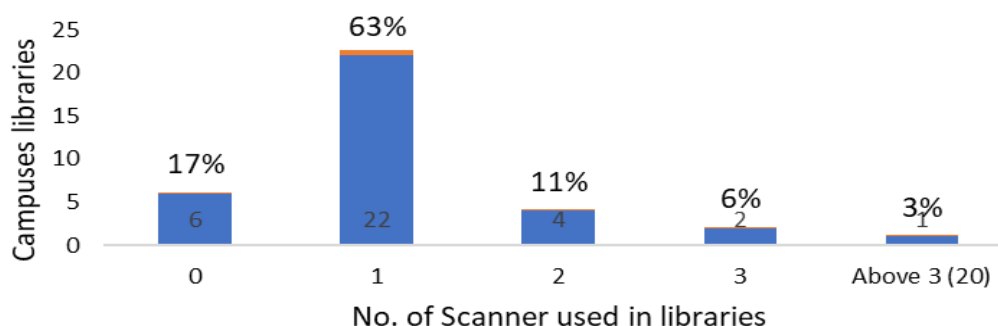


Figure 9 No. of scanner used in libraries

Source: Online survey, 2022

Figure 9 shows that 63% of the 35 surveyed campuses reported using one electronic equipment in their libraries, while 17% reported using none. Only 11% and 6% reported using two or three equipment respectively, and one campus reported using more than three. This suggests that while some campuses have adopted electronic equipment, there is still room for improvement in terms of increasing adoption. However, it's important to note that the data is limited to the responses of 35 campuses and may not be representative of all libraries in Nepal.

Used of Terminals

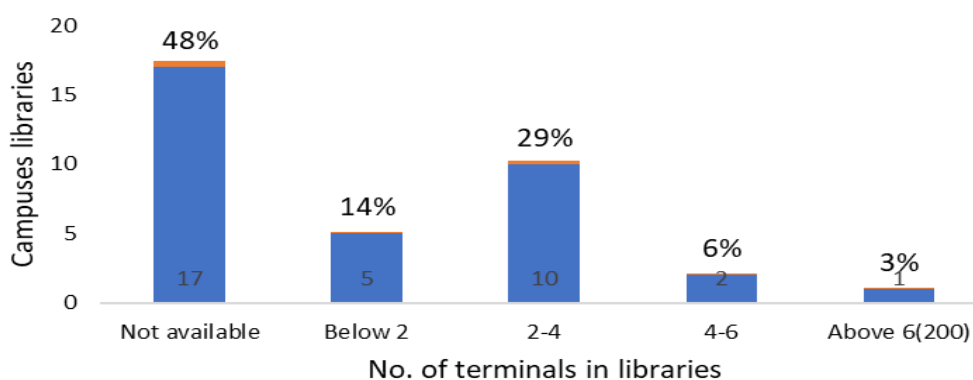


Figure 10 No. of terminals in libraries

Source: Online survey, 2022

The data shows that 48% of campuses surveyed do not have any terminals in their libraries, which could affect accessibility for users. However, 29% of campuses have 2-4 terminals, 14% campuses use below 2 terminals and 3% have more than 6 terminals. This suggests that while there is a need for improvement in some areas, a significant number of campuses do have terminals available for their users.

Used of Printers

Table 6 No. of printer available

No. of Printer	Number of campuses	Percentages
Not available	5	14%
Below 2	10	29%
2-4	18	51%
4-6	1	3%
Above 6	1	3%
Grand Total	35	100%

Source: Online survey, 2022

Table 6 shows that 14% of campuses have no printers in their libraries, while 29% have less than 2 printers. 51% have 2 to 4 printers and only 3% have 4 to 6 printers. A mere 3% of campuses have more than 6 printers. Most campuses have 2 to 4 printers, indicating a moderate provision of printers in libraries. However, the limited number of printers available in some campuses could potentially hinder users who require hard copies. Nonetheless, the percentage of campuses without printers is low.

Used of Barcodes

Table 7 Used barcode on libraries

Used barcode on libraries	No. of Campuses library	In percentages
Not available	10	29%
Below 2	10	28%
2-4	12	34%
4-6	3	9%
Grand Total	35	100%

Source: Online survey, 2022

Data from 35 campuses, Table 7 shows that 29% did not provide information on barcode readers. Among the campuses that did provide data, 28% have less than 2 barcode readers, indicating limited resources. 34% have 2-4 barcode readers, suggesting some adoption of barcode technology. However, only 9% have more than

4-6 barcode readers. Investment in this technology could improve library operations and enhance user experience, indicating room for improvement.

Used of RFID

The majority of surveyed campuses (85%) do not utilize RFID technology in their libraries. Only a small percentage (6%) have 2-4 RFID installations, while 9% have less than 2. This indicates that traditional methods are still commonly used for inventory management and security. However, there is potential for increased adoption of RFID technology, which could enhance efficiency and improve the user experience in campus libraries.

Used of Other Electronics Equipment's

Table 8 Other equipment on libraries

Other equipment on libraries	No. of Campuses library	In percentages
Not available	28	80%
Photocopy	4	11%
CC Camera	3	9%
Grand Total	35	100%

Source: Online survey, 2022

The data highlights three types of equipment mentioned in the "Others" category - "Not available", "Photocopy", and "CC Camera". The majority of the campuses (80%) reported "Not available" in this category, suggesting a lack of equipment. Among the campuses that provided data for this category, the most common equipment was the photocopy machine, with 4 out of 35 (11% of the total) campuses reporting having one photocopy. In contrast, the CC camera was the least common equipment, with only 3 out of 35 (9% of the total) campuses reporting having one. These findings imply that photocopy machines are more commonly adopted among campuses than CC cameras.

4.4 Operating System in Library

Table 9 Operating system on libraries

Operating system on libraries	No. of Campuses library	In percentages
Windows	25	71%
Unix base Linux	2	6%
Macintosh	0	0%
Others	8	23%
Grand Total	35	100%

Source: Online survey, 2022

Table 9 shows that the majority of the sampled campuses, which amounts to 71%, are using the Windows operating system on their campus library computers. This suggests that Windows is the most popular operating system in campus libraries, and it could be due to its user-friendly interface and widespread availability. However, it is worth noting that a small percentage of campuses (6%) use Unix-based operating systems, such as Linux. These operating systems are known for their stability, reliability, and flexibility, and they are often preferred by advanced users and developers. The data also reveals that a significant proportion (23%) of campuses use other operating systems, which could include macOS or Chrome OS.

Table 10 Available server on libraries

Available server on libraries	No. of Campuses library	In percentages
Not available	7	20%
1-2	19	54%
2-4	6	17%
4-6	2	6%
More than 6	1	3%
Grand Total	35	100%

Source: Online survey, 2022

The majority of campus libraries (20%) do not have any servers, while 54% have 1-2 servers. A smaller percentage have 2-4 servers (17%), 4-6 servers (6%), or more than 6 servers (3%). This suggests that most campus libraries have a limited number of servers, which may impact the range of electronic resources and services they can offer to users.

4.4.1 Library Automation

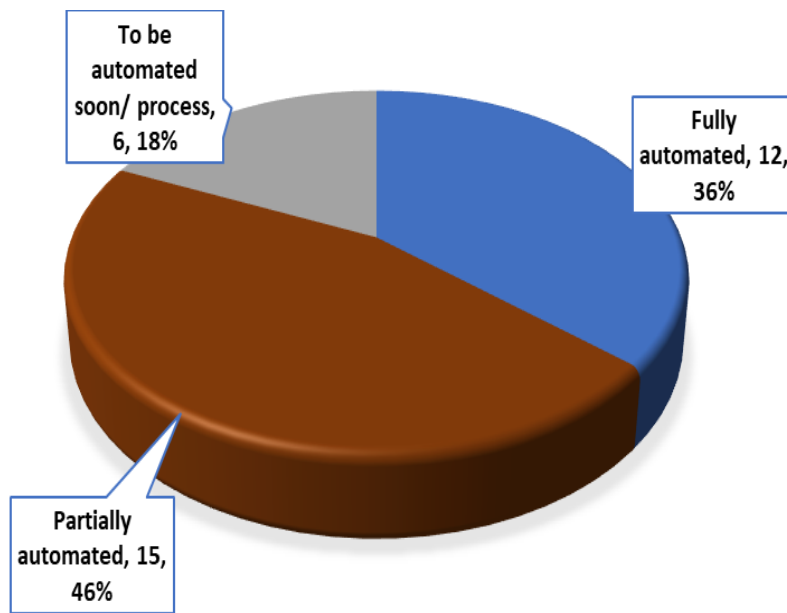


Figure 11 Automation on libraries

Source: Online survey, 2022

Figure 11 shows data from 35 campuses on automation of library systems for managing digital resources. 6% have not automated, 43% are partially automated, 34% are fully automated, and 17% plan to automate soon. While there is a trend towards automation, there is still room for growth, and the reasons for the variation in automation rates are not provided. Further research is needed to better understand the factors that influence decisions on automation.

4.5 Technical Supports for ICT /Automation

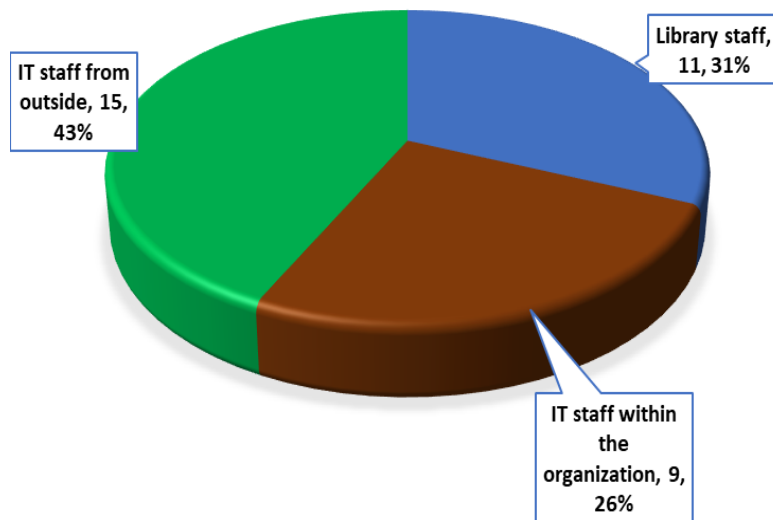


Figure 12 Provides the technical supports for ICT /automation service

Source: Online survey, 2022

Figure 12 displays a relatively even distribution of technical support options for ICT or automation services in the sample of 35 campuses. The majority of campuses (31%) provide technical support through library staff, followed by IT staff within the organization (26%) and outsourcing IT staff (43%). These options suggest that campuses take different approaches to provide technical support, and there is no one-size-fits-all solution.

4.6 Information Retrieval Techniques

Table 11 Bibliographical information accessing techniques

Information Retrieved Techniques	Number of Campuses	Percentages
a) Through LAN (in campus)	7	20%
b) Through WEB/WAN	3	9%
c) With the help of library staff	15	43%
d) Card Catalogue	1	3%
Both a & b	2	6%
A,b,c	2	6%
Both a & c	1	3%
Both b & c	1	3%
b,c,d	1	3%
Both c & d	2	6%
Grand Total	35	100%

Source: Online survey, 2022

According to the data from 35 campus libraries, the most popular method for information retrieval is assistance from library staff, reported by 43% of libraries. LAN (in campus) was reported by 20%, while WEB/WAN was reported by only 9%. Card catalogues are no longer widely used. The data also shows that different combinations of techniques are used for information retrieval. In conclusion, although technology-based techniques are available, most campus libraries depend on library staff to help users access information.

4.7 Library Personnel Information

Table 12 Staff designation with number

Staff of TU Constituents Campuses Library			
SN	Designation	No. of Staff	Percentage
1	Deputy librarian	6	2%
2	Library officer	17	6%
3	Section Officer	13	5%
4	Head Assistant (Mu.Ka.Sa)	40	15%
5	Office Assistant	30	11%
6	Library office assistant	43	16%
7	Office account assistant	2	1%
8	Technician	6	2%
9	Mimographer	1	0%
10	Book Checker	22	8%
11	Audio Reader	1	0%
12	Audio Editor	1	0%
13	Lab assistant	1	0%
14	Volunteer	3	1%
15	Helper	87	32%
	Grand Total	273	100%

Source: Telephone survey, 2022

TU Constituent Campuses Library has a diverse range of staff members with various job designations, but the majority are in support positions like "Helper", "Library office assistant", and "Office Assistant". The smaller percentages of higher-level positions may suggest a flatter organizational structure. However, the data also shows a deficiency in professional staff, technicians, and IT personnel, which may hinder the library's smooth functioning. The insights provided by this data can aid in identifying areas for staffing adjustments and training.

Table 13 Different software knowledge base staff number

Total library staff of TU Constituent Campuses Library	No. of Staffs	Percentage
General ICT knowledge	15	5%
Library Software Knowledge (e.g.KOHA, PMB, EMIS, etc.)	23	8%
Digital Library Software Knowledge (e.g. Greenstone, DSpace etc.)	6	2%
LIS background	29	11%
Computer Science background	25	9%
Others (Administrative Staff)	175	64%
Grand Total	273	100%

Source: Online survey, 2022

Among the 273 Library staff in TU Constituent Campuses Library, only a small percentage possess specific knowledge/skills related to ICT, library software, digital library software, LIS background, or computer science background. The majority of staff don't have these skills, and 64% fall under the "Others" category. This data provides insights into the strengths and weaknesses of the library's workforce and can be useful for identifying areas for improvement or training. However, it's important to note that the data represents a snapshot in time and may change over time as staff gain new skills or leave the organization.

4.8 ICT on Libraries

Table 14 ICT introduced on libraries

ICT Introduced on libraries	No. of Campuses library	In percentages
2035-2040 B.S.	1	3%
2040-2045 B.S.	0	0%
2045-2050 B.S.	0	0%
2050-2055 B.S.	1	3%
2055-2060 B.S.	1	3%
2060-2065 B.S.	5	14%
2065-2070 B.S.	4	11%
2070-2075 B.S.	11	32%
After 2075 B.S.	8	23%
Not introduced till now	4	11%
Grand Total	35	100%

Source: Online survey, 2022

According to the data provided, 11% of the 35 campuses reported that ICT has not yet been introduced to their library. Among the respondents who have introduced ICT, the majority (32%) did so between 2070-2075 B.S., and 23% introduced it after 2075 B.S.

Only 14% introduced it between 2060-2065 B.S., while 11% introduced it between 2065-2070 B.S. Interestingly, there were no campuses that introduced ICT before 2035 B.S. or between 2040-2045 B.S. and 2050-2055 B.S., suggesting that the adoption of ICT in libraries has been a more recent trend in Nepal. While this data provides insights into the adoption of ICT in libraries in Nepal, it's important to remember that it's based on a limited sample size and may not be representative of all libraries in the country.

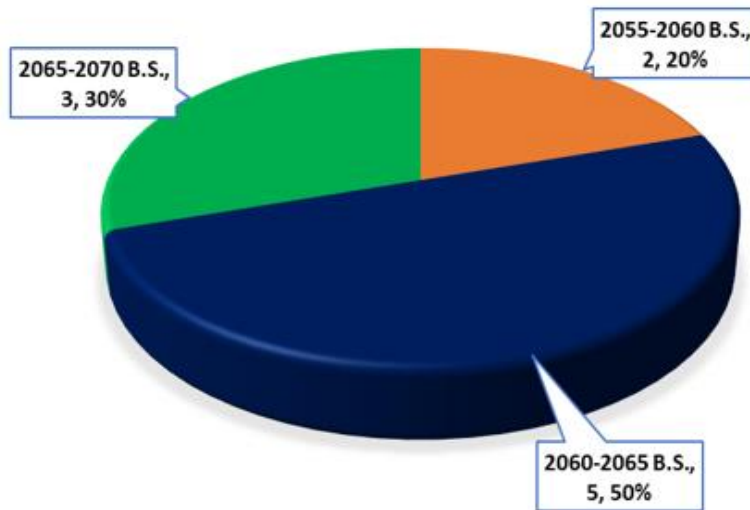


Figure 13 Automation introduced on libraries

Source: Online survey, 2022

The data represents the year of introduction of automation in the libraries of 35 campuses. Only 6% of the respondents reported that automation was introduced in their libraries between 2055-2060 B.S. 14% of the respondents reported that automation was introduced in their libraries between 2060-2065 B.S. 9% of the respondents reported that automation was introduced in their libraries between 2065-2070 B.S. 9% of the respondents reported that automation was introduced in their libraries between 2070-2075 B.S. 9% of the respondents reported that automation was introduced in their libraries after 2075 B.S. 63% of the respondents reported that automation has not been introduced in their libraries till now. From the data, it can be inferred that the majority of the campuses have introduced automation in their libraries after 2075 B.S.

4.9 Types of Library Software is Being Used

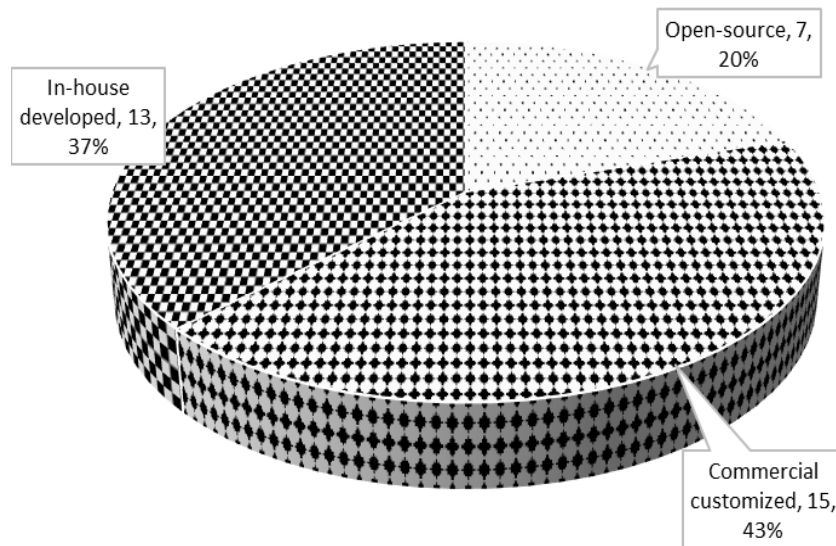


Figure 14 Types of software being used on libraries

Source: Online survey, 2022

Figure 14 shows that, presents data from a sample of 35 campuses regarding the type of software being used in their campus library. Out of these 35 campuses, 7 (20%) campuses have used open-source types of software. Open-source software refers to software whose source code is freely available for anyone to use, modify, and distribute.

The data also shows that 15 (43%) campus libraries have used commercial customized types of software. Commercial customized software is software that is developed and sold by a company for a specific purpose and can be customized based on the needs of the user.

Finally, the data shows that 13 (37%) campus libraries have used in-house developed types of software. In-house developed software is software that is developed by the campus library's own IT department or by a contracted software development company specifically for the needs of the library.

4.10 Used and Installed Library Software

Table 15 Used and installed software

Used and installed software	No. of respondents/ campuses	Percentages
Koha	10	28%
Cosmos	1	3%
Mumolas	6	17%
E-Library	1	3%
Mitra ERP	17	49%
Grand Total	35	100%

Source: Online survey, 2022

Out of the 35 surveyed campuses, Mitra ERP was the most installed library software (49%), followed by Mumolas (17%) and Koha (28%). Only one campus each had Cosmos and E-library installed. Further research is needed to understand the reasons behind these choices and the effectiveness of these software systems.

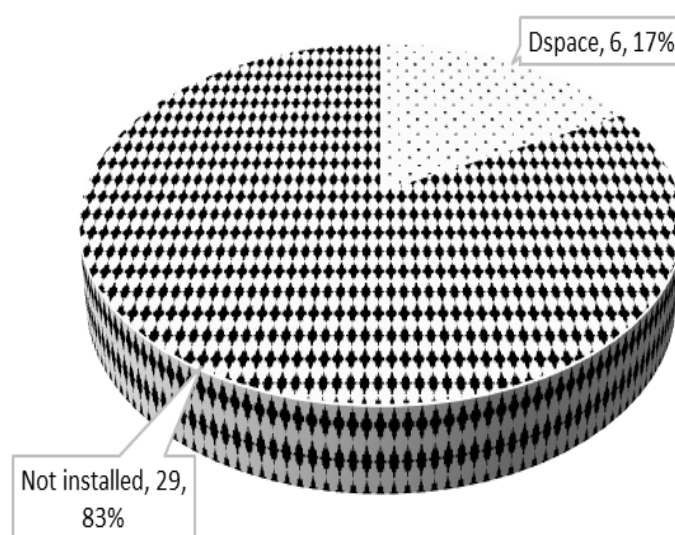


Figure 15 Installed digital library software

Source: Online survey, 2022

The data provided shows the installation status of digital library software, specifically DSpace, in a sample of 35 campuses. Out of the 35 campuses, 29 (83%) have not installed any digital software, while DSpace has been installed in 6 (17%) of the campuses.

4.10.1 Decision for Selection Library Software

Table 16 Makes decision regarding the selection of software

Decision on selection of software	Number of Campuses	Librarian	Office authority	Professionals	In %
Koha	8	1		7	23%
Mitra ERP	17		17		48%
Mumolus	8		3		23%
E-library	1		1		3%
Cosmos	1		8		3%
Grand Total	35	0	29	8	100%

Source: Online survey, 2022

The data reveals variations in the decision-making process for software selection across 35 campuses. Among the software options:

Koha: Professionals had a significant involvement (87.5%), while one librarian (12.5%) also contributed.

Mitra ERP: Office authorities were solely responsible for decision-making in all 17 campuses (100%), without involvement from librarians or professionals.

Mumolus: 37.5% of campuses had involvement from office authorities, but no response was provided for librarians or professionals.

E-library: A single campus reported involvement from one office authority (100%), with no response from librarians or professionals.

Cosmos: A single campus involved eight office authorities (100%), but no response was provided for librarians or professionals.

The data indicates a lack of comprehensive involvement from all stakeholders in the decision-making process. Librarians and professionals were absent or minimally represented in many cases, potentially limiting their expertise and impact on software selection. The dominance of office authorities suggests a centralized approach in some campuses.

It is important to consider other factors such as cost, functionality, user requirements, and institutional policies, which are not captured in this data.

In conclusion, a more inclusive approach involving all relevant stakeholders is recommended to ensure comprehensive and informed decisions regarding software selection.

4.10.2 Software Installation, Development, Implementation in Library

Table 17 Responsible for installation, development and implementation of automation and software project

Responsible for installation, development of software	Number of Campuses	Library staff	ICT department attached with the library	Library staff and ICT attached staff	Outsourcing	In %
Koha	8	7		1		23%
Mitra ERP	17				17	48%
Mumolus	8		5		3	23%
E-library	1				1	3%
Cosmos	1				1	3%
Grand Total	35				100%	100%

Source: Online survey, 2022

The data reveals that Koha software predominantly relies on library staff for the installation, development, and implementation of automation and software projects, with a majority of campuses (88%) reporting this responsibility allocation. Conversely, Mitra ERP, Mumolus, E-library, and Cosmos software systems exhibit a higher tendency to outsource these tasks, with varying percentages of campuses (ranging from 23% to 48%) reporting outsourcing as the chosen approach.

Additionally, the data indicates that none of the campuses using Mitra ERP, Mumolus, E-library, or Cosmos mentioned a combination of library staff and ICT attached staff being responsible for these projects, highlighting a lack of joint involvement between these two groups in the surveyed campuses.

It is important to consider that the data represents the responses from the surveyed campuses and may not reflect the preferences and practices of the entire user population. Further investigation is required to gain a comprehensive understanding of the reasons behind these different approaches and their potential impact on project implementation effectiveness and efficiency.

4.10.3 Maintenance of Library Software

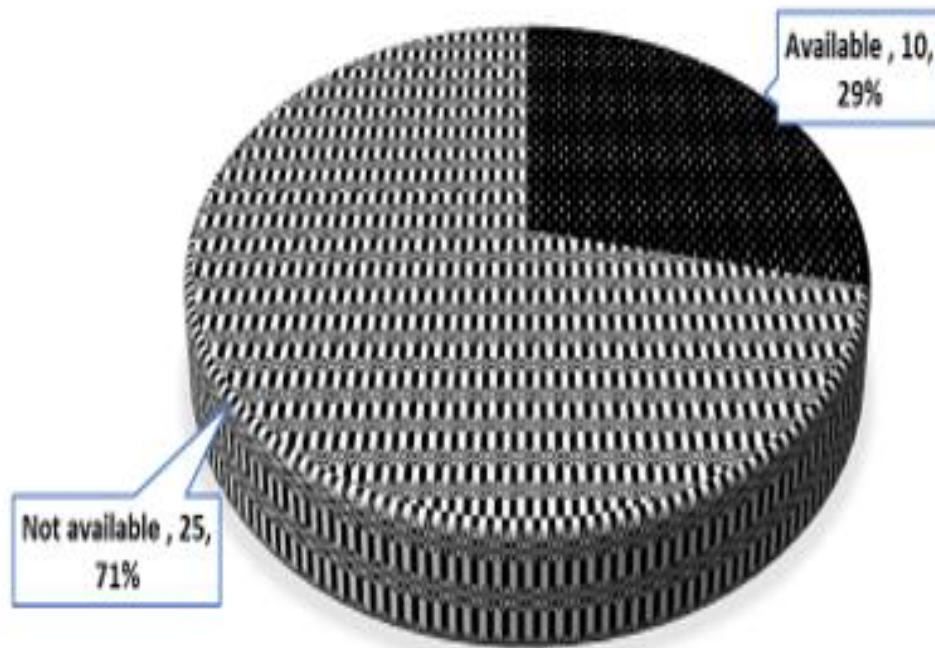


Figure 16 Status of easily availability of technician for maintenance

Source: Online survey, 2022

The provided data presents the status of easily available technicians for maintenance in a sample of 35 campuses. The analysis shows that only 10 (29%) campuses have technicians available for maintenance, while 25 (71%) campuses do not have technicians available. These findings suggest that there is a significant need for universities to prioritize the allocation of resources and support for the maintenance of their technological infrastructure in order to improve the efficiency and effectiveness of their digital library systems.

4.10.4 Provision of MARC Data Import and Export

Table 18 MARC data import and export in software

Provision for MARC data import and export in software	Number of Campuses	Available	Not available	Percentage
Koha	8	8		23%
Mitra ERP	17		17	48%
Mumolus	8		8	23%
E-library	1		1	3%
Cosmos	1		1	3%
Grand Total	35			100%

Source: Online survey, 2022

Upon critically analyzing the provided data on the provision for MARC data import and export in different software systems, the following observations can be made:

Koha:

All 8 campuses (100%) reported that Koha provides the provision for MARC data import and export. This indicates that Koha supports the import and export of MARC (Machine-Readable Cataloging) data, which is a widely used standard for bibliographic data exchange in libraries.

Mitra ERP, Mumolus, E-library, and Cosmos:

Similarly, all campuses using Mitra ERP, Mumolus, E-library, and Cosmos (a total of 27 campuses) reported that these software systems do not provide the provision for MARC data import and export. This suggests that these software systems lack native support for importing and exporting MARC data.

Overall, the data indicates that Koha is the only software system among the options provided that offers the provision for MARC data import and export. This feature is essential for libraries that rely on MARC standards for cataloging and data interchange. However, it is important to note that the data represents the responses from the surveyed campuses and may not reflect the availability of MARC import/export functionality in other versions or configurations of the software systems.

In summary, if the ability to import and export MARC data is a crucial requirement for a library, Koha would be the recommended choice among the software systems mentioned. However, further evaluation of specific features, functionalities, and user

requirements would be necessary to make a well-informed decision regarding the selection of a suitable software system for a particular library.

4.10.5 Use of MARC Data Import and Export Work

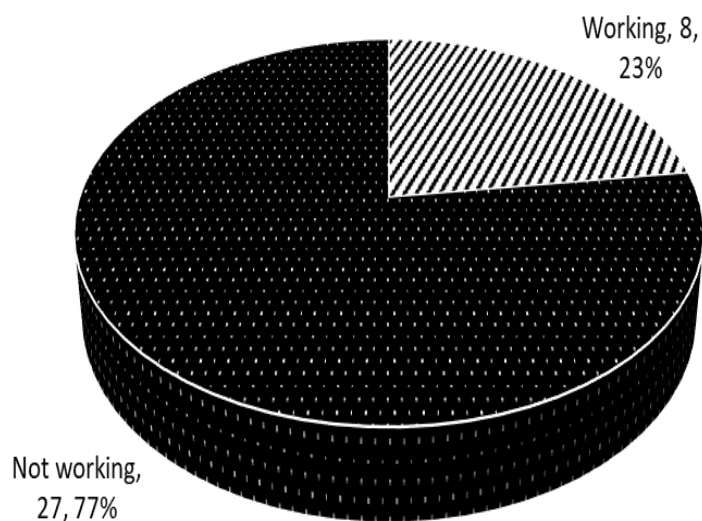


Figure 17 MARC data import and export using of software

Source: Online survey, 2022

According to the data provided, out of the 35 campuses surveyed, only 23% (8) of them reported using for MARC data import and export in their library software. On the other hand, 77% (27) of campuses reported not using for MARC data import and export.

The low percentage of campuses with MARC data import and export provision indicates a potential gap in the management of digital resources, especially considering the importance of the MARC format in library cataloging and information organization. Further research is needed to understand the reasons behind the low adoption of MARC data import and export provision in these campuses and the potential impact on their library services.

4.10.6 Refresher Training on Library Software

Table 19 Getting refresher training about the software

Refresher training about software	Number of Campuses	Yes	No	In %
Koha	8	7	1	23%
Mitra ERP	17	1	16	48%
Mumolus	8	1	7	23%
E-library	1		1	3%
Cosmos	1		1	3%
Grand Total	35			100%

Source: Online survey, 2022

From table 19 data shows that a significant majority of campuses using Koha reported receiving refresher training for the software, indicating a recognition of the importance of staying updated and skilled in utilizing the system effectively. However, for the other software systems (Mitra ERP, Mumolus, E-library, and Cosmos), only a small proportion of campuses reported receiving refresher training, suggesting a potential gap in keeping users updated with the software's features and enhancements.

Overall, this highlights the need for campuses using any software system to prioritize ongoing training and professional development to ensure users have the necessary skills and knowledge for optimal software utilization. It is essential to bridge the gap in refresher training for software systems other than Koha to ensure users can fully leverage the capabilities of the software and stay up-to-date with the latest developments.

84.10.7 Purpose and Use of Software

Table 20 Purpose and use of library software

Purpose of software used	Number of Campuses	Library automation	Housekeeping operation	Book circulation	catalogue	In %
Koha	8	2	2	2	2	23%
Mitra ERP	17	0		12	5	48%
Mumolus	8			8		23%
E-library	1	0		1		3%
Cosmos	1	0		1		3%
Grand Total	35	2	2	24	7	100 %

Source: Online survey, 2022

Table data shows that, Koha is used for library automation, housekeeping operations, book circulation, and cataloging in 2 campuses (25%). Mitra ERP is primarily used for book circulation in 12 campuses (71%), and for cataloging in 5 campuses (29%). No information is provided for library automation or housekeeping operations. Mumolus is used for library automation in all 8 campuses (100%). No information is available for housekeeping operations, book circulation, or cataloging. E-library is used for book circulation in the single reported campus (100%), with no information for other purposes. Cosmos is used for book circulation in the single reported campus (100%), with no information for other purposes.

In summary, the data suggests that different library software systems serve various purposes across the surveyed campuses. Koha stands out as the software used for multiple functions, including library automation, housekeeping operations, book circulation, and cataloging. Mitra ERP is primarily used for book circulation and cataloging, while Mumolus is predominantly used for library automation. E-library and Cosmos have limited data, indicating their primary usage for book circulation.

4.10.8 Features of the Software

Table 21 Available features in library software

Available features in library software	Number of Campuses	Housekeeping	Integrated Offline	Integrated with Online	In %
Koha	8	8	8	8	23%
Mitra ERP	17			17	48%
Mumolus	8	3	3	2	23%
E-library	1	1			3%
Cosmos	1	1			3%
Grand Total	35				100%

Source: Online survey, 2022

Table 21, the analysis of the provided data reveals the following:

Koha: All 8 campuses reported having the housekeeping, integrated offline, and integrated online features available in their Koha software.

Mitra ERP: Among the 17 campuses using Mitra ERP, all reported having the housekeeping feature, while none mentioned having the integrated offline feature. However, all 17 campuses reported having the integrated online feature.

Mumolus: Out of the 8 campuses using Mumolus, 3 reported having the housekeeping feature, 3 mentioned having the integrated offline feature, and 2 reported having the integrated online feature. Mumolus shows a balanced distribution of these features among the surveyed campuses.

E-library and Cosmos: Only one campus each reported available features for E-library and Cosmos. The single campus using E-library mentioned having the integrated offline feature, while the single campus using Cosmos reported having the housekeeping feature.

Overall, Koha stands out for offering a comprehensive set of features, covering all three mentioned categories. Mitra ERP focuses more on integrated online capabilities and lacks reported availability of the integrated offline feature. Mumolus demonstrates a balanced distribution of features, and E-library and Cosmos had limited data with one campus each reporting available features.

4.10.9 Satisfaction Level with Software

Table 22 Status on satisfied with the software

Status on satisfied with the software	Number of Campuses	Yes	Want to replace	In %
Koha	8	7	1	23%
Mitra ERP	17	4	13	48%
Mumolus	8	1	7	23%
E-library	1	0	1	3%
Cosmos	1	0	1	3%
Grand Total	35	34%	66%	100%

Source: Online survey, 2022

Upon analyzing the data on software satisfaction among different campuses, the following observations can be made:

Koha: 88% of the 8 campuses reported satisfaction with Koha, with only 1 campus (13%) expressing a desire to replace it.

Mitra ERP: Among the 17 campuses, only 24% reported satisfaction with Mitra ERP, while a significant majority of 76% expressed a desire to replace it.

Mumolus: Similarly, for the 8 campuses using Mumolus, only 13% reported satisfaction, while 88% expressed a desire to replace it.

E-library and Cosmos: The data from a single campus for both E-library and Cosmos indicated that none of the campuses were satisfied with the software, with both expressing a desire to replace it. However, it's important to note that these results are based on a single campus and may not be representative.

In summary, the data highlights a high level of satisfaction with Koha, while Mitra ERP and Mumolus show significant dissatisfaction among the surveyed campuses. It is crucial to investigate the specific reasons behind the dissatisfaction and understand the factors contributing to the desire for replacement. Additionally, the data may not

represent the satisfaction levels of all users, and further evaluation is necessary to address the identified concerns effectively.

4.10.10 Problems of Library Management Software

Table 23 Campus facing the problems with library management software

Problems on software	Number of Campuses	Updating	Maintenance	Reinstallation	Handling	Percentage
Koha	8	4			4	23%
Mitra ERP	17	2	4	3	8	48%
Mumolus	8		8	8		23%
E-library	1		1	1		3%
Cosmos	1		1	1		3%
Grand Total	35	17%	12%	37%	34%	100%

Source: Online survey, 2022

Koha: Among the 8 campuses using Koha, updating and handling were the most commonly reported issues, with 50% of campuses experiencing problems in each category. No specific mention was made about maintenance, reinstallation, or other types of problems.

Mitra ERP: Out of the 17 campuses using Mitra ERP, a diverse range of problems were reported. This includes 12% facing issues with updating, 24% with maintenance, 18% with reinstallation, and 47% experiencing difficulties in handling the software.

Mumolus: All campuses using Mumolus (100%) reported facing problems with maintenance and reinstallation. No specific mention was made about updating or handling issues.

E-library and Cosmos: Limited data is available for E-library and Cosmos, with only one campus each reporting. The single campus using E-library mentioned problems

with handling the software, while the single campus using Cosmos reported issues with maintenance and reinstallation.

In summary, the data indicates that different software systems have varying types of problems reported by the surveyed campuses. Koha primarily faces issues with updating and handling, Mitra ERP has a range of problems including updating, maintenance, reinstallation, and handling, Mumolus primarily encounters problems with maintenance and reinstallation, and limited data is available for E-library and Cosmos.

It is crucial to consider that the data represents the responses from the surveyed campuses and may not reflect the problems experienced by all users. Further investigation and analysis are necessary to gain a more comprehensive understanding of the specific nature and causes of these problems, facilitating effective solutions and improving the overall user experience.

4.10.11 Useful Library Software

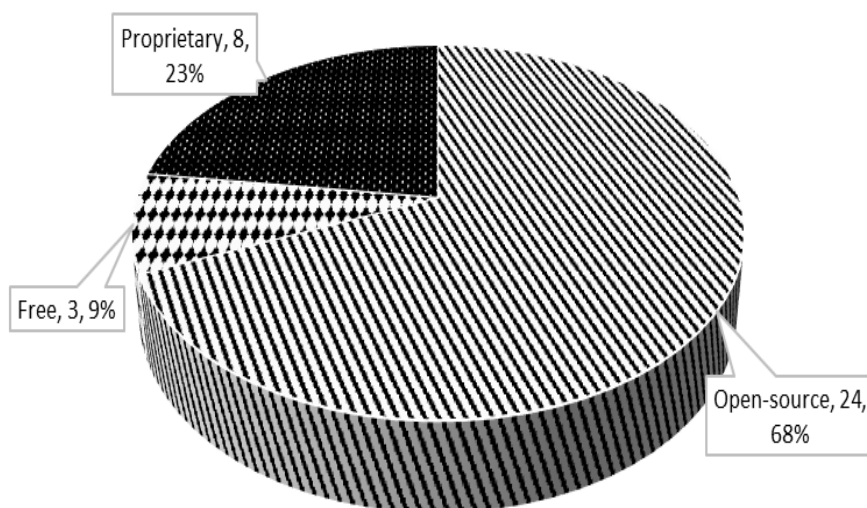


Figure 18 Useful campus library software for its durability

Source: Online survey, 2022

Figure 18 shows that information, a survey conducted on 35 campuses found that 69% of the campuses prefer open-source software, 22% prefer proprietary software, and 9% prefer free software due to its cost-effectiveness. The data suggests that libraries value

the flexibility, customization, and cost-effectiveness of Open-source software, while Proprietary software may offer unique features or support. However, the selection of free software may have limited support and updates.

4.10.12 Software Hosting in Library

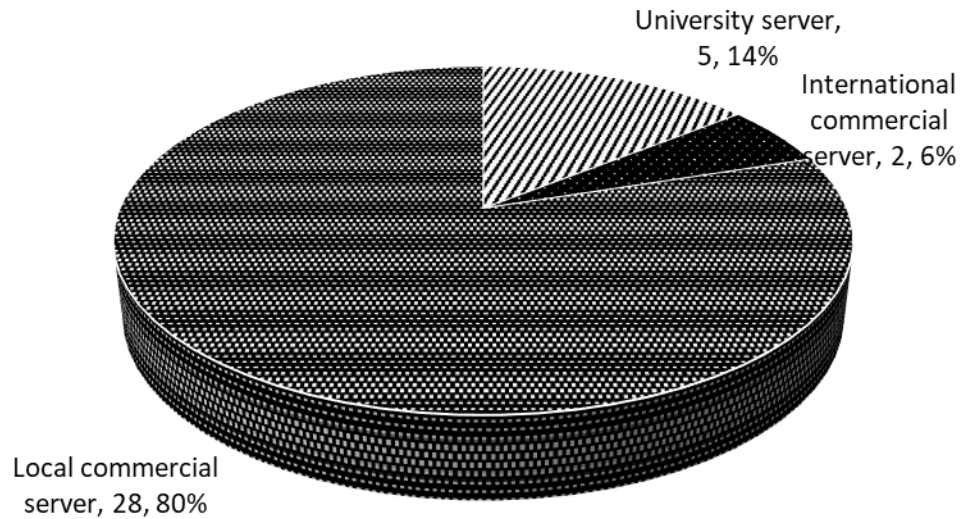


Figure 19 Campus libraries software hosted from

Source: Online survey, 2022

Figure 19 shows that out of 35 sampled campuses, only a small proportion of campuses (14%) have hosted University Servers in their libraries, while the majority of campuses (80%) have hosted Local Commercial Servers. A very small percentage of campuses (6%) have hosted International Commercial Servers.

Overall, it can be inferred that a significant proportion of campuses have hosted Local Commercial Servers in their libraries, indicating the importance of such servers in the academic environment. However, the relatively low percentage of campuses hosting University Servers and International Commercial Servers suggests that these types of servers may be less commonly used in academic libraries. The lack of information on the software hosted in some libraries highlights the need for better communication and transparency regarding library services and resources.

4.10.13 Status of Library Software Training Offer availability for the User

Table 24 Training offers available for users

Training offers available for users	Number of Campuses	Yes	No	In %
Koha	8	5	3	23%
Mitra ERP	17	5	12	48%
Mumolus	8	1	7	23%
E-library	1		1	3%
Cosmos	1		1	3%
Grand Total	35	31%	39%	100%

Source: Online survey, 2022

Analyzing the data vertically, we observe the availability of training offers among the surveyed campuses for each software system:

Koha: Among the 8 campuses using Koha, 63% reported having training offers available.

Mitra ERP: Among the 17 campuses using Mitra ERP, 29% reported having training offers available.

Mumolus: Among the 8 campuses using Mumolus, only 13% reported having training offers available.

E-library: The single campus using E-library did not report having any training offers available.

Cosmos: The single campus using Cosmos did not report having any training offers available.

When analyzing the data horizontally, we find that overall, 31% of the 35 surveyed campuses reported having training offers available, while 69% mentioned not having any training offers.

In summary, the data indicates that Koha has the highest proportion of campuses with training offers available, followed by Mitra ERP and Mumolus with relatively lower availability. E-library and Cosmos did not report any training offers. Overall, the

availability of training opportunities for library software systems among the surveyed campuses is relatively low, suggesting a potential need for increased provision of training resources and support.

4.10.14 Software Training Frequency Required

Table 25 Software training frequency required

Level of frequency need for training on software	Number of Campuses	Rarely	Frequently	Occasionally	In %
Koha	8	6	0	2	23%
Mitra ERP	17	0	12	5	48%
Mumolus	8	0	6	2	23%
E-library	1		1		3%
Cosmos	1		1		3%
Grand Total	35	17%	57%	26%	100%

Source: Online survey, 2022

The data reveals variations in the frequency of training needs on software among the surveyed campuses.

For Koha, a majority of campuses reported rare training needs, indicating a low demand for frequent training.

Mitra ERP and Mumolus, on the other hand, showed a higher demand for frequent training, with a significant proportion of campuses reporting this need.

Insufficient data is available for E-library and Cosmos to determine their training frequency.

Overall, among the 35 surveyed campuses, the majority reported either frequent or occasional training needs on software.

In conclusion, the data highlights the importance of considering the training needs of campuses when implementing software systems. While some campuses may require

training rarely, others may have a higher demand for frequent training. Understanding these variations can help institutions develop appropriate training programs to effectively support the usage of software systems.

4.10.15 Professionals Personnel Refresher Training

Table 26 Getting refresher training about the software

Getting refresher training about the software	Number of Campuses	Yes	No	In %
Koha	8	7	1	23%
Mitra ERP	17	1	16	48%
Mumolus	8	1	7	23%
E-library	1		1	3%
Cosmos	1		1	3%
Grand Total	35			100%

Source: Online survey, 2022

Upon critically analyzing the provided data on the refresher training for software systems in different campuses, the following observations can be made:

Koha:

Out of the 8 campuses using Koha, 7 (88%) reported receiving refresher training about the software, indicating that the majority of Koha users have access to refresher training opportunities. This suggests that there is a recognition of the importance of staying updated and skilled in utilizing the software effectively.

Mitra ERP, Mumolus, E-library, and Cosmos:

For these software systems, only a small proportion of campuses reported receiving refresher training. Out of the 17 campuses using Mitra ERP, only 1 (6%) reported receiving refresher training. Similarly, out of the 8 campuses using Mumolus, only 1 (13%) reported receiving refresher training. The same trend applies to E-library and Cosmos, where 1 campus each reported receiving refresher training.

Overall, the data indicates that refresher training opportunities are more prevalent among campuses using Koha compared to other software systems. The relatively higher percentage of campuses receiving refresher training for Koha suggests a recognition of the importance of ongoing training and skill development for effective utilization of the software. On the other hand, a majority of campuses using Mitra ERP, Mumolus, E-

library, and Cosmos did not report receiving refresher training, which could indicate a potential gap in keeping users updated with the software's features and enhancements.

It is important to note that the data represents the responses from the surveyed campuses and may not reflect the availability or utilization of refresher training in all instances.

In summary, the data suggests that refresher training opportunities are more commonly provided or accessed by campuses using Koha compared to other software systems. However, it is advisable for campuses using any software system to consider the importance of ongoing training and professional development to ensure users are equipped with the necessary skills and knowledge to effectively utilize the software.

4.10.16 Provision for Book Renew and Reservation Option

Table 27 Provision for book renew and reservation option

Provision for book renew and reserve option	Number of Campuses	Yes, Working	Not working	In %
Koha	8	8		23%
Mitra ERP	17	2	15	48%
Mumolus	8	2	6	23%
E-library	1		1	3%
Cosmos	1		1	3%
Grand Total	35	34%	66%	100%

Source: Online survey, 2022

The data reveals variations in the provision for book renew and reserve options among the surveyed campuses using different software systems.

Horizontally, all campuses using Koha reported having the provision in a working state. However, for Mitra ERP and Mumolus, a lower percentage of campuses reported the provision as working. No specific data is available for E-library and Cosmos.

Vertically, out of the total 35 campuses surveyed, 34% reported having the provision for book renew and reserve options in a working state, while 66% mentioned it as not working. Koha had the highest percentage of campuses reporting the provision as working.

It is important to note that the data represents the responses from the surveyed campuses and may not be representative of the provision for all users of the respective software systems.

In summary, the data highlights variations in the availability and functionality of the book renew and reserve options across different software systems. Koha shows a higher percentage of campuses with the provision in a working state, while other systems have a lower percentage. Further investigation and evaluation may be needed to understand the specific issues and challenges faced by campuses in implementing and maintaining these features.

4.10.17 Satisfaction Sevel of Library Software Different Modules

Table 28 Satisfaction level of different modules of installed library management software

Satisfaction level of different modules	Number of Campuses	Acquisition	Catalogue	Processing	Circulation	reference	Administration	Reporting	budget	In %
Koha	8	Highly satisfied	Highly satisfied	Highly satisfied	Highly satisfied	Highly satisfied	Highly satisfied	Highly satisfied	Highly satisfied	23 %
Mitra ERP	17	Dissatisfied	Slightly satisfied	Dissatisfied	Slightly satisfied	Dissatisfied	Slightly satisfied	Dissatisfied	Dissatisfied	49 %
Mumolus	3	Dissatisfied	Slightly satisfied	Dissatisfied	Slightly satisfied	Dissatisfied	Slightly satisfied	Dissatisfied	Dissatisfied	9 %
E-library	1	Dissatisfied	Slightly satisfied	Dissatisfied	Slightly satisfied	Dissatisfied	Slightly satisfied	Dissatisfied	Dissatisfied	3 %
Cosmos	8	Dissatisfied	Slightly satisfied	Dissatisfied	Slightly satisfied	Dissatisfied	Slightly satisfied	Dissatisfied	Dissatisfied	23 %
Grand Total	35									100 %

Source: Online survey, 2022

In summary, the provided data indicates that Koha, a library management software, received higher satisfaction ratings across multiple modules compared to other software systems such as Mitra ERP, Mumolus, E-library, and Cosmos. Specifically, Koha received high satisfaction ratings for its acquisition, cataloging, processing, circulation, reference, administration, reporting, and budget modules, with 23% of the surveyed campuses reporting high satisfaction for each of these modules.

On the other hand, the majority of campuses using Mitra ERP, Mumolus, E-library, and Cosmos expressed dissatisfaction or slight satisfaction with the modules of these software systems. This suggests that these systems may not fully meet the needs and expectations of the campuses in terms of acquisition, cataloging, processing, circulation, reference, administration, reporting, and budget functionalities.

It is important to note that the provided data does not offer specific insights into the reasons behind the satisfaction or dissatisfaction with the modules. Additionally, the percentages represent the distribution among the surveyed campuses and may not reflect the satisfaction levels of the entire user population.

To make informed decisions about the suitability of each software system for specific library management needs, further investigation and evaluation are necessary. This includes a thorough understanding of the functionalities, usability, and user experiences associated with each module of the software systems

4.10.18 Need and Maintenance of Library Software

Table 29 Level of frequency need of maintenance / updating the software

Level of frequency need for maintenance of software	Number of Campuses	Rarely	Frequently	Occasionally	In %
Koha	8	6	0	2	23%
Mitra ERP	17	0	12	5	48%
Mumolus	8	0	6	2	23%
E-library	1		1		3%
Cosmos	1		1		3%
Grand Total	35	17%	57%	26%	100%

Source: Online survey, 2022

Table data shows that among the surveyed campuses:

For Koha, 75% of the campuses reported needing maintenance rarely, while 25% mentioned needing maintenance occasionally.

For Mitra ERP, 71% of the campuses reported needing maintenance frequently, and 29% mentioned needing maintenance occasionally.

For Mumolus, 75% of the campuses reported needing maintenance frequently, and 25% mentioned needing maintenance occasionally.

The single campus using E-library and Cosmos did not provide specific responses regarding the level of maintenance frequency.

When analyzing the data vertically:

Out of the total 35 campuses surveyed, 17% reported needing maintenance rarely, 57% reported needing maintenance frequently, and 26% reported needing maintenance occasionally.

Among the campuses using Koha, 75% reported needing maintenance rarely, while none reported needing maintenance frequently.

Among the campuses using Mitra ERP, 71% reported needing maintenance frequently, and 29% reported needing maintenance occasionally.

Among the campuses using Mumolus, 75% reported needing maintenance frequently, and 25% reported needing maintenance occasionally.

Data is not available for E-library and Cosmos regarding maintenance frequency.

It is important to note that the data represents the responses from the surveyed campuses and may not be representative of the maintenance needs for all users of the respective software systems.

CHAPTER-V

FINDINGS, SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Findings:

The data analysis reveals the following findings:

Based on the analysis of the provided data, the following findings can be summarized:

All campuses have official email communication.

91% of campuses have a website.

57% of campuses have less than 50,000 books. 23% have collections between 50,000 and 100,000 books. Only a small proportion have collections exceeding 100,000 books.

31% of campuses have no monograph subscriptions. The most common range of subscriptions is between 1 and 2000 monographs.

51% of campuses do not publish any journals or periodicals. 34% publish below 100 journals or periodicals.

85% of campus libraries do not have any audio-video tape collections. Among libraries with collections, 85% have 0-5 items.

72% of campus libraries do not have any photograph collections. Few libraries have small collections of 1-10 photographs.

Information on map availability is not provided for most campuses.

97% of campuses do not have any microfiche collections.

Information on CD-ROM/DVD availability is not widely reported. Most campuses have a small number of CD-ROM/DVDs.

85% of campuses did not provide information on the size of their digital collections. Only a few campuses have more than a few thousand items.

91% of campus libraries do not have any other types of resources. Some libraries have a small number of resources, while one has 3000 resources.

Windows is the most popular operating system (71%). 54% of campus libraries have 1-2 servers.

43% of campuses plan to automate library systems soon.

Assistance from library staff (43%) is the most popular method for information retrieval.

Technical support is provided by library staff (31%), internal IT staff (26%), and outsourced IT staff (43%).

TU Constituent Campuses Library has a majority of support positions. There is a deficiency in professional staff, technicians, and IT personnel. Only a small percentage of library staff possess specific ICT skills.

Updating and handling were common issues for Koha. Mitra ERP faced problems with updating, maintenance, reinstallation, and handling.

69% of campuses preferred open-source software. 22% preferred proprietary software.

9% preferred free software due to cost-effectiveness.

Local Commercial Servers were the most commonly hosted servers in libraries (80%). University Servers were used by 14% of campuses. International Commercial Servers were used by 6% of campuses.

Koha had the highest percentage of campuses reporting training offers (63%).

5.2 Summary:

The objective of this research was to investigate the state of library management software in TU constituent campus libraries in Nepal. The study aimed to identify areas that require improvement and provide insights into the adoption of technology, online presence, book collections, and journal subscriptions.

The findings of the study shed light on several areas that need attention. It was observed that a significant number of campuses still lag behind in terms of embracing technology and implementing efficient library management systems. While some campuses have made progress, there is a clear need for improvement across the board.

One aspect that emerged from the analysis of data from 35 campus libraries is the lack of interest and usage of certain resources. Audio-video tapes, photographs, maps, and microfiches were found to be underutilized in academic institutions in Nepal. This indicates a need to reassess the relevance and availability of these resources in the library collections.

The research also highlighted the diversity in library collections among the surveyed campuses. While some campuses had smaller book collections, others had a more extensive range of resources. It was found that a majority of campuses had library collections with less than 50,000 books, and only a small proportion had collections exceeding 100,000 books.

In terms of communication channels, it was encouraging to see that all 35 campuses had an official email, indicating a standard practice for communication. Additionally, the majority of campuses (91%) had a campus website, which enables online presence and information dissemination.

The study revealed that the adoption of information and communication technology (ICT) and automation in libraries is a recent trend in Nepal. The majority of campuses introduced ICT between 2060-2075 B.S., indicating a gradual shift towards embracing technology in library systems.

In terms of operating systems, Windows was found to be the most popular choice among campus libraries, followed by other operating systems and Unix-based systems. This highlights the need for compatibility and support for different operating systems in library management software.

Assistance from library staff was identified as the most preferred method for information retrieval among the surveyed campuses. This underscores the importance of trained library personnel in providing efficient services to library users.

One key finding of the study was the shortage of professional staff, technicians, and IT personnel in campus libraries. This shortage could potentially impact the efficiency and effectiveness of library operations. It emphasizes the need for universities to prioritize resource allocation for staffing and skill development in the technological domain.

In conclusion, the research provides valuable insights into the state of library management software in TU constituent campus libraries in Nepal. It highlights the need for improvement in various areas, including technology adoption, resource utilization, and staffing. By addressing these areas, academic institutions can enhance their library services and better meet the needs of their users.

5.3 Conclusion:

The study highlights the need for staffing adjustments and training to improve the workforce's skills in campus libraries in Nepal. Additionally, the findings suggest that there is still room for growth in automation, and further research is needed to understand the factors that influence decisions on automation. The use of open-source software was found to be preferred due to its flexibility, customization, and cost-effectiveness. Moreover, the study emphasizes the importance of providing training on library software use to library users and updating library software to the latest technological advancements to improve their functioning.

In conclusion, the data analysis indicates that there are several challenges and opportunities for improving library management software in TU constituent campus libraries in Nepal. Campuses need to invest in technology and build an online presence to stay relevant in today's age of information technology. Additionally, there is a need to increase book collections, publish and subscribe to journals and periodicals, and prioritize the specific needs and priorities of individual campuses. The study highlights the need for further research to understand the reasons for the trends observed in the data analysis. There are various problems related to the use of library management software in TU Constituent Libraries in Nepal. However, these problems can be addressed by identifying and implementing solutions such as providing training to staff and increasing the availability of servers. The study recommends that further research is conducted to better understand the factors that influence decisions on automation and to identify areas for staffing adjustments and training. It also suggests that a more in-depth analysis is needed to determine the reasons for the low adoption of ICT in libraries in Nepal.

5.4 Recommendations:

Based on the findings and conclusions of the study, the following recommendations are suggested:

a) Problems in Using Library Management Software in TU Constituent Campus Libraries

Despite the adoption of library management software in some constituent campus libraries of Tribhuvan University, there are several challenges and problems that need to be addressed. Some common problems include:

Lack of uniformity: Different campuses may use different library management software, resulting in a lack of standardization and compatibility between libraries. This can hinder resource sharing and collaboration.

Limited technical knowledge: Library officers and staff may have limited technical knowledge and skills to effectively use and manage library management software. This can lead to inefficiencies and difficulties in utilizing the full potential of the software.

Insufficient training and support: Libraries may lack proper training and support for library staff in using the software effectively. This can result in underutilization of software features and an inability to address technical issues or troubleshoot problems.

Data management challenges: Managing and maintaining accurate and up-to-date data in the software can be a challenge. Issues such as data entry errors, inconsistent data formats, and data duplication can affect the reliability and integrity of the library's information system.

Limited customization options: Some library management software may have limited customization options, making it difficult for libraries to tailor the system to their specific needs and workflows.

b) Solutions for Using Library Management Software

To address the problems identified, several solutions can be considered:

Standardization: TU constituent campuses should work towards adopting a standardized library management software system across all libraries. This will facilitate resource sharing, data exchange, and collaboration between libraries.

Training and capacity building: Adequate training programs should be conducted to enhance the technical knowledge and skills of library officers and staff in using and managing library management software effectively. This can be achieved through workshops, seminars, and online training resources.

Data quality management: Libraries should establish data quality management practices to ensure the accuracy, consistency, and integrity of data in the library management software. Regular data audits, validation checks, and data cleaning processes can help improve data quality.

Customization options: Libraries should choose library management software that offers sufficient customization options to meet their specific

Technical support and maintenance: It is crucial to provide ongoing technical support and maintenance services to address any software-related issues or challenges faced by the libraries. This can involve establishing a dedicated support team or outsourcing support services from software providers.

Data management and quality control: Libraries should implement robust data management practices to ensure the accuracy, consistency, and integrity of the information stored in the software. This can include regular data audits, data validation checks, and training on data entry best practices.

Customization and scalability: Libraries should select software that offers sufficient customization options to meet their specific needs and workflows. The software should also be scalable, allowing for future growth and expansion of library services and collections.

Collaboration and knowledge sharing: TU constituent campuses should encourage collaboration and knowledge sharing among library professionals to learn from each other's experiences and best practices in using library management software. This can be facilitated through workshops, conferences, and online platforms.

Regular software updates and upgrades: Libraries should stay up to date with the latest software updates and upgrades to benefit from new features, improvements, and security patches. This can involve establishing a process for regularly evaluating and implementing software updates.

Research and evaluation: Continuous research and evaluation of library management software options should be conducted to stay informed about emerging technologies, trends, and best practices. This can help libraries make informed decisions when selecting and implementing software solutions.

Overall, addressing the challenges related to library management software in TU constituent campus libraries requires a multi-faceted approach that includes standardization, training, support, data management, customization, collaboration, and staying informed about advancements in technology. By implementing these recommendations, libraries can improve the efficiency, effectiveness, and user experience of their library management systems.

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ANNEX-1

ANNEX-1 (STRUCTURE QUESTIONNAIRES)

"Library Management Software in Tribhuvan University Constituent Campuses: Problems and Solutions"

Myself Mahendra Prasad Adhikari, a master level student of Central Department of Library and Information Science, Tribhuvan University, Kathmandu. I wish to conduct research on the topic as the partial fulfillment of my master degree. This research aims to explore types of library software being used in constituent campus library and problems faced. The following is the set of questionnaires on the use of library and information management software study prepared for my research work please kindly cooperate by answering the questions voluntarily and provide a consent to generate data for my thesis work. It will take approximately 10- 15..... minutes to complete this questionnaire. I want to assure you that the information will be kept confidential.

1. About the Institution and the Library

- a) Name of the Library: *
- b) Year of Establishment of the Library *
- c) E-mail : *
- d) Telephone/cell number: *
- e) Website (if any):

02. Give the number of following Collection:

- a) Books b) Monographs (Thesis, PhD paper, Research reports) c) Journal and periodicals (published by your institution)
- d) Journal and periodicals subscribed by your library e) Audio/Video tapes
- f) Photographs g) Maps h) Microfiche i) CD-ROM/DVD
- j) Digital collections (e-books, e-journals, etc.) k) Others l) Total

03. When was ICT introduced in your library?

04. What is the automation status of your library?

- a) Fully automated b) Partially automated c) Not yet d) To be automated soon/ on process

5. Number of computers in your library
- a) For users *... b) For employees *....
6. Mainly which operating system is being used by your library? *
- a) Windows b) Macintosh c) Unix e.g. Linux d) Others
7. Number of Server (if any):.....
08. Who provides the technical supports for ICT or automation services? *
- a) IT staff within the organization b) IT staff from outside (Outsourcing)
c) Library staff
9. How users access bibliographic information of library materials? (You can tick more than one if applicable)
- a) Through LAN (in campus) b) Through WEB/WAN c) With the help of library staff d) Card Catalogue
10. Number of electronic equipment's and their number
- a) Number of document Scanner * b) Number of Terminals * c) Number of Printer *
d) Number of Barcode scanner * e) Number of RFID * f) Others
11. Staff Information
- a) Total Library Staff give the number of Staffs with their designation
- b) Number of staff with general ICT knowledge * c) Number of Library Staff with Library Software Knowledge (e.g. KOHA, PMB, EMIS, etc.) * d) Number of Library Staff with Digital Library Software Knowledge (e.g. Greenstone, DSpace etc.) * e) Number of staffs with LIS background *
- f) Number of staffs with Computer Science background * g) Others
12. When automation program was first introduced in your library?
.....*
- 12.1 When digitization program was first introduced in your library? *
13. What type of software is being used in your library?
- a) Open-source b) Commercial Customized c) In-house developed
- 13.1 If any other please mention *

14. Which library software is installed for your library? (Name of software) -----*
- 14.1. Name of the DL software you are currently using (Please tick)-
- a) Greenstone b) DSpace c) Fedora d) E-Prints
- f) In-house developed (Please write the name here)
- g) Commercial DL software (Please write the name here)
15. Who makes decision regarding the selection of software?
- a) Librarian b) Office authority c) Professionals
16. Who are responsible for the installation, development and implementation of automation and software project? *
- a) Library staff b) ICT department attached with the library c) Outsourcing d) Both A and B
17. Are the technician easily available to maintain your software/database?
- a. Yes b. No
18. Is there any provision for data import and export in your software? *
- a. Available b. Not available c. Possible after customization d. Not working e. Other:
19. Are you using data import and export provision of software? * a. Yes b. No
20. Did you get refresher training about the software? *
- a. Yes b. No
21. For what purpose library software is being used? *
22. What are the features available in your software? *
- a. Housekeeping /automation b. Integrated /offline c. Integrated with online
23. Are you satisfied with the software? * a. Yes b. Want to replace
24. What type of problems are you facing with your software? *
- a. Updating b. Maintenance c. Reinstallation d. Handling

25. In your opinion, what type of library software is useful in campus libraries for its durability?

- a. Open-source b. Proprietary c. Free

26. Where does your software hosted?

- a) University Server b) Local Commercial Server c) International Commercial Server

27. Do you offer training on library software use to the users of your library?

- a) Yes b) No

28. How frequently you offer the training? *

- a) Very frequently b) Frequently c) Not frequently d) Rarely

29. Does your authority allow LIS professionals to attend workshop/training/conference on new technologies in library sector?

- a) Yes b) No

30. Is there provision of reserve and renew books using online system of your software?

- a) Yes b) No

31. Please indicate the satisfaction of different modules of the software you are currently using

a) For Acquisition work *

Satisfied highly, Satisfied, Satisfied Slightly, Dissatisfied

b) For Processing work *

Satisfied highly, Satisfied, Satisfied Slightly, Dissatisfied

c) For Circulation work *

Satisfied highly, Satisfied, Satisfied Slightly, Dissatisfied

d) For Cataloging work

Satisfied highly, Satisfied, Satisfied Slightly, Dissatisfied

e) For Budget work *

Satisfied highly, Satisfied, Satisfied Slightly, Dissatisfied

e) For Record work *

Satisfied highly, Satisfied, Satisfied Slightly, Dissatisfied

f) For Administration work *

Satisfied highly,	Satisfied,	Satisfied Slightly,	Dissatisfied
g) For Reference work *			
Satisfied highly,	Satisfied,	Satisfied Slightly,	Dissatisfied

32. Need of maintenance / updating of your library software – *

a) Frequently b) Occasionally c) Rarely

33. Please mention your suggestions and recommendations for the solution to the existing problems and for the development of the automation

Name of the Respondent: *

Designation: *

Date: *

Thank you for your co-operation

ANNEX-2

**RESPONSIBLE LIBRARY PERSON To PROVIDE DATA FROM
CONSTITUENT CAMPUSES LIBRARIES, TU**

Table 30 Name list of responsible library person of constituent campuses libraries

SN	Name of Campus	Name of Librarian	Mobile No.
1	Amrit Campus	Ramesh Niraula	9849029625
2	Trichandra Campus	Bachharam Wagle	9841393042
3	Nepal Commarce Campus	Kalpana Karki	9860872182
4	Public Youth Campus	Sudip Dhakal	9851167434
5	Mahendra Ratna Campus, Tahachal	Lal Bdr Chauhan	9849296952
6	Shankar Dev Campus	Anup Ranjit	9841557784
7	Sarswoti M. Campus	Bidhya D. Manandhar	9741003651
8	Sano Thimi Campus	Huma Dhakal	9842118701
9	Mahendra Morang MMAMC Biratnagar	Ajaya Yadav	9863002021
10	Snatakottar Biratnagar	Mina Khadka	9842434677
11	Purbanchal Dharan	Ambar BdrThapa	9842064086
12	Mahendra Multiple Campus, Dharan	Dol Bdr Baniya	9842060806
13	Kendriya Prabidi Dharan	Om Nath Khatiwada	9841055957
14	Gorkha Shiksha Campus	Shushila Thapa	9846188851
15	Lamjung Krishi Campus	Menuka Mishra	9846246516
16	Nursing Campus Pokhara	Gyan Kumari Parajuli	9856051048
17	Tribhuvan Campus, Palpa	Ekadashi Udaya	9857060197
18	Butwal Multiple Campus	Sharada Pageni	9847092145
19	Gauradaha Krishi Campus	By Faculty (No body staff)	9845620750
20	Bhairahawa Multiple Campus	Bishnu Gajurel	9847111706
21	Surkhet Campus	Dambar Dhakal	9848039996
22	Mechi Multiple Campus	Pujan Acharya	9842677382
23	Pulchowk Engineering	Gobinda Raj Bista	9849296925
24	Thapathali Campus	Seema Thapa	9849028688
25	Krishi Campus, Khaireni	Ramita Thapa Basnet	9849800663
26	Forestry Campus, Pokhara	Surya Kshetri	9846034322
27	PN Campus, Pokhara	Kishor Subedi	9849120436
28	Paschimanchal engineering, Pokhara	Sita Khanal	9846119611
29	Thakuram Campus, Birgunj	Niraj Baidhya	9845583588
30	Birendra M.Campus	Prakash Acharya	9845113796
31	Lalitkala Campus	Shyam K. Shresth	9841560973
32	University Campus, TUCL, Kirtipur	Sagar Raj Subedi	9841364473
	TUCL, data taken by Gebnath Neupane	Gebnath Neupane	9841700631
33	PK Campus,Kath	Roshani khayar Goli	9849203082
34	Patan Samukta Campus	Laxman Bohara	9841255914
35	Nepal Law Campus	Bijaya K. Pokharel	9849096075
36	Paklihawa Krishi Campus	Ram Kisor Kurmi	9866155052

37	Jana Prashasan Campus	Shakul Prasad Poudel	9841282901
38	Bhaktapur Multiple Campus	Shyam Raj Subedu	9851188297
39	Maharajgunj Campus	Indira Aryal	9841512600
40	Maharajgunj Nurshing Campus	Champa Gurung	9803044248
41	Nurshing , Birgunj	Satish Tamang	9845098047
42	Ratna Rajya Laxmi Campus	Anita Bhattraï	9851178316
43	Bishwo Bhasha Campus	Durga Poudel	9841344893
44	Suryanarayan Satyanarayan, Sirah	Sanju Yadav	9862920819
45	Dhaulagiri Multiple Campus, Baglung	Kalpana Regmi	9847624412
46	Mahendra Multiple Campus, Dang	Gopal Rana	9847845673
47	Jumla multiple Campus, Jumla	Narendra Mahat	9849131560
48	Nurshing Campus, Biratnagar	Pawan Dhakal	9852033934
49	Hetauda Ban Campus, Hetauda	Ratan Magar	9804280853
50	Bhojpur Multiple Campus, Bhojpur	Manju Bhattarai (Ghimire)	9842225188
51	Tehrathum M.Campus, Terhathum	Ambika Thapaliya	9862621691
52	Dhankuta M. Campus	Shyam S. Shrestha	9842052910
53	Chitwan Engineering Campus, Rampur	Shusma Bhatta (faculty)	9851134107
54	Dedeldhura Campus	Harina Awasthi (Hemu)	9848802183
55	Doti Campus	Lal Bahadur Thapa	9848434561
56	Siddnath Bigyan Campus, Mahendra Nagar	Dal bahadur Kathaayat	9848703435
57	Nurshing Campus, Nepalgunj	Meena Subba	9868212499
58	Mahendra M. Campus, Nepalgunj	Shiva Yogi	9812502960
59	Ramsworup Ramsagar Campus, Janakpur	Dev Narayan shah	9844051947
60	Mahendra Ratna Multiple Campus, Ilam	Dinesh Raya	9842744378
61	Aayurbed Campus, Kirtipur	Aaradhana Basnet	9843560471
62	Mahendra Bindeshwori Campus, Rajbiraj	Bibekanand Mishra	9842823611

Source: Telephone survey, 2022

Library staff's data taken from only (45 campuses and in designation table date also include TUCL, not respondent from other 17 due to lack of internet. (The following table is related and details of Table 12)

SN	Campus	Total	DL	LO	SO	MKS	LA	OA	AOC	SBC	BC
1	Amrit Campus	4	0	1	0	1	0	0	0	0	0
2	Trichandra Campus	11	0	1	0	0	0	6	0	0	1
3	Nepal Commarce Campus	6	0	0	1	3	0	1	0	0	0
4	Public Youth Campus	4	0	1	1	0	0	1	0	0	0
5	Mahendra Ratna Campus, Tahachal	5	0	0	0	4	0	0	0	0	1
6	Shankar Dev Campus	8	0	0	0	2	0	4	0	0	0
7	Sano Thimi Campus	7	1	0	0	1	0	3	0	0	0
8	Mahendra Morang MMAMC Biratnagar	8	0	0	1	1	0	1	0	0	0
9	Purbanchal Dharan	6	0	1	0	0	0	0	0	0	1
10	Kendriya Prabidi Dharan	3	0	1	0	0	0	1	0	0	0
11	Gorkha Shiksha Campus	4	0	0	0	0	0	1	0	0	2
12	Lamjung Krishi Campus	5	0	0	0	1	0	1	0	0	0
13	Nursing Campus Pokhara	3	0	0	1	0	1	0	0	0	0
14	Tribhuvan Campus, Palpa	5	0	0	0	1	1	0	0	0	0
15	Butwal Multiple Campus	9	0	0	1	1	0	1	0	0	1
16	Gauradaha Krishi Campus	2	0	0	0	1	0	0	0	0	0
17	Bhairahawa Multiple Campus	4	0	1	0	1	1	0	0	0	0
18	Surkhet Campus	6	0	0	1	0	0	0	0	0	2
19	Mechi Multiple Campus	7	0	0	1	0	2	1	0	0	0
20	University Campus, TUCL	31	2	1	2	8	4	0	0	0	0
21	Thapathali Campus	6	1	0	0	1	0	0	0	0	1
22	Krishi Campus, Khaireni	2	0	0	0	0	0	1	0	0	0
23	Forestry Campus, Pokhara	5	1	0	1	1	1	0	0	0	0
24	PN Campus, Pokhara	14	0	1	1	2	0	6	0	0	0
25	Paschimanchal engineering, Pokhara	8	0	0	1	1	3	0	0	0	0
26	Thakuram Campus, Birgunj	8	0	0	1	0	0	2	0	0	0
27	Birendra M.Campus	10	0	1	0	1	0	2	1	0	0
28	Lalitkala Campus	3	0	0	1	0	0	0	0	0	1
29	Pulchowk Engineering	8	0	1	0	0	0	2	0	0	0
30	PK Campus,Kath	6	0	0	1	1	0	2	0	0	1
31	Patan Samukta Campus	9	0	1	0	0	0	3	0	0	0
32	Nepal Law Campus	6	0	1	0	0	0	2	0	0	0
33	Bhaktapur Multiple Campus	3	0	0	1	0	0	0	0	1	1

34	Maharajgunj Teaching Campus	11	1	0	1	1	0	1	0	1	4
35	Maharajgunj Nurshing Campus	6	1	0	1	2	1	0	0	0	0
36	Nurshing , Birgunj	3	0	0	0	1	0	1	0	0	0
37	Mahendra Multiple Campus, Dang	4	0	0	1	0	0	1	0	0	0
38	Nurshing Campus,Biratnagar	2	0	0	0	0	1	0	0	0	0
39	Bhojpur Multiple Campus, Bhojpur	2	0	0	0	0	0	1	0	0	0
40	Chitwan Engineering Campus, Rampur	1	0	1	0	0	0	0	0	0	0
41	Dedeldhura Campus	1	0	0	0	0	0	1	0	0	0
42	Siddnath Bigyan Campus, Mahendra Nagar	2	0	0	0	0	0	0	0	0	0
43	Mahendra Ratna Multiple Campus, Ilam	6	0	0	0	1	0	1	0	0	2
44	Aayurbed Campus, Kirtipur	5	0	1	0	1	0	0	0	0	2
45	Ramsworup Ramsagar Campus, Janakpur	6	0	0	1	1	2	0	0	0	0
	Total	278	7	14	20	39	17	47	1	2	20

Source: Telephone survey, 2022

Continuous designation column from previous table

SN	Campus	BC	BB	AC	MR	LB	HR	SY	VR	TC	DR	AR
1	Amrit Campus	0	0	0	0	1	1	0	0	0	0	0
2	Trichandra Campus	1	0	0	0	0	3	0	0	0	0	0
3	Nepal Commarce Campus	0	0	0	0	0	1	0	0	0	0	0
4	Public Youth Campus	0	0	0	1	0	0	0	0	0	0	0
5	Mahendra Ratna Campus, Tahachal	1	0	0	0	0	0	0	0	0	0	0
6	Shankar Dev Campus	0	0	0	0	0	2	0	0	0	0	0
7	Sano Thimi Campus	0	0	0	0	0	2	0	0	0	0	0
8	Mahendra Morang MMAMC Biratnagar	0	0	1	0	0	4	0	0	0	0	0
9	Purbanchal Dharan	1	0	0	0	0	3	1	0	0	0	0
10	Kendriya Prabidi Dharan	0	0	0	0	0	1	0	0	0	0	0
11	Gorkha Shiksha Campus	2	0	0	0	0	1	0	0	0	0	0
12	Lamjung Krishi Campus	0	0	1	0	0	2	0	0	0	0	0
13	Nursing Campus Pokhara	0	0	0	0	0	1	0	0	0	0	0
14	Tribhuvan Campus, Palpa	0	0	0	0	0	2	0	1	0	0	0
15	Butwal Multiple Campus	1	0	0	0	0	5	0	0	0	0	0
16	Gauradaha Krishi Campus	0	0	0	0	0	1	0	0	0	0	0
17	Bhairahawa Multiple Campus	0	0	0	0	0	1	0	0	0	0	0
18	Surkhet Campus	2	1	0	0	0	2	0	0	0	0	0
19	Mechi Multiple Campus	0	0	0	0	0	2	0	0	0	0	0
20	TUCL	0	2	1	0	0	9	0	0	0	1	1
21	Thapathali Campus	1	0	0	0	0	2	1	0	0	0	0
22	Krishi Campus , Khaireni chitwan	0	0	0	0	0	1	0	0	0	0	0
23	Forestry Campus, Pokhara	0	0	0	0	0	1	0	0	0	0	0
24	PN Campus, Pokhara	0	0	0	0	0	4	0	0	0	0	1
25	Paschimanchal engineering, Pokhara	0	0	1	0	0	2	0	0	0	0	0
26	Thakuram Campus, Birgunj	0	0	0	0	0	3	0	2	0	0	0
27	Birendra M.Campus	0	0	0	0	0	3	1	0	1	0	0
28	Lalitkala Campus	1	0	0	0	0	1	0	0	0	0	0
29	Pulchowk Engineering	0	0	0	0	0	3	0	2	0	0	0
30	PK Campus,Kath	1	0	0	0	0	1	0	0	0	0	0
31	Patan Samukta Campus	0	0	0	0	0	2	0	4	0	0	0
32	Nepal Law Campus	0	0	0	0	0	2	1	0	0	0	0
33	Bhaktapur Multiple Campus	1	0	0	0	0	0	0	0	0	0	0
34	Maharajgunj Teaching Campus	4	0	0	0	0	2	0	0	0	0	0
35	Maharajgunj Nurshing Campus	0	0	0	0	0	1	0	0	0	0	0

36	Nurshing , Birgunj	0	0	0	0	0	1	0	0	0	0	0
37	Mahendra Multiple Campus , Dang	0	0	0	0	0	2	0	0	0	0	0
38	Nurshing Campus,Biratnagar	0	0	0	0	0	1	0	0	0	0	0
39	Bhojpur Multiple Campus, Bhojpur	0	0	0	0	0	1	0	0	0	0	0
40	Chitwan Engineering Campus, Rampur	0	0	0	0	0	0	0	0	0	0	0
41	Dedeldhura Campus	0	0	0	0	0	0	0	0	0	0	0
42	Siddnath Bigyan Campus, Mahendra Nagar	0	0	0	0	1	1	0	0	0	0	0
43	Mahendra Ratna Multiple Campus, Ilam	2	0	0	0	0	2	0	0	0	0	0
44	Aayurbed Campus, Kirtipur	2	0	0	0	0	1	0	0	0	0	0
45	Ramsworup Ramsagar Campus, Janakpur	0	0	0	0	1	1	0	0	0	0	0
	Total	20	3	4	1	3	83	4	9	1	1	2

Source: Telephone survey, 2022

Note: Full form of designation see table no. 12

ANNEX-3

LIBRARY SOFTWARE

A3.1 Operating System

The operating system (OS) manages all of the software and hardware on the computer. It performs basic tasks such as file, memory and process management, handling input and output, and controlling peripheral devices such as disk drives and printers. Details different types of Operating system are given as following

A3.1.1 Linux Operating System

Linux is a free and open-source operating system based on Unix and designed to be lightweight and highly customizable. It is known for its stability, security, and reliability, and is used in a variety of applications, from servers and enterprise systems to embedded systems and personal computers. There are many different distributions of Linux available; each with its own features and user interface, and it is supported on almost every major computer platform. As an open-source system, Linux is constantly evolving and improving, with regular updates and contributions from a large community of developers.

The Linux OS can be found in many different settings, supporting many different use cases. Linux is used in the following ways: **Server OS, Desktop OS, Headless server OS, Embedded device or appliance OS,**

Linux is highly configurable and depends on a modular design that enables users to customize their own versions of Linux. Depending on the application, Linux can be optimized for different purposes such as:

- Networking performance;
- Computation performance;
- Deployment on specific hardware platforms; and
- Deployment on systems with limited memory, storage or computing resources.

Users can choose different Linux distributions for specific applications or adapt a specific distribution to incorporate custom kernel configurations.

A3.1.2 Macintosh Operating System:

MACINTOSH stands for More Accurate Computer Inter-Networking, at the Top of Such Heights. It is a GUI-based operating system designed by Apple Inc. in 1984 and is now known as macOS. It is used to power every Mac, and comes with beautiful apps and iCloud integration, while prioritizing privacy and security.

Apple's next-generation macOS operating system, available now.

- FaceTime upgrades: Share Play, spatial audio, and more.
- Universal Control across devices with a single mouse or trackpad.
- Safari revamp.
- Shortcuts app.
- Live Text and Visual Lookup.
- Privacy enhancements.

Major new features

- Continuity Camera.
- Dark Mode.
- Desktop Stacks.
- Dynamic Desktops.
- Finder enhancements: Gallery View, view metadata, and Quick Actions.
- Improved OS and Safari security.
- Screenshot markup.
- benefits of macOS?

- Mac OS X is optimized for maximum performance on Mac hardware, taking advantage of modern features such as faster memory and data buses, resulting in faster operations than previous versions.

A3.1.3 Windows Operating System:

I apologize, but that information is not entirely accurate. Microsoft Windows 1.0 was actually released on November 20, 1985, not November 10, 1983. Additionally, Windows was not Microsoft's first operating system - they had previously released versions of MS-DOS and Xenix.

Types of operating system

- Windows 10 S (2017) ...
- Windows 10 (2015) - MS Version 6.4. ...
- Windows 8/8.1 (2012-2013) - MS Version 6.2/6.3. ...
- Windows 7 (2009) - MS Version 6.1. ...
- Windows Vista (2006) - MS Version 6.0. ...
- Windows XP (2001) - MS Version 5.1. ...
- Windows 2000 (2000) - MS Version 5.

Best Features of Windows Operating System

- Speed. ...
- Compatibility. ...
- Lower Hardware Requirements. ...
- Search and Organization. ...
- Safety and Security. ...
- Interface and Desktop. ...

- Taskbar/Start menu.

Advantages of Windows operating system:

- Backing for all equipment – As windows OS is utilized by 95% of clients so the majority of the equipment merchants make drivers for windows.
- Convenience – ...
- Programming support – ...
- Fitting and playing highlight – ...
- Work area and contact screen –

A3.2 Software

Software is a collection of computer programs, documentation, and data that performs various tasks on a computer. It can be written in low-level assembly language or high-level programming languages that are compiled or interpreted into machine language. (Wikipedia, 2022).

Based on the goal, computer software can be divided into two

1. Application software uses the computer system to perform useful work or provide entertainment functions beyond the basic operation of the computer itself.

Application software consists of programs that perform a specific, well-defined task for a particular application (Islam et al., 2017).

2. System software is designed to operate the computer hardware, to provide basic functionality, and to provide a platform for running application software. System software consists of program that facilitates the use of the computer by the users (Islam et al., 2017)

A3.2.1 Open-Source Software

Open-source software is software that is freely available and allows users to access and modify its source code to fit their needs, often developed collaboratively in a public

manner(Minkova, 2018). Open-source software can offer many benefits such as improved quality due to the ability for anyone to contribute and review the source code, increased flexibility and customization options, and lower costs due to the lack of licensing fees. It also helps to break down traditional vendor lock-in where users are locked into using a particular vendor's software and solutions(Tramboo et al., 2012).

The most well-known example of open-source software is the Linux operating system, but there are open-source software products available for every conceivable purpose.

It has revolutionized the development of software and offers a number of attractions for libraries, especially for developing countries (Rafiq & Ameen, 2009).

A list of open-source software given below (Randhawa, 2013)

A list of open-source software given

Notation	Open-Source Software
Koha	http://www.koha.org/ originated in New Zealand
Evergreen	http://www.open-ils.org/ originated in USA
OpenBiblio	http://obiblio.sourceforge.net/ originated in Spain
NewGenLib	http://www.verussolutions.biz/ originated in India
Dspace	http://www.dspace.org/ originated in USA
Greenstone	http://www.greenstone.org/ originated in New Zealand
Eprints	http://www.eprints.org/ originated in UK
MicroLCS	http://www.avantibrarysystems.com/microlcs.html originated in USA
OPALS	http://www.mediaflex.net/ originated in USA
Emilda	http://www.emilda.org/ originated in Finland
Invenio	http://invenio-software.org/ originated in Europe

Source: Secondary data, 2022

A3.2.2 Proprietary Software

Proprietary software is software that is licensed under exclusive legal right of the copyright holder, restricting users from modifying, sharing, studying, redistributing, or reverse engineering the code. The code is restricted and cannot be changed from its original construction(Randhawa, 2008).

In the library perspective, according to the library automation and digitization aspects, library software can be of two types:

- Library Automation software
- Digital library software

A3.3 Library automation software:

Library automation involves the computerization and automation of traditional library operations such as acquisition, cataloging, circulation, serials management, and information services to improve efficiency and accuracy(Sonone, 2023). Library automation is the application of computers and technology to automate and streamline various library services and tasks, such as cataloging, circulation, and information retrieval. In general Library Automation means ‘use of machines for library processes’(Adkinson & Stearns, 1967).

According to Salmon, ‘Library Automation is the use of automatic data processing with the use of appliances to perform various tasks and services like acquisition, cataloguing and circulation. Though aforesaid tasks were manually performed in traditional libraries but library automation may be distinguished from related fields like retrieval of information, automatic indexing, abstracting and automatic textual analysis’ (Kumar, 2013).

A3.3.1 Evergreen

Evergreen ILS is another option when researching open-source ILS options. Evergreen is an open-source Integrated Library System (ILS), initially developed by the Georgia Public Library Service for Public Information Network for Electronic Services (PINES), a statewide resource-sharing consortium with over 270 member libraries. The software was initially released on September 2006. Linux operating system is needed to run the software. It too is standards compliant and uses the OPAC interface, and

offers many features including flexible administration, work-flow customization, adaptable programming interfaces, and because its open source, cannot be locked away and can benefit from any community contributions (Amatya, July 2005).

A3.3.2 Koha:

Koha was created in 1999 by Katipo Communications for the Horowhenua Library Trust in New Zealand. It is a promising full featured open-source ILS (integrated library system and Linux operating system) currently being used by libraries all over the world (Chouhan, 2010). The name comes from a Māori term for a gift or donation.

Koha has most of the features that would be expected in an ILS, including (Reddy & Kumar, 2013).

Features:

1. Simple, clear interface for librarians and members (patrons)
2. Various Web 2.0 facilities like tagging, comment, social sharing and RSS feeds
3. Fully automation of library
4. Union catalog facility
5. Customizable search
6. Circulation and borrower management
7. Full acquisitions system including budgets and pricing information (including supplier and currency conversion)
8. Simple acquisitions system for the smaller library
9. Ability to cope with any number of branches, patrons, patron categories, item categories, items, currencies and other data
10. Serials system for magazines or newspapers
11. Reporting
12. Reading lists for members

A3.3.3 Alice for Windows

The Alice library management system is a suitable option for libraries that may not have access to the latest technology or IT infrastructure, and that it is easy to use, reliable and effective. Softlink International has a global presence and markets their

LMS under different names in different regions. Recently Soft link International decided to call the software Alice for Windows all over the world to maintain consistency in nomenclature (Mukhopadhyay, 2002).

The main features of Alice are as follows (Mukhopadhyay, 2002):

1. It has four distinct versions – Public library ver., Special library ver., Academic library ver. And School library ver.

2. The package is modular and modules are grouped into one of the three sets –

Standard Set: Includes Management; Reports & Utilities; Circulation; OPAC

Advanced Set: In addition to standard set it includes Acquisition; Periodicals; Journal

Indexing; Multimedia; Web Inquiry Special Set: In addition to Standard & Advanced set it includes Reservation; Interlibrary loan; Patron self-checking; Rapid retrospective conversion;

A3.3.4 Libsays

LIBSYS Ltd. is a company based in Gurgaon, India, providing innovative library management systems across the country. It is known for its all-encompassing functionality and outstanding features. The LIBSYS software is a fully integrated multi-user library system based on the client-server model, supporting open system architecture, web-based access, and GUI. The LMS has seven basic modules, including Acquisition, Cataloguing, Circulation, Serials, OPAC, Web-OPAC, and Article indexing. The software is designed and developed by LibSys Corporation in New Delhi(Mukhopadhyay, 2002):

Advantages of the software:

The major advantages of using LIBSYS [8,9] are as follows:

1. Based on client-server model and TCP/IP for communication and networking
2. Provides ANSI Z39.50 complaint web access for making the server accessible through Internet/Intranet

3. Supports web OPAC for access of bibliographic databases through Internet/Intranet
4. Supports standard bibliographic formats like USMARC, UKMARC, CCF, UNIMARC etc.
5. Includes images and multimedia interfaces with LIBSYS search engine
6. Supports barcode technology for membership card production and circulation
7. Offers SDI, CAS, fine calculation, e mail reminders etc. utilities

A3.3.5 Mirror

The Mirror library is designed to provide meta-data for C++ constructs at compile-time and run-time, including information about namespaces, classes and their inheritance, member variables, constructors, and member functions. Its goal is to provide a consistent and generic interface for introspection of these constructs.

Mirror aims to be non-intrusive, which means that it does not require any changes to be made to existing code or any Mirror-specific code to be added to class definitions. Mirror achieves this by using the C++ template metaprogramming technique to generate meta-data about classes at compile time, which can then be used at runtime for various purposes like serialization, validation, and more. This approach makes Mirror quite flexible and versatile, as it can work with any C++ code, whether it was designed with Mirror in mind or not.

Features:

- a. **Reusability:** Mirror provides reusable meta-data for many different purposes and situations.
- b. **Flexibility:** Mirror provides meta-data that can be accessed at both compile-time and run-time in a functional and object-oriented manner, based on the specific needs of the application.
- c. **Encapsulation:** Mirror and the additional layers provide interfaces for easy access to program meta-data.
- d. **Stratification:** Mirror is non-intrusive and separates the meta-level from the base-level constructs it reflects.
- e. **Ontological correspondence:** The meta-level facilities correspond to the ontology of the base-level C++ language constructs which they reflect.

- f. **Completeness:** Mirror aims to provide comprehensive meta-data including specifiers, namespace member iteration, and more to be as useful as possible.
- g. **Ease of use:** Although Mirror allows doing very complicated reflective (meta-) programming, simple things are kept simple.
- h. **Cooperation with other libraries:** Mirror can be used with the introspection facilities provided by the standard library and other libraries.

A3.4 In House Made:

Libraries have different needs and requirements, and choosing between in-house developed software and commercial packages depends on several factors such as budget, technical expertise, customization needs, and support options. Some libraries may have the resources and expertise to develop their own software, while others may prefer to use commercial packages that can offer more features and support. Ultimately, the choice depends on the library's specific needs and resources.

In house made software is software that is specially developed for some specific organization or other user.

Customized software can meet a library's exact specifications without unnecessary extras, providing greater control and addressing specific needs. It can also make the interface more familiar and easier to use.

A3.4.1 PhpMyBibli (PMB) – Library Automation System

PMB (formerly known as PhpMyBibli) is a French library automation system based on PHP and MySQL. It is highly customizable and designed for medium-sized and large libraries. PMB can manage networks of libraries integrated in a collective catalog and uses the UNIMARC cataloging format. The software also includes format conversion and importation systems, such as USMARC and XML.

Features includes:

- Management of authority data (by author, publisher, collection).
- Management of a thesaurus of subject areas.
- Use of the Z39.50 protocol.

- Automation of the SDI.
- Control of serial publications, Management of journal summaries and storage.
- System for producing back-up copies.

Modules:

- Administration of the system.** How to parametrize the configuration of the system, manage the system's users, produce back-up copies, etc.
- Cataloguing.** For monographs, serial publications, acquisition of records from the Z39.50 catalogue, creation of lists of records (for novelties, saved searches, etc).
- Loan/ Circulation and Report**
- Acquisition**
- Authorities.** For authors, publishers, collections and classification. Includes the creation of a thesaurus by subject area.
- Selective dissemination of information (**SDI**).
- OPAC** which allows readers to carry out a search in the library catalogue.
 - Open-source software
 - Barcode generator

A3.4.2 Mumolas

ERASOFT Pvt. Ltd is a software development company based in Nepal. It was founded in 2008 by Kabita Raya and has since experienced organic growth under the leadership of Managing Director Om Khadka. The company offers a range of services, including web application development, library management, business ERP, IT consultancy, training services, and library consultancy. ERASOFT is known as the best software development company in Nepal and has a strong presence in the national market, with plans to establish alliances in the international market. The company aims to deliver smart technology solutions that align with the business needs of its clients and has

supported government and non-government organizations, the education sector, and other corporate businesses inside Nepal.

ERASOFT understands that every project has clearly defined business goals and works with its clients to measure the return on investment (ROI). The company's commitment to progressive improvement over short-term achievement has been key to its success. It has identified that its trusted and capable network of partners and clients has underpinned its success. As a technology company, ERASOFT believes that technology has become a permanent feature and works as a partner to deliver smart technology solutions that align with the business needs of its clients. The company's mission, vision, and values hinge on technology evolution and innovation, which has led to its expansion into broader and more holistic engagement beyond its foundation expertise.

Main feature of Mumolas Library Automation

1. Acquisition
2. Catalogue with 39.50
3. Membership with no dues and library clearance certificate
4. Circulation
5. Report and Tools
6. Serial Control
7. OPAC
8. E-Resources management
9. Administration

A3.4.3 Mitra Erp Emis (Nepal)

FEATURE AND MODULES

Cataloguing

- New Book Bibliographic Record Entry
- Multi-copy Book entry
- Spine Level/Barcode
- Stock Summary
- Stock Verification
- Location Transfer

- Auto Catalogue by ISBN from Google docs
- Auto Classification from OCLC
- Manage Journal and Articles
- Library 2.0 OPAC
- Online Reserve and Renew option

Membership Management

- Member Registration from Existing Database with generates ID card in standard format.
- Member Renewal process, valid date, updated, expire date provision
- Member Search options
- Member Barcode Generation

Circulation

- Transaction Management with applied rule
- Fine Management in several scheme
- Barcode Circulation Desk

Reports

- Status
- Transactional
- Fine; paid history,
- Member who not issued any book
- Book which is not issued yet.
- Maximum fine payer and Maximum time issued time.
- Stock Summary Reports with adjust leave calendar.

Integration with EMIS

- Get Automatically Members from Master Data of Student and HR
- Web Based and cloud database.
- Role Based Access control
- Fine Send to Accounts
- Data import and export to all modules such as Academic, Store, Administration, Library, Account, class room, etc.

A3.4.4 Libra Library Software

Buddha Academic Enterprises is are a renowned and established organization that has been importing and exporting publication for a long time. Market reputation is the hallmark of Buddha Academic Enterprises. Support and maintenance even after delivery has been its feature. As such the Libra management software comes with full commitment any feature maintenance or trouble shooting would be handled with high importance.

Libra: a powerful solution to your library. Libra is a bound to provide service for collection, storage, processing, and dissemination of library task, training to use and implement is also given to staff of library. After all, Libra has:

Cross platform support: Use Libra no matter what OS you have. it has the capability to run any OS (Linux, Window, Fedore, Debian, Solaris, Unix)

Barcode Label and Identity card Generator: Library can automatically generate barcode labels for books and patrons and can even generate identity cards for staff and students.

Online Public Access Catalogue (OPAC): OPAC is the powerful feature of Libra that enables patrons to use the library through the internet no matter where they are.

A single librarian can now handle job for more the 10 staff.

Available Features:

Circulations: Issue, Return, Reserve

Catalogue: Maintain catalogue, Add Catalogue, Advanced search.

Barcode: Patron Home, Add New Patron, Search Patron

Acquisitions: Suppliers/Venders, Acquisitions, Orders, Book Fund

Tools: Reports, Bulk User update, Stock Verification, Repair Database,

System: Borrowers, Item type, Issuing rules, Currency, Branch Info.

A3.5 Digital Library Management Software:

Digital library management software is a type of software that is designed to help libraries manage their digital resources, such as e-books, e-journals, and digital archives. It can provide a range of features to help libraries organize, store, and provide access to these resources, as well as to track usage and monitor performance.

Some common features of digital library management software include:

Cataloging: This feature allows libraries to create and maintain an online catalog of their digital resources, including metadata such as author, title, subject, and keywords.

Search and discovery: This feature enable users to search for and access digital resources using a variety of search criteria, such as title, author, subject, and keyword. It can also provide search suggestions and related resources based on user queries.

Access management: This feature allows libraries to control access to digital resources, such as by setting access levels, creating user accounts, and monitoring usage.

Reporting and analytics: This feature allow libraries to track usage of their digital resources, such as the number of downloads, the most popular resources, and the types of users who are accessing them.

Interlibrary loan: This feature allows libraries to borrow and lend digital resources with other libraries, providing greater access to resources and expanding the reach of the library.

Integration with other systems: Digital library management software can be integrated with other library systems, such as integrated library systems (ILS), learning management systems (LMS), and research management systems (RMS), to provide a seamless user experience and simplify administrative tasks.

A3.5.1 Dspace:

Dspace is a digital institutional repository that stores and manages digital items and associated metadata, allowing for easy searching and retrieval of research output. It is widely used by universities to capture, preserve, and redistribute the intellectual output of their research faculty in digital formats(Ashok Kumar, 2009).

DSpace was initially released in November 2002 as a collaborative project between developers from MIT and HP Labs. DuraSpace is now responsible for providing leadership and guidance to the DSpace software and user community.

“DSpace captures your data in any format – in text, video, audio, and data. It distributes it over the web. It indexes your work, so users can search and retrieve your items. It preserves your digital work over the long term. DSpace provides a way to manage your

research materials and publications in a professionally maintained repository to give them greater visibility and accessibility over time.” www.dspace.org

DSpace is an adaptable digital institutional repository that can be customized to meet the needs of different communities. It is built to adhere to international standards for metadata format and interoperability between systems. As an open-source technology platform, it can be extended and customized to increase its capabilities. Some of its characteristics as shown in DSpace documentation are as:

- a) It is a service model for open access and/or digital archiving for perennial access (Tramboo et al., 2012).
- b) Provides a platform to frame an Institutional Repository and the collections are searchable and retrievable by the Web.
- c) Helps to make available institution-based scholarly material in digital formats. The collections will be open and interoperable.

Optimized Search & Browse: As per Bass, Miller (2011), the system allows end-users to discover content in a number of ways.

A3.5.2 Greenstone:

Greenstone Digital Library Software is a New Zealand-based project that offers an innovative way of organizing and sharing large collections of digital documents over the internet. It provides a uniform interface to access collections of information consisting of thousands to millions of documents(Tramboo et al., 2012). It provides a way of organizing information based on metadata and publishing it on the Internet (Witten & Bainbridge, 2005). A typical digital library built with Greenstone will contain many collections, individually organized. Easily maintained, collections can be augmented and rebuilt automatically (Tramboo et al., 2012).

Greenstone provides a user-friendly interface called "Librarian" for creating and managing digital library collections. It aims to help librarians and other users to easily organize and compile electronic anthologies. With the use of a standard design, it only takes a few minutes to set up a collection and start the building process, provided that the necessary documents and metadata are already in electronic form.

A3.5.3 Eprints

EPrints is free software developed by the “University of Southampton, England (Tramboo et al., 2012). EPrints is a repository platform that collects, preserves, and disseminates research output in digital format, allowing researchers to deposit their preprints, post prints, and other scholarly publications using a web interface, and organizing these publications for easy retrieval. It is designed to be easy to use for both end-users and administrators, and can be customized for different types of digital content(Tramboo et al., 2012)

EPrints is a flexible content management system that can be used for various types of digital content, including academic research, images, and audio archives. Its strength lies in its user-friendliness, both for end-users and administrators.

A3.5.4 Fedora

Fedora is a digital asset management architecture that provides a flexible service-oriented approach to managing and delivering digital content, making it a popular choice for building institutional repositories, digital archives, and digital library systems(Minkova, 2018). Fedora is not a complete digital asset management system, but rather a flexible and extensible architecture for building such systems. It provides a framework for managing and delivering digital content, with the aim of enabling interoperability and extensibility through modular design (i.e., executable programs) as clearly defined modules. Fedora initially released on 16th May 2003.