SATISFACTION LEVEL ON WEB BASED LIBRARY RESOURCE & SERVICES AMONG LIBRARY & INFORMATION SCIENCE RESEARCH SCHOLARS OF CENTRAL UNIVERSITIES IN NORTH INDIA : A STUDY

THESIS

SUBMITTED FOR THE AWARD OF THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

LIBRARY AND INFORMATION SCIENCE

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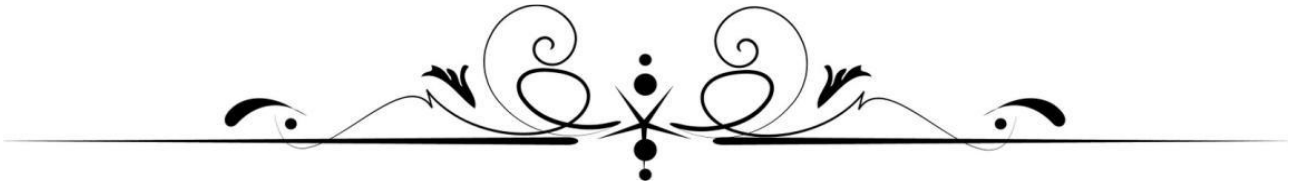
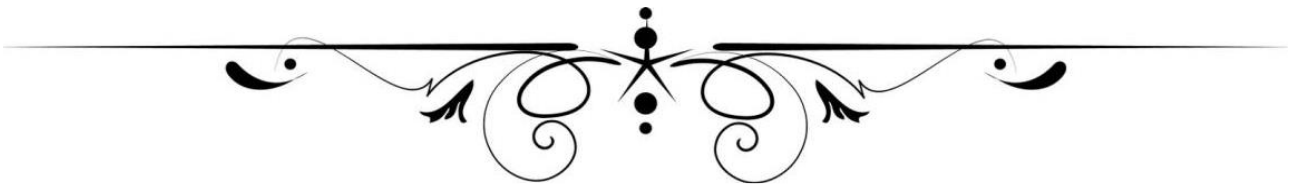


Dedicated to
My
Beloved Parents



DECLARATION

I hereby declare that the thesis entitled, **"SATISFACTION LEVEL ON WEB BASED LIBRARY RESOURCE & SERVICES AMONG LIBRARY & INFORMATION SCIENCE RESEARCH SCHOLARS OF CENTRAL UNIVERSITIES IN NORTH INDIA : A STUDY"** Submitted by me for the award of the Degree of Doctor of Philosophy in Library and Information Science to the Department of Library and Information Science, Babasaheb Bhimrao Ambedkar University, Lucknow is an outcome of my own efforts and is an original work. The contents of this thesis did not form a basis for the award of any previous degree to anyone else. It is also undertaken that thesis is essentially free from all kinds of plagiarism.

I hereby also undertake that the thesis submitted by me to Babasaheb Bhimrao Ambedkar University, Lucknow satisfies all the requirements as stipulated in the Doctor of Philosophy (Ph.D.) regulations -1999 as amended in 2013 and it is fit for submission and evaluation for the award of the degree of Doctor of Philosophy in Library and Information Science of the University.

Date: 15-03-2021

Place: BBAU, Lucknow

15-03-2021

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CERTIFICATE

This is to certify that the thesis titled **"SATISFACTION LEVEL ON WEB BASED LIBRARY RESOURCE & SERVICES AMONG LIBRARY & INFORMATION SCIENCE RESEARCH SCHOLARS OF CENTRAL UNIVERSITIES IN NORTH INDIA : A STUDY"** Submitted by Mr. Omprkash Kumar Jigyshu is an original research work and has not been previously submitted in part or full for the award of any other degree or diploma to this or any other university.

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Date: 15/03/2021

Supervisor 15/03/2021

Head of Department

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Ph.D. Course Work Certificate

This is to certify that **Omprkash Kumar Jigyshu**, Enrollment No. 600/12 Ph.D. Research Scholar, Department of Library and Information Science of the University has successfully completed his Ph.D. Course work in the examination held during May, 2017.

Controller of Examinations

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15-03-2021

Omprkash Kumar Jigyshu

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ABBREVIATIONS

ARL	Association of Research Libraries
AOL IM	America Online Instant Messenger
ASME	The American Society of Mechanical Engineers
BSNL	Bharat Sanchar Nigam Limited
CAS	Current Awareness Service
CD-ROM	Compact Disk-Read Only Memory
DBMS	Database Management Software
DOAJ	Directory of Open Access Journals
DOI	Digital Object Identifier
DF	Degrees of Freedom
DVD	Digital Versatile Disk
ETD	Electronic Thesis and Dissertation
FAQs	Frequently Asked Questions
FRBR	Functional Requirements of Bibliographic Records
HTML	Hypertext Mark-up Language
HTTP	Hypertext Transfer Protocol
BBAU	Babasaheb Bhimrao Ambedkar University
GBL	Gautam Buddha Central Library
AMU	Aligarh Muslim University
MAL	Maulana Azad Library
BHU	Banaras Hindu University
DU	Delhi University
CUHP	Central University of Himachal Pradesh
ILL	Inter Library Loan

ICT	Information and Communication Technology
ISDN	Integrated Service Data Network
IT	Information Technology
IEC	International Electro Technical Commission
LAN	Local Area Network
MARC	Machine Readable Catalogue
NKN	National Knowledge Commission
NISCAIR	National Institute of Science Communication and Information Resources
OAJSE	Open Access Journal Search Engine
OPAC	Online Public Access Catalogue
OCLC	Online Computer Library Centre
OFC	Optical Fibre Cable
PDF	Portable Document Format
PI	Persistent Identifier
RAID	Redundant Array of Independent Disks
RAM	Random Access Memory
RDA	Resource Description and Access
RFID	Radio Frequency Identification
RSS	Rich Site Summary
SDI	Selective Dissemination of Information
TCP/IP	Transmission Control Protocol/Internet Protocol
TIFF	Tag Image File Format
URL	Uniform Resource Locator
VSAT	Very Small Aperture Terminals
WWW	World Wide Web
XML	Extensible Mark-up Language

PREFACE

In particular, www has opened up new opportunities for the provision of information tools and services to users technology savvy. The technology not only enhanced personal connectivity and user engagement, but also allowed users to access a wide variety of new information services from anywhere in the world at any time on their desktop. It has been the driving force for library change and improvement and has improved the quality and effectiveness of library operations and services. In addition, the existing facilities and their deliverables have also been strengthened. Libraries around the world are providing new web-based library tools and facilities in this changed environment, such as online journals, textbooks, databases, catalogues, web types, etc. In order to meet the demand of its users via websites.

The current study, Satisfaction Level on Web-Based Library Resources & Services among Library & Information Science Research Scholars of Central University In North India : A Study, intended to study how research scholars use the new web technologies to provide resources and services for web-based libraries, intended to study how research scholars use the new web technologies to provide resources and services for web-based libraries.

Furthermore, the aim of the study was also to find out about awareness, use, Opinion and problems faced by users while accessing web-based services and resources and satisfaction level.

Structure of the thesis

The present study of **"Satisfaction Level on Web Based Library Resource & Services among Library & Information Science Research Scholars of Central**

Universities in North India : A Study" has been reported in the following six chapters:

Chapter- 1: Introduction In the first chapter, the following points have been discussed such as the background of the study library web-based library resources and services, objectives of the study, scope of the study hypotheses, research methodology, sample size, statistical tools, and technologies.

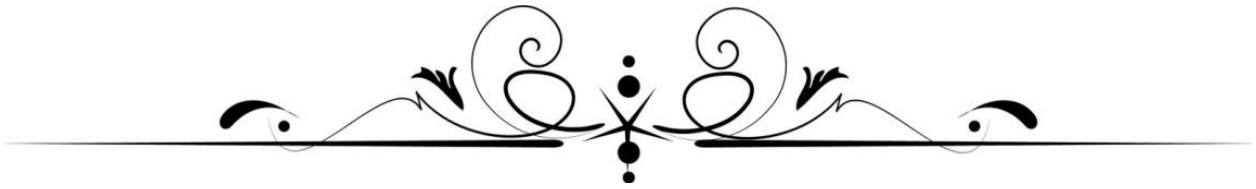
Chapter- 2: Review of the literature Second chapter, review of literature discusses all recent studies on web-based library resources and services at national and international levels.

Chapter-3: Basic concept of web-based library resources and services in this chapter discuss about deferent types of web-based library resources and services

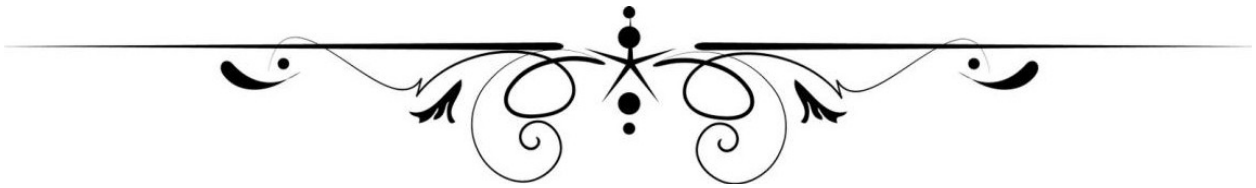
Chapter-4: Profile of the Central Libraries this chapter presents the brief introduction of central universities libraries.

Chapter-5: Analysis and interpretation of data this chapter present the tabulation, statistical analysis, interpretation, and graphical representation of the collected data from libraries.

Chapter- 6: Findings, Suggestions & Conclusion this chapter present the finding and suggestion of the study and concluded with the suggestion in future to improve the web-based library resources and services uses in the university libraries. It offers a conclusion based on findings.



CHAPTER-1
INTRODUCTION



CHAPTER-1

INTRODUCTION

1.1 Background

A University library is the heart of a university and it plays an important role to support education and research works. And library serves as research centers in the University. During the last decade library resource centers and information services, in general, have made a great stride able to play a leading role in society. Information and technology have introduced many changes in library activities. These, along with a library that manages information have to integrate the necessary technological changes to adapt to the new challenges, for this they have made important investments in technology to update their infrastructure the current WWW information service is important and in continuous evolution. In the present time need accurate, precise, and systematic information. The previous methods of library and information services have changed greatly in recent years because of the development and application of new information technologies, especially the internet and web technologies. The Web has enabled library services to be offered 24X7, beyond the normal library hours to be accessed by the users from anywhere from a range of devices such as tabs, laptops, desktops, and smart phones. This has not only saved users time but also have provided the users the convenience to effectively and efficiently use library services without frequently visiting the library. The web 2.0 or participative web has opened up a new environment for the library and improve library services, procedure and operation and empower users by allowing them to create and content management of services. Thus, libraries must adopt these latest web technologies in providing

The new web environment has enormous effects on how user services are designed and implemented." Innovation has created new opportunities and difficulties to libraries in promotion, dissemination, and storage of information" (Madhusudan & Nagabhushan, 2012, p.569). The current programs and user standards have changed. The satisfaction of users with library services would be dependent on the library's ability to adapt and meet the users' changing information needs and perceptions. To adapt to this evolving web environment libraries all over the world are developing new electronic library tools and facilities, such as online journals, e-books, e-databases, OPAC, web-forms, etc. to meet the demands of the users." Web-based library services are modified versions of existing services and technology-driven services" (Arora, 2001, p.2). Halub (1999) stated that "web-based library resources and services promote the image of the library as an innovative, progressive and integral to the commitment to excellence in education and research" (p.257). Library users prefer these programs because they can access them from their laptop whenever it suits them and thereby save their valuable time. “Web based Library Services means library services provided using internet as medium and library website as a gateway with the help of integrate library management system.” (White, 2001) has defined web based services as an information service in which users ask questions via electronic means e.g. email or web forms. Web based library services provides users with the convenience of accessing information in their own time, saving them travelling cost and time and new options for answering reference questions. The provision of these services is not constrained by the traditional opening hours but can be offered on a 24 hours. According to (Sangale, 2015) web based services are established due to following reasons: “Ensuring the needs of users and the accessible information sources are suitable matched at all times; Delivering those information

sources to the users in a timely and appropriate fashion; Ensuring the information provided is high quality, accurate and appropriate; Assisting the user in interpreting the materials, if necessary; Promoting user awareness of new services and information sources as they develop; Providing users with individualized guidance and support as they build their information research and application skills."

This continued growth from the users has forced the library websites to be advanced. Libraries websites have fully altered the idea of conventional and student visits to library collections with the concept of online access to website-accessible information and services. University libraries use this innovative technology "to create home pages, as starting points or gateways for information" (Arora, 2001, p. 23)By providing valuable and collaborative resources and services to the research and development needs of scientists and by encouraging them"the image of the librarians as the Internet expert" (Madhusudan & Nagabhushan, 2012, p.570). A homepage offers the library an ability to explore its goals and objectives.

The University Library websites provide information on the resources and services of the library by allowing access to all digital collections, such as online databases, online sources, topic materials, library directions, and new arrivals. This has helped significantly the information scientists incorporate the four aspects of a library from information acquisition, information organization, retrieval of information to users, and preservation of library online information on their homepage. Web 2.0 technologies have provided new opportunities for developing library facilities, infrastructure, and operations, and motivated users by designing and maintaining resources.

Thus, adopting these latest web innovations is crucial for university libraries to provide access to web-based library resource and services to satisfy the users' information needs. Libraries need to design, develop, and implement web-based library resources and services of the highest quality to the fingertips of the users.

The growth of library web-based technology has increased the users' aptitude for web-based library services. As such, libraries need to update the current library system to convert conventional library services to web-based library services to provide better facilities to the users.

The main purpose of the study was web-based library resources and services in the central universities libraries in North India. The study clearly brought out the assessment of the interaction and of satisfaction of research scholars with web-based library resource and services from the Central Universities Libraries. Also, the study purpose of the study was to find out the problems faced by the Researchers to accessing web-based library services, their opinion on web-based library services, and expectations of Web-Based Library Resource and Services on the web 2.0 environments.

1.2 Statement of the Problem

The present study is conceived under the title “Satisfaction level on web-based library resource & services among library & information science research scholars of a central universities in north India: a study” therefore, the purpose of the study is to analyze how to web-based resources and services effects the scholars learning ability and how media and digital literacy would be fruitful for empowering research scholars with their critical thinking and problem-solving skills for making them carefully use of library web-based resources and services.

1.3. Definition of Important Keywords

1.3.1. Web-Based Library Resources and Services

In the context of library Web-based library resources and services are such types of resources and services provided through the web or the internet. The web facilitates and library staff to extend services beyond posted library hours. Web improves library visibility of the library system, and users become aware of the library up to date. The library can use the web to deliver more effective databases and full-text web services and promotes the image of the librarians as the internet expert. It also promotes the status of the library as an innovative, progressive, and integral to the dedication to excellence in education and research. Web-based library services offer services such as more online textbooks, databases, tutorials, and a virtual library of links to other useful resources. And it also provides the exclusive service of linking to full-text articles, integrating libraries' house-keeping operations, library policies, staff listings, etc for the timely help.

Therefore, in this study, web-based library services means, library services provided using the internet as a medium and library website as a gateway with the help of web-based library automation software. Such web-based library services include the reference service in a library often defined as direct personal assistance given to its reader for finding information. Web-based reference services owe their increasing popularity amongst users to extend the reference desk beyond the library's walls. The goal is to meet the demand for easy 24 hours access to electronic reference sources from their desktops. The web-based reference services provided to their clientele such as electronic document delivery services, electronic current awareness services, electronic SDI services, web-based reference tools, electronic research guides, virtual reference desk/ask-a- librarian.

1.3.2 Web-based Library Resources

Web-based library resources are described as those digital information services that users can access electronically through a computer network within the library or through the website outside the library. Online resource development and growth provide an opportunity to access information and data from anywhere and anywhere, at the convenience of the user. For this analysis, web-based tools are e-books, e-journals, electronic databases, patents, standards, theses/dissertations, etc.

Numbers web-based resource is made on online resources provided by universities,

- Emerald.
- Elsevier Science.
- JSTOR.
- Open Access e-journal like Directory of Open Access Journal (DOAJ).
- Open Access Journal Search Engine (OAJSE) etc.

1.3.3 Web-based Library Services

Web-based library services meant which are provided through different sections such as acquisition service, circulation service, cataloguing service, reference service, periodical service, and general / administrative. Library services provided using the Internet as a medium and library website as a gateway with the help of an integrated library management system. On the user demand, there are various types of web-based library services such as Current Awareness Service, SDI Service, Online delivery service, document delivery service, CD- ROM service, internet access, indexing and abstracting databases, library portal service, federated search, alert service, digital library services, web OPAC service and a virtual library of links to other useful resources. It provides a unique service like integrating library house-keeping operations, library policies, staff listings, etc.

The present study looks at the web-based library services provided by different central university libraries in north India. The purpose of the study is to learn what type of web-based library services are available in different university libraries, how they were used by the research scholars, and users' skills ineffective use.

1.3.4 Reference and Information Services

The library systems have also been a significant part of the research and information system. The key concept of reference and information services is to provide the right information through personalized services to the right user at the right time. Technologies have provided librarians with a forum to reach out directly to the users, rather than waiting at the reference desk. Web-based reference and information resources have allowed libraries to continue to be important in a growing world by assisting the academic community in its search for knowledge.

1.3.5 Library Acquisition Services

The library acquisition services provide print collection as well as electronic documents. The web-based acquisition resources offered by the libraries through the acquisition section include a list of new acquisitions, new arrivals notification services, product recommendations, acquisition policies, proposed material status, and upcoming items.

1.3.6 Library Circulation Services

Circulation is one of the robust and customized programs that impacted users a great deal. The web-based user account enables users to access their personal information, enabling users to manipulate and communicate with the circulation system without having to visit the library. So no need to visit the library, waits in line, or speaks to the staff at the circulation. This web-based circulation program has saved users precious time.

The web-based library circulation service provided these services through library websites includes user account status, issuance/return of documents, circulation policies, the status of reserved documents, cancelation of reserved documents, replacement of loan documents, document preservation, contact with users for the question, payment of overdue fees.

1.3.7 Web-Based Library Cataloguing Services

The Library Catalogue is the cornerstone of library facilities, a simple resource for accessing material. The Internet-enabled software has had an enormous impact on how to use the catalogue. The catalogue's basic listing feature is transformed by a hypertext connection, which allows the discovery and distribution of the listed items simultaneously.

Library web-based cataloguing services included Web-OPAC access; Subscribed e-newspapers, consortium-based e-newspapers, institutional archives, web databases, union catalogues, electronic indexes, federated searches, transparent URL connections to external services, streamed/downloaded multimedia, and personalized files

Search. Search.

1.3.8 Web-Based Library Periodical Services

These services deal with newspaper subscriptions and renewals. This is the essential work for maintaining lists of subscribing journals in the library. This includes problems such as holding copies of newspaper items, notifications for non-receipt, title adjustment, periodicity, and title mergers. Online technologies have helped the libraries perform these activities effectively and efficiently.

The periodical section, therefore, includes numerous web-based activities such as web-based 'Content Table,' electronic article distribution, article warning service, journal quote report, journal subscription recommendation, recommended journal

status, most quoted articles, and the accessibility of print issues both in online and vice versa, etc.

1.3.9 General and Library Administrative Services through Web Based

Today, the digital era transforms all traditional libraries into electronic to digital to virtual the librarians' traditional responsibilities have been changed with technology that has influenced the scale, competitiveness, and speed of librarians' awareness of users. The library can provide online access to their policies, staff list, library timings, calendar, Library Advisory Committee, FAQ, web-based user education, information about library exhibitions, workshops, etc. along with resources and services.

However, the effective library administrator will be the one who can exploit the possibilities of the large Internet and WWW scope toward a library's mission.

Web Based User Education

Web guides and teaching tools are found everywhere on the web because they are easily updated, accessed and printed on demand. The web based user education provides a high degree of interactivity and flexibility to the users. The library websites can use web-based user education for imparting training to users in the following area: Basic library skills along with glossary of library terms; Using Library OPAC/ Web OPAC, locating books, magazines and other library materials; Instructions for searching CD-ROM and web based databases and other electronic resources; and Instructions on subject search training, using Boolean operators and searching internet resources through search engines.

1.4 Advantages of Web-based Services

Following are the advantages of Web Based Services:

- It saves the precious time of the users

- A large number of users can be helped simultaneously by using web based library services
- Less dependent on the library staff for getting the required information
- No need of library staff in large numbers to carry out library works and services
- Availability of information in different places and also in different formats
- Cut in Library Budget • Fulfil information requirements instantly
- Operating costs are minimal
- Cannot be stolen or miss shelved
- Saves considerable storage space
- Immediate receipt of issue • Fast publication

1.4.1 Disadvantages of web based services

- A huge volume of information is generated every minute
- No order or rules are imposed on the generation, distribution, access and use of this information
- No fully comprehensive record of the different documents is available at the moment
- Requires some training for users to use special equipment required
- Use is limited by copyright laws and licensing agreements
- Access is currently unreliable (URL problems, internet connection problems)
- Format is in the early stages of development

1.5 New Web-Based Library Services

1.5.1 Virtual Library Tours

Websites of libraries provides virtual library guide to the physical facilities including collections, services and infrastructure available in the library. The combination of

library maps and floor plans, library departments and photographic views are used for the tour. Virtual library tours are also using new technologies such as QuickTime movies etc and are beginning to replace image maps on main campus Web sites.

1.5.2 Ask-A-Librarian

Ask-A-Librarian services are Internet-based question and answer service that connects users with individuals who possess specialized subject knowledge and skill in conducting precision searches. Most "Ask-a-Librarians" services have a web-based question submission form or an e-mail address or both. Users are invited to submit their queries by using web forms or through e-mail. Once a query is read by a service, it is assigned to an individual expert for answering. An expert responds to the query with factual information and or a list of information resources. The response is either sent to the user's e-mail account or is posted on the web so that the user can access it after a certain period of time. Many services have informative web sites that include archives of questions and answers and a set of FAQs. Users are usually encouraged to browse archives and FAQs before submitting a question in case sufficient information already exists.

1.6 Need for the study

In the present time library the emergence of new trends and technology creates new challenges for a library to fill the demand of their users; web-based information services have put a wide impact on the provision of library and information services. The present study aims to investigate the satisfaction level of web-based library resources and services in the central universities libraries in North India and also assesses its satisfaction level convenience of use among the research scholars of library and information science.

This research was primarily aimed at discovering the following advantages, such as:

- The analysis was focused on the current situation and the result can be used for reorganizing web-based library services for users.
- Needs for new web-based services after collecting feedback from users which could satisfy university library users ' requirements.
- Evaluation of new web-based services after collecting feedback from users which could satisfy university library users ' needs.

This study is to provide suggestions on how to develop the existing web-based services to better support university library users to navigate in the new data-rich world.

1.7 Objectives of the Study

The present study evolution of the satisfaction level on web-based resource and services among library and information science research scholar of central universities libraries in north India: A study. Therefore, the study has the following objectives to examine:

1. To identify and analyze Web-based library resource and services offered through the websites of central university libraries.
2. To find out the availability of web technologies and its application for effective use of Web-based library resources and services.
3. To know the level of satisfaction among the research scholars under the study.
4. To know the awareness and use of Web-based library resources and services among the research scholar of central university libraries.
5. To find out the problem faced in using Web-based library resources and services.

1.8 Hypotheses of the Study

The Following hypothesis formulated of this study:

1. Selected central university libraries have adequate infrastructure for Web-based resources and services for LIS research scholars;
2. All the central university libraries are providing Web-based library resources and services according to the need of LIS research scholars;
3. LIS research scholars have sufficient awareness about web-based library resources and services;
4. LIS research scholars of the selected university are satisfied with Web-based library resources and services.

1.9 Scope and Limitation of the Study

The scope of the study is limited to the research scholars of the central universities library in North India. The Study was cover those central universities who running regular mode library and information science at central university North India, to find out the satisfaction on Web-based library resource & services among library and information science of research scholar in central universities library in North India, like Haryana, Delhi, Himachal Pradesh, Jammu & Kashmir, Uttarakhand, Punjab, and Uttar Pradesh. The Scope of the study is following the topic of the study following University Libraries was covered under the study.

1.10 Name of University in Offered Library and Information Science Course

Name of Library	Name of the University	Established Year	Place of Location
Maulana Azad Library	Aligarh Muslim University	1857	Uttar Pradesh
Gautam Buddha Central Library	Babasaheb Bhimrao Ambedkar University	1996	Uttar Pradesh
Sayaji Rao Gaekwad Library	Banaras Hindu University	1916	Uttar Pradesh
Central Library	University of Allahabad	1887	Uttar Pradesh
Delhi University Library system	University of Delhi	1922	New Delhi, Delhi
Dr. B. R. Ambedkar Central Library	Jawaharlal Nehru University	1969	New Delhi, Delhi
Dr. Zakir Husain Library	Jamia Millia Islamia University	1920	New Delhi, Delhi
Central Library	Central University of Haryana	2009	Haryana
Central Library	Central University of Himachal Pradesh	2009	Himachal Pradesh
Central Library	Central University of Jammu	2009	Jammu
Central Library	Central University of Kashmir	2009	Kashmir
Central Library	Central University of Punjab	2009	Panjab
---	Indira Gandhi National Open University	1985	New Delhi, Delhi
Central Library	Hemwati Nandan Bahuguna Garhwal University	1973	Uttarakhand

These Eight universities are offered Library and Information Science course, these are, the University of New Delhi, Delhi, Central University of Kashmir, Ganderbal, Kashmir, Central University of Punjab, Bathinda, Panjab, Muslim University, Aligarh, Uttar Pradesh, Banaras Hindu University, Varanasi, Uttar Pradesh, Central University of Jammu, Trikuta Nagar, Jammu, Babasaheb Bhimrao Ambedkar University, Lucknow, Uttar Pradesh, Indira Gandhi National Open University, Delhi.

1.11 Research Methodology of the study

Research methodology has become an important aspect of human activity. It provides a dependable solution to problems and resolves conflicts. The research methodology

is a way to systematically solve the research problem; it may be understood as a science to studying how the research is done scientifically.

In this study, two types of methods were adopted for data collection

- The questionnaire and
- The interview

The questionnaire was structured to keep the specified goals in mind. There are close-ended as well as open-ended questions in the questionnaire. Two sets of semi-structured questionnaires were formulated to collect primary data. For the web-based library services survey of the selected central universities, one collection of questionnaires was intended for the librarian. And the second questionnaire was prepared for research scholars to evaluate their library using resources and services, satisfaction with the library's various web-based resources and services, and to gather their views on web-based information services.

There were formulated two questionnaires

- Questionnaire for Librarian
- Questionnaire for Research scholar

The research scholar questionnaire divided into various sections:

- **Section: 1 Web-Based Library Resources:** This section having twelve questions regarding the awareness and use of web-based library resources and services.
- **Section: 2 Web-Based Library Services:** This section having seven questions regarding web-based library services in the various section in the library.
- **Section: 3 General Web-Based Library Resources and Services.** This section contains four questions.

The study is based on Web-based library resource and services in central universities library in North India with special reference to accessibility to the library and information science research scholars. The study will investigate how web-based resources and services in libraries are helpful to the academic environment and the use of web-based services by the researchers. The research is based on the study method. The study will be conducted among the library and information science research scholars in the central universities in North India. A stratified random sampling method will be used for this study. The questionnaire is the main tool proposed for data collection in this study. Other tools like observation and interviews will be also supporting the study. Statistical analysis of the questionnaire will use the data SPSS (Statistical Package for Social Sciences). Percentage, chi-square test, ANOVA, and correlation analysis are some of the statistical techniques will use in SPSS for analyzing and interpretation the data.

1.12 Development of Study Instrument

Measure the satisfaction of the web-based library service again using the five-point Likert style scale (i.e. 1= highly satisfy, 2= satisfy, 0= neutral, -2= dissatisfy, -1= strongly dissatisfy).

1.13 Data analysis

The data collected were analyzed with the aid of MS Office (Excel). The methods used to evaluate the user data were chi-square checking. The citation and references are provided in the format of the APA, edition 6. To help the analysis, other instruments including observation and interviews were used.

1.14 Structure of the Thesis

The present study of "SATISFACTION LEVEL ON WEB-BASED LIBRARY RESOURCE & SERVICES AMONG LIBRARY & INFORMATION SCIENCE

RESEARCH SCHOLARS OF CENTRAL UNIVERSITIES IN NORTH INDIA: A STUDY" has been reported in the following six chapters:

Chapter- 1:

Introduction In the first chapter, the following points have been discussed such as the background of the study library web-based library resources and services, objectives of the study, scope of the study hypotheses, research methodology, sample size, statistical tools, and technologies.

Chapter- 2:

Review of the literature Second chapter, review of literature discusses all recent studies on web-based library resources and services at national and international levels.

Chapter-3:

Basic concept of web-based library resources and services in this chapter discuss about deferent types of web-based library resources and services

Chapter-4:

Profile of the Central Libraries This chapter presents the brief introduction of central universities libraries.

Chapter-5:

Analysis and interpretation of data This chapter present the tabulation, statistical analysis, interpretation, and graphical representation of the collected data from libraries.

Chapter- 6:

Findings, Suggestions & Conclusion This chapter present the finding and suggestion of the study and concluded with the suggestion in future to improve the web-based library resources and services uses in the university libraries. It offers a conclusion based on findings.

References

Chandrashekara J., Mohan B. S and Nayana H. (2016). “Web-based Library Services in Visvesvaraya Technological University Research Centres Libraries in India: an Analysis of the Researcher’s Perspective.” J. Adv. Res. Lib. Inform. Sci.

Singh, Gurpreetand Samyal, and Kumar Jatinder. (2014). **“**IIT Libraries: Evaluation of Web-based Information Resources and Services.”SRELS Journal of Information Management, Vol 51(5), p. 1–7.

Bwalya, Tuesday. (2014). “Internet and Web-based library Services Provision among Academic Libraries in Zambia: a Comparative study of the University Zambia and Copperbelt University Libraries.”International Research: Journal of Library and Information Science 4.4 475-493.

Lwoga, Edda Tandi. (2014). “Integrating Web 2.0 into an Academic Library in Tanzania.” Electronic Library 32.2 183-202.

Mohammed, Abubakar, Aminu Garba, and Hafiz Umar. (2014).“University Library Websites in Nigeria: An Analysis of Content.”Information and Knowledge Management 49.3 17-22.

Zhixian, Yi. (2014). “Australian Academic Librarians' Perceptions of Effective Web 2.0 Tools Used to Market Services and Resources.” Journal of Academic Librarianship xxx xxx-xxx.Elsevier.

Anaraki, Leila Nemati, and Fahimeh Babalhavaeji. (2013). “Investigating the Awareness and Ability of Medical Students in Using Electronic Resources of the Integrating Digital Library Portal of Iran: a Comparative Study.” Electronic Library 31.1 70-83.

Islam, Md. Anwarul and Muhammad Jaber Hossain. (2014). “Marketing Information Resources and Services on the Web.”Electronic Library 32.5742- 759.Emerald. Web. 15

June 2015. Khalid, Mahmood, and John V. Richardson Jr. “Impact of Web 2.0 Technologies on Academic Libraries: a Survey of ARL Libraries.” Electronic Library 31.4 (2013): 508-520. Emerald.

Khan, Imran. (2013). “Library, Librarian and Library Services in Web 2.0 Environment.” International Journal of Digital Library Services 3.4. 14-36.

Krishnamurthy, M,, and Winnie Chan. (2013). “Implementation of Library Portals for Information Resources: a Case Study of Indian Statistical Institute, Bangalore (ISIB).” International Information and Library Review 37 pp.45- 50.

Malik, Amara, and Khalid Mahmood. (2013). “Infrastructure Needed for Digital Reference Service (DRS) in University Libraries: an Exploratory Survey in Punjab.” 62.6/7 420-428.Emerald.

Sarkar, Tanmay De. (2013): “Prevalence of Widget Applications on Library Websites: an Analytical Study.” New Library World 114.3/4 110-131.Emerald.11 May. 2017.

Arora, Jagdish. (2001): “Web-based Digital Resources and Services: Trends and Innovations.”CALIBER n.pag.Web.14 May 2017. <http://ir.inflibnet. ac. in/handle/1944/105>

Halub, L P. (1999): “The Value of Web-based Library Services at Cedras-Sinai Health System.” Bulletin of the Medical Library Association 87.3 pp.256- 60.

Liu, Shu. (2008). “Engaging Users: the Future of Academic Library Websites.” College Research ibraries69.1

Moyo, Lesley M. (2004): “Electronic Libraries and the Emergence of New Service Paradigms.” electronic Library 22.3 pp.220-230.Emerald.

Technical Education. (2013), Ministry of Human Resource Development, Government of India. National Informatics Centre.

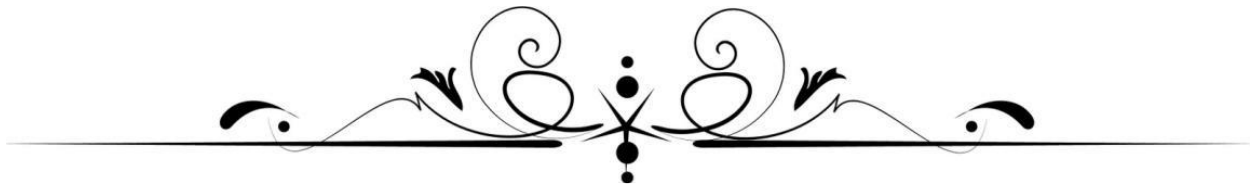
Thomas, C. and R.H. McDonald, "Millennial Net Value (s): Disconnects between Libraries and the Information Age Mindset."

Xiao, Daniel, Pixey Anne Mosley, and Alan Cornish. (1997): "Library Services through the WWW."Public access to Computer systems Review 8.41-8.Web.15 May. 2017.

Shikhaanand, (2016), UGC Approved Central Universities – North India

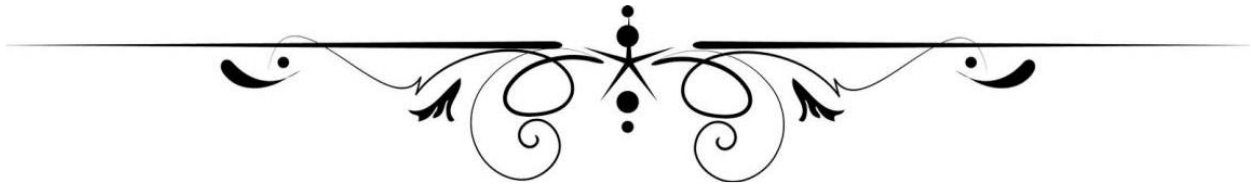
http://www.shiksha.com/humanities-social-sciences/articles/ugc-approved-central-universities-north-india-blogId-13001 Retrieved on May 2017

Madhusudhan, M and V Nagabhushanam. (2012). "Web-based Library Services in University Libraries in India: An Analysis of Librarians' Perspectives." Electronic Library 30.5 pp. 569-588.Emerald.



CHAPTER-2

REVIEW OF LITERATURE



CHAPTER -2

REVIEW OF LITERATURE

Analysis of the literature is conducted to know the understanding of the current situation of affairs and also the scope of the same development. A literature review helps the researcher to prepare for the successful completion of the study a research design and suitable resources. A literature review helps the researcher to analyze the issues extensively and to consider the various aspects of the issue. There are a variety of studies that have been carried out for various reasons, in general, and in particular, on Internet and web technology usages. Citing all literature that is published either in print or electronic form is difficult. Online resources, Emerald, Elsevier Research, JSTOR, Open Access e-journal such as Directory of Open Access Journal (DOAJ), Open Access Journal Search Engine (OAJSE), and so on are reviewed on web-based resources and services. These studies under review received in-depth provides insights into the problem of web-based library facilities at central university in North India.

Introduction

The emergence and existence of literature is so extensive that a critical approach of related studies is inevitable for any organized study or research. So the review of literature is one of the most important aspects of the investigation. It helps to know what is done by other researchers in any specific subject and helps to have a general understanding of the specific subject. The areas that are not explored earlier can be identified while reviewing the related literature. A review of literature also avoids duplication of research and gives an orientation to general problems. It narrows down the scope of investigation so that greater depth can be achieved. Familiarizing the

Methods and procedures used successfully by others who have handled similar problems elsewhere is another advantage of the literature review. A literature search is an attempt to identify, locate, and synthesize completed research reports, articles, books, and other materials about the specific problems of the research topic. In general, the review of related literature in any piece of research activity acts as a bridge that connects the background of the topic and the current problem under study. The review of literature also helps to indicate research gaps. Several studies have been conducted on the use of information by different categories of people in foreign countries and India. But the use of information by the members of Local Self Governments in India is less documented. The related studies reviewed in this chapter are broad. Twenty-seven relevant studies selected are conducted in the twenty-five at the national level and international level. The studies under each section are given in chronological order.

Swamy Shiva Kumar and K. N. (2019) this study is based on the use of online library services provided by Mysore City of Karnataka Engineering Colleges. The analysis covered the specific section of web-based library services such as research, distribution, procurement, cataloging, periodicals, and users' access issues. It was found that most users found web-based library services to be highly useful, but the major hindrance was the number of web technologies to learn to access web-based services properly.

Mierzecka and Suminas (2018) this study discussed the roles of the Academic library websites as presented in the context of the chosen user's information needs. The study was conducted out on 680 users of the University of Warsaw (Poland) and the University of Vilnius (Lithuania). The researcher recognized five features of the website of the academic library: (1) promoting the use of the collection (online and

traditional); (2) promoting culture; (3) gateway for locating information on the Web; (4) education; (5) creating an online image of the library. The websites were found to be effective in acting as a digital portal for library resources and services.

Punchihewa (2018) the types of Web 2.0 applications used were explored and the aims of accepting Web 2.0 applications in 15 university libraries in Sri Lanka were established. By analyzing the web pages of those university library websites, the researcher collected the data. Fourteen university library websites out of 15 universities have incorporated Web 2.0 technology into their library website. In which RSS, SNS were the most common applications used to notify the library of the new addition and to create, respectively, customized relationships with the users followed by blogs. The researcher suggested that the libraries arrange realistic training sessions for library personnel and special web 2.0-related user orientation programs for users.

Devi and Verma (2017) Study conducted a content assessment of the design patterns and web content of library websites of 27 Indian National Institutes of Technology. The study was found that not all of the NIT libraries had their independent library websites. Of 17 NITs only 5 Nits library websites offered their users web 2.0 resources. The NIT Allahabad was found to have taken 422.68 seconds contact rate to access their website, which was the maximum time, while NIT Agartala took 5.48 seconds for the last time. The investigators suggested that all libraries establish different library websites to draw their customers.

Arif, Ameen, and Rafiq (2017) conducted a study to determine the satisfaction of distance education students with the use of Allama Iqbal Open University (AIOU), Pakistan's web-based library services. Study findings showed that AIOU library users were pleased with the library services that were focused on the site. However, the

online book tracking program, Web- OPAC, and Web Radio service were unable to meet the information needs of the users.

Thangam, M. & Padma, P. (2016) the research scholars of Madras University have researched the use of web tools. Google was the most used search engine and Gmail account for file transfer, and it was found that maximum users use web services for academic purposes. In addition, the greatest barrier to accessing web services was the malware attack and slow internet speed.

Sarasvathy, Prasada and Jagdeesha (2016) the idea of the digital library was discussed and the user evaluation at the University of Mysore in the digital library environment was emphasised. In a large number of e-resources, scientific databases, institutional libraries, social networks, ad web OPAC facilities, Mysore University library has been found to have improved significantly. Digital library facilities have been found to be well handled and configured at Mysore University.

Pirshahid, Naghshineh and Fahimnia (2016) this study examined the extent of knowledge and use by librarians of Web 2.0 tools and calculated how librarians use these resources in their daily lives in Eastern Azerbaijan (EA) university libraries in Iran. Librarians are well aware of web 2.0 resources, such as wikis and forums. The librarians use web 2.0 software to connect with friends and family, remain up-to-date and interact with colleagues. The study also indicated that the librarian is using web 2.0 tools for sharing knowledge about library services and filtering the Internet. The main challenges were slow speed or internet, and lack of software orientation.

Okon, Etim, and Inyang (2015) researched the marketing status of web-based library services in Nigerian Universities. In terms of accessibility, online services/resources, and networking with topic gateways, professional societies, etc.,

the researchers analyzed the current status of university library websites. The study developed that digital libraries would make it compulsory for users to communicate with qualified organizations such as NLA, LRCN, etc. to access unrestricted sources and resources.

Okon, Etim and Inyang (2015) examined the status of web-based library services marketing at universities in Nigeria. In terms of visibility, online services/resources and networking with topic gateways, professional societies, etc., the researchers analysed the present status of university library websites. The researchers proposed that communicating with professional organisations such as NLA, LRCN, etc. should be compulsory for digital libraries to allow users to access unrestricted sources and resources.

Zhixian (2014) surveyed the perception of 200 Australian academic librarians in 37 University libraries for using Web 2.0 tools effectively in the marketing of their services and resources. Variables including demographics, human capital, and library variables have been discovered to play a significant role in influencing understanding the use of unique marketing programs and resources tools.

Bawalya (2014) this study finds out that the provision of Internet and web-based services in his study "Internet and web-based library Services prerequisite among Academic Libraries in Zambia: a Comparative study of the University Zambia and Copperbelt University Libraries." The finding of the study revealed that University libraries have not embraced fully the Internet and web in providing online services such as e-journal off-campus, online reference services, self circulation, and web inter-library loans. However, the library provides Web-OPAC, online reservations, and web-based existing services.

Lwoga (2014) in this study revealed that web 2.0 technologies may improve the quality of library services and can be utilized to improve the delivery and promotion of library services. The study "Integrating web 2.0 into an Academic Library in Tanzania" found that students of MUHAS library positively supported the adoption of library 2.0 services despite various challenges faced by the library related to infrastructure, awareness, literacy, insufficient staff, security, and ownership of web 2.0 library services.

Mohammad, Garba and Umar (2014) stated in this content of the functional website of ten University libraries in Nigeria in their study "University Library Websites in Nigeria: An Analysis of Content". The finding of the study concluded that websites had information about library services and physical holding. The study suggested the development of librarian skills as well as the inclusion of website development course in the library curriculum for the improvement of library websites in Nigerian universities.

Anaraki and Babalhavaeji (2013) the Integrated Digital Library Portal of Iran has conducted a comparative study and examined the knowledge and capacity of medical students to use electronic tools. It was found that the level of knowledge and usage of students in the three universities was lower than the average and general search engines were used to fulfill their information needs by those who were not aware of the existence of the IDL portal. The respondents agreed that their most significant issue was a lack of knowledge about the IDL. The study supported university library administrators in gaining a more complete understanding of the electronic information needs of students and obstacles that may hinder their optimal usage.

Shafique and Rieldling (2013) discovered Library 2.0 and Library 3-D principles and adoption in Pakistani libraries; the researchers took Library 2.0 and Library 3-Das Second Life for Library Services into consideration. The study proposed that librarians would use Library 2.0 and 3-D library (Second Life) applications to turn their mindset from a collection-centered approach to a user-centered approach.

Khalid and Richardson (2013) the effect of web 2.0 technologies on 67 US academic libraries identified as members of the Association of Research Libraries was investigated. Library was found to use some form of Web 2.0 technology such as RSS, social networking sites, instant messaging, blogging, and wikis. It investigated the impact of web 2.0 technologies on 67 US academic libraries listed as members of the Research Libraries Association. The library used some form of Web 2.0 technology, such as RSS, social networking sites, instant messaging, blogging, and wikis.

Islam and Hossain (2013) in this study examined the current status of 57 University library websites in Bangladesh in their study "Marketing Information Resources and Services on the Web". The study investigates the extent to which the website of the University libraries is utilized for the marketing initiative to promote the collection and services to their clientele. The study identified that websites are not fully utilized for marketing library resources and services. A majority of libraries did not provide an online information literacy program, access to OPAC, e-books, and have not been linked to other libraries and related associations.

Khalid and Richardson Jr. (2013) in this paper examined the 67 US academic libraries listed in the Association of Research Libraries membership, about the adoption and perceived impact of web 2.0 technologies in their study "Impact of Web

2.0 Technologies on Academic Libraries: a Survey of ARL Libraries". The study found that each library was using some form of technology such as RSS, social networking sites, Instant Messaging, blogs, and wikis. The study revealed that there was a significant positive association between the extent of web 2.0 adoption in libraries and librarians' opinions about their benefits.

Khan (2013) assessment in his work "Library, Librarian and Library Services in Web 2.0 Environment" the execution and utilization of web 2.0 tools in library and information centers and their impact on the role of librarians and the services. The study recommends that web 2.0 technology tools and applications must be the main component in the curriculum of Library and Information Science.

Malik and Mahmood (2013) in this paper explored the current status of ICT infrastructure in their study "Infrastructure required for Digital Reference Service (DRS) in University Libraries: an Exploratory Survey in the Punjab" and found that the ICT infrastructure needed for DRS is better than before but it needed further improvement. The study revealed that a few libraries have started DRS while most of them are still using the face to face channel for reference transactions

Krishnamurthy and Chan (2013) in their study "Implementation of Library Portals for Information Resources: a Case Study of Indian Statistical Institute, Bangalore (ISIB)" analyzed the need for implementing a new library portal and introduced a new library portal that is Library Search Aid at the central library of Indian Statistical Institute, Bangalore which performs meta searching. It is the technology of searching multiple databases across the library's four online resource databases.

Sarkar (2013) this study carried out a study on "Prevalence of Widget Applications on Library Websites: an Analytical Study". They evaluate the characteristic features,

purposes of use, and types of widget applications and measure the degree of implementation of widgets among academic libraries of higher education institutes of four continents (North America, Europe, Australia, and Asia) to make library resources easily and conveniently accessible to users.

Shafique and Rieldling (2013) this study suggested "Survival Avenues for Pakistani Libraries in the Era of Emerging Technologies: Adoption of Library 2.0 and Library 3-D" to embrace new emerging technology for library services in Pakistan. The study suggested that librarians should switch their mindset from collection centered move toward to user-centered approach by using Library 2.0 and library 3D applications (Second life)

Malik and Mahmood (2013) As recognised by the Higher Education Commission, the current status of the ICT infrastructure required for digital reference services in the 40 universities of Punjab was explored (HEC). The existing state of ICT infrastructure has been found to be improved but still not up to the mark, needing changes. It was also found that not all libraries operate on digital reference services, but most libraries do use the conventional reference transaction form, that is, face-to-face contact.

Kiran and Diljit (2012) E-service efficiency and the use of e-service quality assessment methods have been examined in order to determine the quality of web-based library services. The researchers also identified the primary determinants of the quality of the web-based library service and stressed library users' understanding of the quality of the service. The results of the study support the idea that libraries should not ignore basic library resources, such as reference and bibliographic guidance, in the

web environment, in addition to focusing on the technological advancement of new services.

McMenemy (2012) the digital resources of 32 Scottish Public Libraries' public library websites have been discussed. The study revealed that several libraries have subscribed to a consistent collection of electronic reference services, providing high-quality information both inside the library and for members of the library from their home or workplace. The major challenges listed were guidelines on the use of resources and misunderstanding and inconsistency in the use of terms across various library facilities.

Singh, N. K. (2012) in the four university libraries, the researcher conducted a survey on the state of the digital reference service, in which he addressed the different models of providing the user with digital reference services via emails, asking a librarian, chat reference, video conferencing, etc. The study revealed that online/digital resources are offered by all four libraries. Even though all four libraries offered digital reference services, it was found that Delhi University's library system was the strongest in terms of providing digital reference services.

Bhardwaj and Walia (2012) discussed the St. Stephen's College, University of Delhi Web-based information sources and services. The study found that most faculty members were aware of e-resources but require training to access the e-resources available through workshops and lecture methods. Most users favored tools in the N-LIST. It was found that most faculty and staff were pleased with the quality of the video library, and that half of the users rated it excellent.

Anunobi and Ogbonna (2012) survey the awareness and use of web 2.0 application by the librarians in their study "Web 2.0 uses by Librarians in a State in Nigeria". The

finding of the study revealed that low knowledge, lack of computer expertise, motivation, facilities, and access restriction were the major obstacles to using web 2.0 tools by the librarians.

Aharony (2012) in this study examined 31 academic library websites in his study "An Analysis of American Academic Libraries Websites: 2000-2010". The study revealed that the content of academic library websites between 2000 and 2010 has considerably changed. The study found that there was a significant rise in the usages of e-journals and web 2.0 applications.

Chen, Chu, and Xu (2012) this study conducted on "How Do Libraries Use Social Networking Sites to Interact with Users" and studied the four types of interactions, including knowledge sharing, information dissemination, communication, and knowledge gathering between libraries and users on libraries Facebook, Twitter and Weibo. The study found that among the four types of interactions, knowledge-sharing attracted the largest volume of user responses on libraries" social networking sites. The study suggested that to improve the efficiency of interaction with the users on SNSs, libraries must coordinate with different types of SNSs.

Deshmukh, Bhavsar and Bhavsar (2012) explored in their study "Open Source Software for Federated Search" about federated search technology, which enables the user to search multiple resources with a single query and discussed the difference with other search engines.

Kehninde and Tella (2012) in this study assessed the 30 Nigerian University library websites in their study "Assessment of Nigerian University Library Web Sites /Web Pages". The study found many universities in Nigeria have a website, while some of them were in process of developing websites for their library to meet the new

information superhighway's challenges. The criteria for the assessment of library websites were the implementation of web 2.0 tools, access to electronic materials, and linkage to the National University Commission (NUC) virtual library. The study finds out that there is a low level of the integration of web 2.0 in most of the studied libraries' websites.

Madhusudhan and Nagabhushanam (2012) this study conducted web-based library services offered with the help of web-based library automation software in different sections via their websites in their study "Web-based Library Services in University Libraries in India: An Analysis of Librarians' Perspectives". The findings showed that most of the surveyed University libraries are still not been able to leverage the full potential of the web-forms and are not successfully using library websites.

Anunobi and Ogbonna (2012) the study investigated the librarian's use of web 2.0 applications in the State of Nigeria. Study findings showed that the lack of knowledge, technical skills, encouragement, services, and restricted access were the major obstacles librarians face while using Web 2.0 resources.

Muhammad and Khalid (2012) explored the pattern and area of the acceptance of web 2.0 technologies in their study "The Changing Role of Librarians in the Digital World: Adoption of Web 2.0 technologies by Pakistani librarians" and found Instant Messaging, social networking, blogs, and wikis were the most popular tool adopted by Pakistani librarians in their professional and personal lives. The study found a lack of computer literacy, less availability of computers and internet facilities were the major obstacles to web 2.0 adoptions by librarians.

Sinh and Nhung (2012) surveyed the searching behaviour of users in using online databases at VNU-HCM in their study "Users' Searching Behaviour in Using Online

Databases at Vietnam National University-Ho Chi Minh City". The study found that users usually search databases for their research and study rather than for teaching and for updating their professional knowledge. They prefer journal articles and thesis rather than e-books. They prefer keyword for searching databases. The study suggested training and promotion be organized by the library to create awareness among users about the availability of online databases and the library diverse services.

Balaji and Kumar (2011) surveyed the library websites and the usage of web technology in providing information services by South Indian Technological Universities. The findings of the study revealed that the most technological University libraries were still working in the conventional library set up and was the relatively low rate of dispersal of web information services.

Zarei and Abazari (2011) survey of web-based resources of 23 Asian national libraries' open and English-language websites was conducted. It was noticed that Singapore's national library ranked first in providing web-based library services and was the only library offering more than half of its website-based services.

Balaji and Kumar (2011) in this study surveyed "Use of Web technology in Providing Information Services by South Indian Technological Universities as Displayed on Library Websites" and studied the use of web technology, social media, and web 2.0 in providing information services through library websites. The findings of the study revealed that the most of technological University libraries are still working in the usual library set up and here has been a relatively low rate of dispersal of web information services.

Lihitkar (2011) discussed the concept of virtual reference service with the Meebo an open-source Instant Messaging software in his study "Establishing a Virtual

Reference Service" to provide responsive real-time service that allows users to connect with a reference librarian from any time from any place in the world.

Rahman and Shafique (2011) in their study "Use of Web 2.0 and its Implications for Libraries Perceptions of Information Professionals in Pakistan" found that perception of library professionals about web 2.0 applications such the use of Instant Messaging (IM), RSS, and Micro-blogging (Twitter) that could be used to provide online reference services and for selective dissemination of information (SDI) was not very clear in libraries. The study suggested that library professionals in Pakistan could avail of the benefits of web 2.0 technologies for offering attractive and dynamic services for users.

Sun, et al. (2011) emphasized the role of the librarian as educators in their study "Role Changing for Librarians in the New Information Technology Era". The new technology has expanded the role of a librarian from searching the library catalogue, finding print resources, and using services of the traditional library to instructing the use of information searching and participating in various online communities through the discussion board, blog, etc.

Chua and Gho (2010) examined six common web 2.0 applications in one hundred twenty library websites from North America, Europe, and Asia in their study "A Study of Web 2.0 Applications in Library Websites". The study focused on the prevalence of web 2.0 applications, the ways these applications are used, and whether the presence of these applications enhances the quality of library websites. The study found that libraries in North America lead significantly in the adoption of web 2.0 applications compared to their European and Asian counterparts. The study revealed

the difference between public and academic libraries in implementing web 2.0 applications were not statistically significant.

Mansor and Idris (2010) studied the perceptions, awareness, and acceptance of Library 2.0 applications among librarians in their study "Perceptions, Awareness and Acceptance of Library 2.0 Applications among Librarians at the International Islamic University Malaysia" and identified factors and problems that could influence the successful implementation of Library 2.0. The findings showed that there was a high level of computer expertise in terms of web browser and search engines, awareness, and utilization of web 2.0 applications such as blogs and Wikipedia among the librarians.

Ram (2010) discussed in his study "Information Literacy through Web2.0 integrated Web-OPAC an Experiment at Jaypee Group of Institutions" the implication of Web 2.0 application tool such as flicker, Podcast, Facebook, RSS, Blog, YouTube, LinkedIn as an information awareness tool to the users about the resources and services available in the library.

Conclusion

The review of the literature reveals that comprehensive studies have been performed on the use of web technologies in libraries. This study covered nearly all of the relevant studies from 2010 through 2019. The study shows that no extensive, systematic, and national studies have been carried out in India's central university libraries so far. Also, there have been several improvements and innovations regarding the usage of internet and web technologies.

References

Aharony, Noa. (2012). “An Analysis of American Academic Libraries Websites: 2000-2010.” Electronic Library 30.6 pp. 764-776. Emerald.Web.12 may.2017.

Anaraki, Leila Nemati, and Fahimeh Babalhavaeji. (2013). “Investigating the Awareness and Ability of Medical Students in Using Electronic Resources of the Integrating Digital Library Portal of Iran: a Comparative Study.” Electronic Library 31.1 70-83. Emerald. Web.14 may. 2017.

Anunobi, Chinwe V, and Andrew U Ogbonna. (2012).“Web 2.0 use by Librarians in a State in Nigeria.” Developing Country Studies 2.4 pp.57-66.Web. 29 May 2018.

Arif, M., Ameen, K., & Rafiq, M. (2017). Assessing distance education students satisfaction with web-based services: A Pakistani’s perspective. Online Information Review, 41(2), 202–218.

Balaji Bi, Preedip, and Vinit Kumar. (2011). “Use of Web technology in Providing Information Services by South Indian Technological Universities as Displayed on Library Websites.” Library Hi Tech 29.3 pp.470-495. Emerald. Web. 14 May 2017.

Bharadwaj, R.K. &Walia, P.K. (2012). Web-Based Information Sources and Services: A Case Study of Stephen's College, University of Delhi. Library Philosophy and Practice (e-journal).

Bwalya, Tuesday. (2014).”Internet and Web-based library Services Provision among Academic Libraries in Zambia: a Comparative study of the University Zambia and Copperbelt University Libraries.”International Research: Journal of Library and Information Science 4.4 475-493.Web.13 may.2017.

Chen, Dora Yu-Ting, Samuel Kai-Wah Chu, and Shu-Qin Xu. (2012). "How Do Libraries Use Social Networking Sites to Interact with Users." ASIST pp.28-31.Web.20 May. 2018.

Chua, Alton Y K and Dion Goh. (2010). "A Study of Web 2.0 Applications in Library Websites." Library and Information Science Research 32.3 pp. 203-211.Elsevier.Web.10 may. 2017.

Deshmukh, Shamkant, Sonia Bhavsar, and Sandeep Bhavsar. (2012)."Open Source Software for Federated Search." DESIDOC Journal of Library & Information Technology 32.5 pp. 427-430.Web.9 May. 2017.

Devi, K. K. & Verma, M. (2017). Content Evaluation and the Design Trends of National Institutes of Technology (Nits) Library Websites of India: An Evaluative Study. Journal of Indian Library Association. 53. 135-174. Retrieved on Feb 2018. doi: https://doi.org/10.1016/j.lisr.2012.02.005

Harinarayana, N.S. and V. N Raju. (2010). "Web 2.0 Features in University library Websites." Electronic Library 1 69-88. Emerald. Web. 11 may. 2017. http://digitalcommons.unl.edu/libphilprac/1263

Islam, Md. Anwarul and Muhammad Jaber Hossain. (2014). "Marketing Information Resources and Services on the Web."Electronic Library 32.5742- 759.Emerald. Web. 15 Jan 2020.

June 2015. Khalid, Mahmood, and John V. Richardson Jr. "Impact of Web 2.0 Technologies on Academic Libraries: a Survey of ARL Libraries." Electronic Library 31.4 (2013): 508-520. Emerald. Web.14 may.2017.

Khalid, M. & Richardson, J. V. (2013).Impact of Web 2.0 Technologies on Academic Libraries: a Survey of ARL Libraries. Electronic Library, 31(4), 508-520. Retrieved on 20 Jan 2018.

Khan, Imran. (2013). “Library, Librarian and Library Services in Web 2.0 Environment.” International Journal of Digital Library Services 3.4. 14-36.Web.5 May 2017.

Kiran, K., & Diljit, S. (2012). Modeling Web-Based library service quality. Library and Information Science Research, 34(3), 184-196. Retrieved Jan 2, 2016

Krishnamurthy, M, and Winnie Chan. (2013). “Implementation of Library Portals for Information Resources: a Case Study of Indian Statistical Institute, Bangalore (ISIB).” International Information and Library Review 37 pp.45- 50.Web.10 May 2017.

Library Web Sites /Web Pages.” (2012). New Review of Information Networking 17.2 69-92.Taylor and Francis.Web.14 May. 2017.

Lihitkar, Shalini R. (2011): “Establishing a Virtual Reference Service.” DESIDOC Journal of Library & Information Technology 31.1 pp.31-34.Web.7 may. 2014.

Lwoga, Edda Tandi. (2014). “Integrating Web 2.0 into an Academic Library in Tanzania”. Electronic Library 32.2 183-202. Emerald Web. 10 May. 2017.

Madhusudhan, M and V Nagabhushanam. (2012). “Web-based Library Services in University Libraries in India: An Analysis of Librarians' Perspectives.” Electronic Library 30.5 pp. 569-588.Emerald.Web.8 May. 2017.

Malik, Amara, and Khalid Mahmood. (2013). “Infrastructure Needed for Digital Reference Service (DRS) in University Libraries: an Exploratory Survey in Punjab.” 62.6/7 420-428. Emerald Web.14 may, 2017.

Mc Menemy, D. (2012). Emergent digital library services in public libraries: a domain study. New Library World,113 (11/12), 507-527. Retrieved Jan 2, 2017 doi: https://doi.org/10.1108/03074801211282902

Mierzecka, A. & Suminas, A. (2018). Academic library website functions in the context of users’ information needs. Journal of Librarianship and Information Science. 50. 157-167.

Mohammed, Abubakar, Aminu Garba, and Hafiz Umar. (2014).“University Library Websites in Nigeria: An Analysis of Content.”Information and Knowledge Management 49.3 17-22.Web. 22 May. 2017.

Muhammad, Arif, and Khalid Mahmood. (2012), “The Changing Role of Librarians in the Digital World: Adoption of Web 2.0 technologies by Pakistani librarians.”Electronic Library 30 pp. 469-479.Emerald.Web.26 May 2017.

Okon, E. E., Inyang, I.J. & Etim, I.A. (2015).Marketing of Web-Based Library Resources in Nigerian Universities. *Library Philosophy & Practice (e-journal),* paper 1263. Retrieved July 27, 2017 from http://digitalcommons.unl.edu/libphilprac/1263

Pirshahid, S.E., Naghshineh, N. & Fahimnia, F. (2 016). Knowledge and use of Web 2.0 by librarians in university libraries of East Azerbaijan, Iran. The Electronic Library, 34(6), 1013-1030. DOI: https://doi.org/10.1108/ EL -10- 2014- 0192. Retrieved on 20 Jan 2018.

Punchihewa, C.N.D. (2018). How do Sri Lankan University Libraries Employ Web 2.0 Tools in Providing Web-Based Library Services? : A Comparative Study. Journal of the University Librarians Association of Sri Lanka. 21. 18-39.

Rahman, Ata-Ur, and Farzana Shafique. (2011). "Use of Web 2.0 and its Implications for Libraries Perceptions of Information Professionals in Pakistan." Library Philosophy and Practice (e-journal) n.pag. http://www. web pages.uidaho.edu/~mbolin/rehman-shafique.htm. Retrieved on 12 May. 2017

Ram, Shri. "Information Literacy through Web2.0 integrated Web OPAC an Experiment at Jaypee Group of Institutions." DESIDOC Journal of Library & Information Technology 30.3 pp. 43-50.Web.17 may. 2017.

Sarasvathy, P., Prasada, G. & Jagdeesha. (2016). Digital Library Environment in Changing Scenario: User's Survey of Mysore University, Mysore. International journal of library and information studies. http://ijlis.org/img /2016_Vol_6_Issue_2/90-96.pdf. Retrieved on 20 Jan 2020.

Sarkar, Tanmay De. (2013): "Prevalence of Widget Applications on Library Websites: an Analytical Study." New Library World 114.3/4 110-131.Emerald.11 May. 2017.

Shafique, Farzana, and Ann Rielding. (2013). "Survival Avenues for Pakistani Libraries in the Era of Emerging Technologies: Adoption of Library 2.0 and Library 3-D." Electronic Library 31.4 pp.412-432.Emerald.Web.12 May. 2017.

Shiva Kumara Swamy, K.N. (2019). Use of Web-Based Library Services in Mysore City Engineering Colleges in Karnataka, India: A Study. Library Philosophy and

Practice (e-journal).2370. DOI: https://digitalcommons. unl.edu/libphilprac/ 2370. retrieved on 22. Jan 2020

Singh, N. K. (2012). Digital Reference Service in University Libraries: A Case Study of the Northern India. International Journal of the Library and Information Studies, 2(4), 1-17. Retrieved Jan 2, 2016https://doi.org/10.1108/OIR-07-2016-0172. Retrieved on 2 Feb 2018.

Singh, Nguyen Hong, and Hoang Thi Hong Nhung, (2014). "Users' Searching Behaviour in Using Online Databases at Vietnam National University - Ho Chi Minh City." Proceedings of the IATUL Conferences. Paper 27. (n.d.): n.pag. Web. .<http://docs.lib.purdue.edu/iatul /2012/ papers/27

Sun, Hao-Chang, et al. (2011). "Role Changing for Librarians in the New Information Technology Era", New Library World 112.7/8 pp.321-333. Emerald. Web. 12 may, 2017.

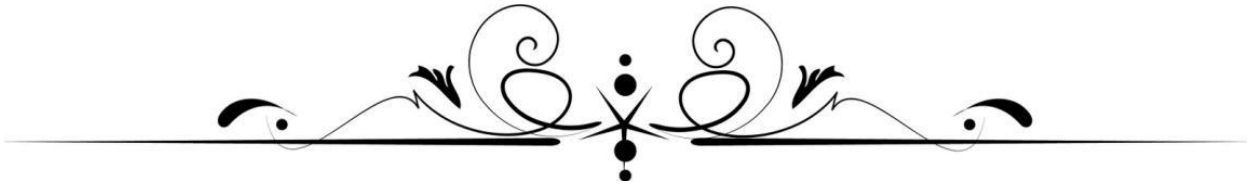
Zarei, H. &Abazari, Z. (2011). A study of web based services offered by Asian national libraries. The Electronic Library, 29(6), 841-850. Retrieved Jan 2, 2016 from doi: https://doi.org/10.1108/02640471111188051.

Zhixian, Yi. (2014). "Australian Academic Librarians' Perceptions of Effective Web 2.0 Tools Used to Market Services and Resources." Journal of Academic Librarianship xxx xxx-xxx.Elsevier.Web.30 May 2017.

https://doi.org/10.1177/0961000616664401. Web.13 may, 2018.

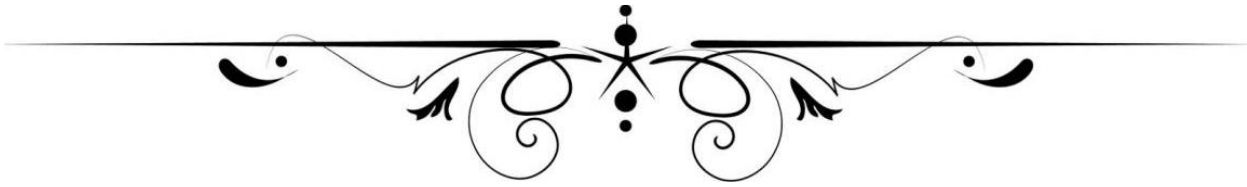
https://doi.org/10.4038/jula.v21i1.7909. Web.13 Jan 2019.

http://digitalcommons.unl.edu/libphilprac/768/ Retrieved October 18, 2018



CHAPTER-3

BASIC CONCEPT OF WEB-BASED LIBRARY RESOURCES AND SERVICES



CHAPTER-3

BASIC CONCEPT OF WEB-BASED LIBRARY RESOURCE AND SERVICES

3.1 Introduction

Libraries has faced a number of challenges over the last few decades, such as the increase of information, the IT revolution, and increasing cost of electronic services, advent of digital / virtual libraries and diminishing value of the budget and the ever-increasing demands of users for complex information requirements. Technology has given unlimited capacity to expand the capacities of modern libraries, not only to face these challenges, but also to address the increasing needs of users efficiently and effectively. The Internet and associated technologies, in particular the WWW, have opened up new perspectives for the provisions of information resources and services to users who consider themselves technologically knowledgeable and virtually interact with information resources virtually. In order to survive in a changing technological climate, libraries should not only adopt such emerging technologies but also incorporate adequate information, guidance and training for users of such newly introduced services.

An academic library undertakes some important activities such as acquisition of new books and developing a balanced and up-to-date collection, recruitment of library personnel, designing and developing physical infrastructure, etc. All these elements are the basic and lay the foundation of library services from the perspective of the user. The superstructure of the library services comprises the circulation, reference, and information services. The strength of the academic library lies in the strength of its services through which it can ensure effective use of its information resources and

play its role in fulfilling objectives of education. In most of the academic libraries, of late, the emphasis is shifting from mere collection building to providing access to information. The user community is the pivot around which are developed all the library services rendered by the librarian, and their close relationship need not be overemphasized. The user community of an academic library comprises students, faculty members, researchers, and administrative staff of the institution (discussed in another module). The library services to be provided should be developed after assessing the information needs of the users (discussed in another module) which are likely to change over a period of time. The library services must be evaluated and revised in the changing perspective of the information needs. Such evaluation and periodic revision makes the library services to continue to be effective in pursuing education and research activities.

3.1.1 Planning of Academic Library Services

When planning academic library services it is imperative to work clearly within the parameters of the objectives and mission of the parent institution. For example, the objectives of colleges and universities are to enhance the educational capabilities of students and undertake research in different subject fields to extend the boundaries of knowledge. The academic libraries therefore have to do planning of such services as would help the teachers, research scholars, and Post-graduate students to develop and increase skills in searching the required material/information from the vast library collection.

3.1.2 Factors of Planning in Academic Library Services

The library services to the academic community have to be planned in view of not only their present information/literature needs but have also to be taken into

consideration their prospective information needs. Such information needs are dynamic and do not remain constant; they rather go on changing under the influence of various factors such as the external environments, user community, and the governing framework.

3.1.2.1 External Environments

In the present times, the external environments play an important role in the planning process of library services. The external environments bring in many factors which play their own role in changing the library services from time to time. The reference librarian ought to anticipate and relate these environments with library services and respond accordingly. These are mentioned as following:

3.1.2.2 Technological Forces

In recent times there have been many developments in communication and information technology. These developments and changes have brought in various technological systems, structures, and tools to be used for the social good. Their availability with the associated advantages is so compelling as to be used in the various institutions and the academic libraries as well. Also, the users are becoming increasingly computer literate and they are placing new type of demands upon the academic libraries and their services. The academic libraries, of late, have been making use of IT and satisfy user demands to some extent. Through various IT based networks, academic libraries are now making the increased availability of the information. As a consequence, there has been remarkable improvement in the academic library services which is a welcome feature.

3.1.2.3 Social Forces

The social forces contribute to the change in the information needs of the users of the academic library services. They necessitate the change in the purpose of the information requirements of the faculty and the students as well with the change in their projects, research topics, and some mundane needs that may keep them busy elsewhere. The social circumstances may lead to change their priorities as far as usage of literature and information is concerned. It could be, for example, the inflationary situation, increase in prices of daily use commodities, etc which may shift their focus on a new set of social problems of concern to a large section of the society. The academic libraries need to provide information on such socially important and relevant issues.

3.1.2.4 Economic Forces

The adequate availability of financial resources to faculty as well as the academic library helps in expanding the base of the library services, commencing the new services to satisfy the changing and the rising information needs with the passage of time. The faculty may be engaged in a new research project, for example, funded by a national agency; it will lead to change in the information needs as per the requirements of the new project. But in the present era of budgetary cuts, the axe fall on library and its services are adversely affected.

3.1.2.5 Internal Environments

To some extent the internal environments also play an important role in shaping the information needs of the user community.

3.1.2.6 User Community

For planning academic library services the user surveys/studies must be undertaken to determine their information needs. The librarian and other professional staff need to know the profile of the user community. This will help the library and information professionals to match the various aspects of their needs with the information resources available in the library. In view of the change in the demands and needs the library manpower need to prepare themselves for such eventuality. They may equip themselves with the other facets of information resources to meet with the demands adequately.

3.1.2.7 Governing Framework

While planning library services the policies of the governing bodies need to be encouraging. The development of information resources, manpower resources, and financial resources, physical and other resources is linked with the policy framework of the university. The policies of the academic library have to be within the governing framework of the institution. These policies need to be developed into a written document of objectives, mission and vision so that the user community is well served.

3.2 Management of Library Services

Once library services have been planned on the basis of the information needs of the user community and the expanse of the subjects studied in the institution, these need to be managed for their proper delivery in an effort towards solving the problems. Girija Kumar affirms that the principles of management of library services are best understood in terms of the 'classic management' cycle as advanced by Peter Lawrence. In his cycle, Lawrence has identified the following three stages: 1. Planning: includes forecasting, making policies and priorities, setting objectives, and

determining the means to achieve these objectives; 2. Organizing and Coordinating: includes deploying resources, developing structures, and integrating activities; and 3. Controlling: includes setting up a feedback mechanism to ensure that the things are going according to plan. On the other hand, management guru Peter Drucker has also identified similar stages with some additions:

- Setting objectives;
- Organizing;
- Motivating and communicating;
- Measuring; and
- Developing people.
- Drucker has added two new categories to Lawrence‘s stages. These are:
- Motivating and communicating, and
- Developing people.

Girija Kumar states that in the context of library services, these two categories are very important as they directly impact the user community who are the end users of library services.

The academic library services in this context must be well organized and well managed so as to make them effective for the user community. The perception of the users about the library, in academic setting, needs to be changed. They may be received in the library with a proverbial ‘Monalisa smile’ and treated well so that they feel comfortable in a new library environment. Library and information managers may go a step further and make them take in that ‘the user is the king’. These words may be prominently displayed near the entrance to give them due importance that

their every need for information will be met in the library and they may ask anything unhesitatingly.

3.3 Organization of Academic Library Services

The following types of library services are generally organized in a large academic library such as a university library:

Reference Service and Work S. R. Ranganathan was quite enthusiast about reference service, hence he regarded it as the essence of librarianship. Accordingly, he defined it as "the process of establishing contact between reader and book by personal service". This indicates that for establishing the contact between the two some human agency in the form of reference librarian is required. Here the emphasis is on personalized service hence reference service becomes subjective in nature. But initiating the user and instructing him/her as to how to use the library and its resources is objective in nature because it encourages the user to make use of library services and information sources independent of human agency. However, he elaborated on the following four categories of reference service which, according to him, need attention of the reference librarian:

- initiation;
- directional instruction (general help to reader);
- ready-reference service; and
- Long-range reference service.

While explaining reference service, he clearly delineated ready-reference and long-range reference service in respect of the following elements:

- The time involved;

- The material used; and
- The nature of information sought.

3.3.1 Ready Reference Service

It is based on the nature of information sought by the users. Mostly the users would ask a reference librarian such ready reference questions as “Where was Kalidasa born?”, “What is the capital of Cuba?”, “Where can I find a book on Simla Agreement?”, and so on. Regarding the type of material used in such situations, it may be mentioned that such questions can be answered using one or two general reference sources. However, as far as possible these sources must be kept up to date. The time involved in answering such ready reference questions generally is the minimum from one to five minutes. It may, however, be mentioned out that in the era of Internet such online information portals as Google can easily provide answer to ready reference questions and their number might have diminished at the Reference Desk in academic libraries. But Cassell and Hiremath are quick to point out that “Nevertheless, ready reference remains a corner stone of information services, and librarians should be primed to provide it at any time”.

3.3.2 Long Range Reference Service

It is generally based on research questions which are more complex in nature. They may, therefore, take much longer time than that in answering ready reference questions. The research questions also require the librarian to provide to the users a variety of sources. The users can look into those sources to cover different viewpoints of scholars to draw conclusions from them at a later time. It is experienced that sometimes questions that initially seem like ready reference questions turn out to be complex or even more complex for the reason that many hidden facets of the user’s

question are gradually revealed. A good interview with the user requires skills and abilities which the librarian must continually evaluate and improve them. With the increasing complexity of user's question, the variety of reference and other sources also increases. The users with complex questions need to be taught how to use the bibliographic sources, citations, etc. The old saying that giving a man a fish feeds him for a day while teaching him how to fish feeds him for a lifetime proves quite true in such circumstances. After S. R. Ranganathan many developments in this area have taken place including the conceptual developments, application of computer for information retrieval, reference process, and so on. The role of reference librarian is of much importance in reference service and reference work. The reference interview brings the user and the reference librarian in interaction with each other. The user feels a gap in his knowledge about his/her subject and to obtain the required information approaches the reference librarian with a problem, and during the interview the query of the user for information is interpreted, appropriate search strategy is formulated, and literature search takes place to locate the required information from the variety of sources available in the library. The information thus located is delivered to the user and the reference staff keeps a record. In an academic library the scope of reference service is very wide. The search for information is not restricted to the general purpose reference works such as dictionaries, encyclopedias, yearbooks, handbooks, and the like, but it also brings in its ambit several other categories of materials available in academic libraries. In addition, the instruction and guidance to the users (particularly students) is perhaps the main function of reference service in academic libraries.

3.3.3 Bibliographic Services

In the present times of information technology (IT) and its impact on library housekeeping operations, the utility of various types of traditional bibliographic services is still intact in most of the academic libraries in India. The application of IT has facilitated the efficient compilation of these services and thereby provided better access to the whole range of resources. Although not many academic libraries in India provide such services yet these are regarded essential because the reference librarian is invariably called upon to help the users in conducting literature search for a research project, a seminar paper, an assignment, a doctoral dissertation, etc.

3.3.4 List of Additions

A list of new additions to the library may be brought out regularly, say on quarterly basis. This will update the faculty and the students about the latest books and other documents available in the library for their use. Thus it serves as an important current awareness service.

3.3.5 List of Contents

Larger academic libraries may also venture to bring out such a list based on the contents pages of the journals/periodicals. It may be an unannotated list of the contents pages of journals on different subjects and, if possible, may be circulated among the faculty for their use and suggestions.

3.3.6 Ad-hoc Lists

Some ad-hoc reading lists may also be compiled on the occasion of holding a seminar, conference, etc. Such lists prepared in anticipation or on demand serve a useful purpose and unfold the treasure of information to the participants. It may be

mentioned that with the introduction of computers in academic libraries the compilation of bibliographic services has been made a simple operation and helps to avoid the lengthy, labour-intensive and costly manual process of their compilation.

3.3.7 User Education

The importance of user education lies in providing the library user necessary skills and knowledge in making the optimum use of library resources and services in the changing education scenario. There have been many terms in vogue such as library instruction, orientation, bibliographic instruction, initiation, user education, user instruction, that explain this library programme and its various activities. Of late, it is also known by the term information literacy which may range, according to Cassell and Hiremath, from showing a user how to use, say, the library's online catalogue and basic print reference sources to formal classroom sessions about conducting research in the library. In academic libraries the main purpose of user education, according to Fjallbrant and Malley is to stimulate the library use, and that "user education is concerned with the whole information and communication process and one part of this involves the total interaction of the user with the library. This should be continuous process starting with school and public libraries and with possibility of extension into academic and specialized libraries".

3.3.8 Orientation

In most academic libraries across the globe, library orientation remains the most popular method of imparting user education. Library orientation is mostly targeted at the freshly admitted students in academic institutions so that they could be familiarized with the layout of the library building, information system and its services, location of various information sources, and other library tools used in

obtaining information. For this purpose, some libraries prepare printed leaflets giving outline of library collections, brief summary of classification scheme, arrangement of library catalogue, various types of library services offered, rules and regulations, etc. There are different methods of orientation followed in different libraries. However, the most popular methods are as follows:

1. Direct Methods: These include:

    a. Lecture method
    b. Library (guided) tour
    c. Individual help
    d. Practical exercises
    e. Tutorial/seminar/demonstration

2. Indirect Methods: These include:

    a. Film
    b. Video tape
    c. Tape/slide
    d. Audio tape
    e. Printed guide
    f. Self-instructional material

3.3.9 Bibliographic Instruction

It is generally said about bibliographic instruction programme that it is designed and planned by the librarians to teach students about library resources and information sources so as to motivate them to make effective use of library resources and information sources and satisfy their information needs. The purpose of experiments of bibliographic instruction programme in the USA and elsewhere, according to

Patricia Knapp has been "to stimulate and guide students in developing sophisticated understanding of the library and increasing competence in its use to achieve this end, it proposes to provide students with experiences which are functionally related to their course work". Bibliographic instruction programme, when designed and developed may have three guiding principles that it is:

a. course-related
b. demonstrated, and
c. graduated

Such a formal programme in bibliographic instruction and research methods, if adopted in academic libraries, may prove to be most helpful in infusing information seeking habits and enabling students and other library users to be independent in self-service in locating information from various library sources, perhaps without the intervention of reference staff. Library service here can be characterised by reaching out to regular users to teach them in conducting research. It may, however, be stated that although user instruction is always an important part of reference work and service, the degree to which librarians go about providing it may vary and depends upon situation to situation. This also depends upon the mission or purpose of the academic library. It is desired of the reference librarians to play the role both of the bibliographic instructor as well as that of the information provider.

3.3.10 Information Literacy

The concept of information literacy is not new to the extent that it has its roots in user education and/ or user instruction. However, according to Bruce, with the emergence of information society and other accompanying changes in technology used to generate, disseminate, access and manage information has led to the spread of

information literacy. Information literacy, according to Bruce and Candy, therefore, "is the ability to locate, evaluate, manage and use information from a range of sources for problem-solving, decision-making and research". In the new environment of electronic information sources and online catalogues, the academic library users need additional knowledge and skills in retrieving information from electronic sources. "The basic component of information literacy", according to Cassell and Hiremath, "includes demonstrating how, when, and why to use various reference sources in an integrated way that will capture the use's attention at the teachable moment". In this context, the role of academic librarians assumes more significance and they must transfer new skills and competencies so direly needed in the present digital libraries environment to make their users information competent. But in today's educational settings, ironically, using electronic sources is becoming easier and learning the traditional research strategies to find in-depth information is perhaps missing.

3.3.11 Referral Services

Academic libraries have been providing short-range and long-range reference services from the documentary sources in their collection in order to meet information requirement of their users. Sometimes, users' needs are not met through the in-house documentary collection, and may be met by referring them to the resources of other libraries. This is called referral service. Referral service, therefore, directs or refers the user to a source of information, which may be a document, an individual or even an organization. It is a process of linking a user with a need with a service or person which is likely to meet the need of the enquirer. It seems difficult to refer to another more appropriate source, such as a specialised library, a librarian, or any other expert. It is incumbent on the referring library/librarian to posses detailed knowledge of the resources with a reasonable chance of success.

3.3.12 Resource Sharing

In academic libraries occasions arise when their users ask for documents not available in their immediate collection. Libraries at individual level are unable to acquire, due to high increase in published information, shrinking budgets and costly material, as many information resources as they require in their collection. This calls for access to external resources as collectively these libraries constitute a vast resource of books, periodicals, and other documents, enough to meet such requirements.

Resource sharing has since long been regarded as a mechanism of library cooperation for exploiting resources otherwise scattered in a large number of libraries. Therefore, resource sharing provides the basic framework for pooling, sharing, and putting to use the mines of such vast resources. The academic libraries, however, need to design and develop union catalogues to locate documents requested by users but not available in the host libraries. It is pertinent to mention that INFLIBNET has been engaged in compiling such union catalogues of books and journals available in large academic libraries.

3.3.13 Library Networks

This concept of cooperation and sharing of resources has been further extended through participation in networks at international and national level such as INFLIBNET, DELNET, ERNET, INDEST, etc. and through them to distant databases.

INFLIBNET is providing a significant programme for academic world, particularly for colleges, known as National Library and Information Services Infrastructure for Scholarly Content (N-LIST) programme. Colleges in the country can register to obtain this service from INFLIBNET to have access to e-resources including more

than 6,000 e-journals and above 97,000 e-books. Many academic libraries have been using computers for various housekeeping activities for quite some time now, and they have developed own computerized databases, hence their participation in these networks will make them information rich.

3.3.14 Library Consortia

This has led to the development of another concept of consortium where a group of libraries join hands with common interest, say sharing of information resources. It is, therefore, a cooperative arrangement among groups or institutions formed to increase the purchasing power of the participant institutions to expand the resource availability and to offer automated services. Library consortia may be formed at local, regional, national, or international level on a subject basis or functional basis.

3.3.15 Indexing Services

Indexing and abstracting journals are most frequently used sources of scientific and social science information. The value of indexing services lies in furthering the cause of research. Their necessity hardly needs any emphasis for current information service, retrospective literature searches, quick retrieval, and delivery of diverse material acquired in the library. The purpose of preparing in-house indexing service is to fill in the time gaps until the receipt of the commercial indexing and abstracting services.

Indexing services may be initiated in those subject areas for which commercial services are either not received in the library or are not available. It may, however, be pointed out that in India it is all the more important to bring out in-house indexing services as most of the Indian journals and other documents are not adequately covered in the international services. Large academic libraries, like university

libraries, must take initiative and motivate their staff to produce well-planned and classified indexing services in attractive format, covering largely the Indian periodicals.

3.3.16 Reprographic Services

To support teaching and research activities in educational institutions, reprographic services have become indispensable in the present day academic libraries. Photocopying service has not only come to stay but also has become quite popular among the library users. Even in document delivery under resource sharing system, reprographic services have proved quite useful in providing copies of material demanded by the users. According to C. V. Penna and others, reprographic facilities have other usages also. Microforms, for example, fulfill the following basic reference and information purposes:

a. preserving material issued on poor quality paper,
b. providing readable copies of very rare or precious material,
c. increasing the accessibility of documents which are unique or few in number,
d. reducing storage problems, and
e. providing a means of publication for specialist material uneconomic to publish commercially. Further, for quick communication of information and for providing copies of the documents to the users, reprographic services are indispensable.

3.4 Impact of Information Technology on Library Services

In recent times information technology (IT) has begun to have a major impact on academic library services. It may be mentioned that in the twentieth century the library services were responsive because they were rendered at the request of the

library users. However, by the beginning of the twenty first century the library services have become more positive and proactive because these are now offered not only on the users' request but also at the initiative of the library personnel. The information technology is the application of computers and other technologies to the acquisition, organization, storage, retrieval and dissemination of information. The impact of IT is seen in providing efficient and effective services, helping to control the rapid growth of information, facilitating cooperation, etc. Information technology has not only changed but also speeded up the services in the following areas:

1. Format of documents: IT has influenced the format of the books, periodicals, etc. and they are now available in non print format also. The IT has been transforming printed books and journals into digital format and storing them for posterity.

2. Operational activities: IT has its impact on such housekeeping activities as circulation control, acquisition, cataloguing, serials control, etc. Automation of these activities has made them more efficient and effective. The routine activity of issue and return of documents, with which most of the users in academic libraries are more concerned, has become faster than earlier situation.

3. **Library OPAC:** The Online Public Access Catalogue (OPAC) of the library can provide improved access to information retrieval system. It can be placed on the library website and users can have access to the library databases from any part of the world.
4. **Management processes:** Information technology has been helping academic libraries in managing the library stock, financial management, and so on.

5. User orientation: User orientation activities have been changing for the benefit of the users with the application of IT. The interaction between the user and

librarian/information personnel has speeded up and making library resources and services more accessible.

6. Access to Information Resources: IT has impacted to broaden the access points of the users to the library / information resources to their advantage. It has made possible online, easy, and continuous access with multiple user access facility to the entire range of collection including the electronic resources. This saves precious time of the researchers and academicians alike.

7. Online Databases: With the growing demand of computer- savvy users, IT has helped to make available more and more e-databases in bibliographic as well as full text sources. The web enabled databases are easily accessible from the user desktops.

8. Current Awareness Services: Academic libraries can generate current awareness services by using Internet data in combination with existing information resources. These can be delivered in a form compatible to user requirements.

9. Library Networks: Many library and other networks have been made possible by IT and its applications in libraries. These include INFLIBNET, DELNET, ERNET, NICNET, UGC-INFONET, and so on. They have helped in widening the mechanism of library cooperation, resource sharing, and library consortia. As a result of IT, the face and nature of reference and other library services has been changing for better. The time for virtual reference is there to stay in the twenty-first century indicating the possibility of paradigm shift.

It may, therefore, be stated that information technology will continue to improve the effectiveness of academic library services in the times to come.

3.5 Evaluation of Library Services

The need for evaluation of academic library services has been felt since long. Librarians desire to evaluate the services they provide to their users to assess their rating, may be in terms of good, indifferent, excellent or bad. Evaluation, therefore, is a systematic determination of merit, worth, and significance of services using criteria against a set of standards. The focus of evaluation should be on facts as well as value laden judgments of the programmes, outcomes and worth. The main purpose of library service evaluation can be, according to Stake and Schwandt, to "determine the quality of a program by formulating a judgment".

Before evaluating librarian/reference librarian must ask few questions regarding the objectives of evaluation: "why evaluate library/reference services?", "what is the planning after the study results are known?" Cassell and Hiremath believe that it is not only the evaluation of library services but also that of the reference librarian/staff as well as reference collection that is important in every reference environment. They think that the effectiveness of reference service may be evaluated from the quality of reference interaction between the user and the reference librarian as well as a good reference collection. One way of evaluating reference and other library services, therefore, is evaluating the reference personnel and reference collection.

3.6 Evaluating Reference

Collection Reference librarian and other personnel have been heavily depending upon the accuracy of strong reference collection. Since long there has been well established process of building up a good reference collection in the libraries. In library literature, librarian finds many catalogues of "the best of reference", or the "core collection" of reference sources, etc. But there is no end to such lists, and who will decide what is

"best" for whom? Probably this is why Hernon and Dugan observed that "A measure of library quality based solely on collections has become obsolete". Moreover, reference sources are now available in a number of formats which brings in another problem of preferring electronic or print resources. Also, the funds for the purchase of the reference sources are also depleting by the year putting another challenge before the librarian.

3.7 Evaluating Reference Librarian

The American Library Association's Reference and User Services Association has developed "Guidelines for Behavioral Performance of Reference and Information Service Professionals" which are meant to be used, inter alia, for evaluating reference professionals includes some of the following factors:

1. Approachability: The approachability of reference librarian and other reference personnel is important. Is the reference librarian easily available for help to the library users?

2. Interest: Do the reference librarian and other staff display and express a high degree of interest in the reference queries of users to search an answer?

3. Listening/Inquiring: In order to make the user feel at ease, does the reference librarian identifies the user's information need? During the enquiring and/or listening time, do the reference personnel make use of good communication skills?

4. Searching: Is the librarian skilled enough at creating search strategies that yield accurate and relevant results?

5. Follow-up: Does the librarian determine whether the user is satisfied with the results of the search/interaction? The abovementioned elements must form the basis

of any instrument or mechanism or guidelines library chooses to develop for the performance evaluation of its staff. Such an evaluation tool could be in the form of a simple self-evaluation checklist, a peer evaluation tool, or a formal evaluation system.

There is another method of evaluating the performance of reference librarian and other staff. A Library can use some quantitative measure to assess the efficiency of its staff by recording the number of questions the reference librarian has answered during a particular time. It can also measure the frequency with which the print or electronic sources are consulted by librarian and other staff to answer the users' enquiries. In small libraries the number as well as the type of questions asked by the users and answered by the librarian can be easily counted on daily basis. On the other hand, in larger libraries, daily count of queries may not be possible, hence one-week periods count every one or two months may be used to estimate the total number of queries asked and answered during a year.

3.8 Evaluating Reference/Library Services

Evaluation of reference and other library services is of predominant importance for the reason that it helps to assess the satisfaction of the end user. However, the good reference collection and efficient reference personnel are equally significant in this process. For evaluating reference services, the librarian should make a thorough analysis of the reference process. A broad plan may be prepared, keeping into consideration the library objectives, cost, personnel, etc. to make necessary changes from the present to future time. Harold Jenkins said in this context that "if we cannot say why we are doing what we think we want to do, we should then question the wisdom of doing it at all". Therefore, such evaluation methods may be used as to be

helpful in evaluating the users' satisfaction from reference services. Librarians generally employ the following methods to evaluate reference services:

4 Questionnaires

5 Surveys

6 Observations

7 Interviews, etc.

The favoured method of evaluating the reference and other library services among librarians is the library survey wherein all possible sources of data and means of analysis may be used to assess the quality of library and reference services. These days reference service is no more a one-dimensional process; it has rather become multidimensional in approach. The reference librarian will have to use a combination of techniques or methods for appropriate assessment. The main purpose of evaluation of existing practices, procedures, services is to make the current reference environment successful and make a sound projection for the future where library services are made available 24x7 leading to virtual reference service which is growing slowly.

3.9 Online Based Services

These types of library services are delivered using technologies such as web-based, Internet-based, CD-Rom-based, network-based, and consortium-based information services focused solely on digital documents or information tools such as databases, e-books, e-newspapers, etc.

Access to these services is provided by the use of technology that, in effect, helps to provide users with personalized services. Examples of using new technology are the Web-based libraries and virtual libraries.

3.10 Importance of Web-Based Library Resource and Services

Web based library resources and services are important in this ICT era some important aspect is given below:

- Improve competition by educating the students.
- To provide students and teachers access to a higher level of support and information systems to boost their learning opportunities.
- With a single username, faster and easier access to library services;
- The globalization of education now demands that teachers and students be put together at the same time, irrespective of their geographical location. It can be done through e-learning.
- Library staff regularly accessible online.
- Easy-to-use, self-benefit Internet services.
- Faster and easier access to library resources and services at a single login
- 365 x 24 service availability, at any time and from anywhere;
- Online availability of library staff all the time
- Easy-to-use web resources and self-service services;

3.11 Application of Web Technology on University Library Services

3.11.1 Web-based Reference and Services

Over the past decade, the availability on the web of various information sources such as encyclopedias, directories, and dictionaries etc. has increased exponentially. The libraries are able to establish topic portals via the library website which would include links to relevant information sources. Web-based information tools include: SDI, Current Awareness Service, Data Distribution System, Web-based Research Tools, Virtual Reference Desk / Ask-a-Librarian, Online Current Awareness Bulletin, Digital Reference Services, Inter-Library Loan System, and so on.

3.12. Basic Facilities of University Libraries

By paying attention to the provision of network facilities, efficient web-based library resources and services cannot be accomplished. Libraries vary in their technology and this reflects their dedication to provide web-based library resources and services, when it comes to a library beginning to provide users with web-based resources and services they need to have fairly sufficient network facilities. Hardware, software, documentary sources, digital resource management, search and browsing interfaces, human resources, and budget are the key components needed to establish web-based resources and services.

3.13 Library Computer Hardware Systems

3.13.1 Input Devices

The library uses input tools such as scanners, digital cameras and video cameras to incorporate digital libraries based on images. A range of scanners are available for the digitization of books and other material in the library, depending on the user's requirements. There may be two types of scanners used in the library; destructive

binding and non-destructive binding scanners the book may be needed for posterity in destructive digitization process, therefore it must be preserved by removing its binding and re-binding after digitization. Such books can be digitized by means of flatbed scanners. Take advantage of non-destructive digitization (DIY) scanning technology with high-end three-dimensional images that otherwise need disintegration.

3.13.2. Servers

A database is a computer program that can accept requests from clients and the computer which fulfils those requests and responds to them. This can include sharing data or resources for hardware and software among clients. This is called the structure of the client-server. Database servers, mail servers, file servers, web servers, print servers, gaming servers and software servers are typically computer servers.

3.13.3. Data Back and Mirror Servers

A backup system is a server responsible for the recovery and reconstruction of a network's directories, records, servers and hard drives to avoid data loss in case of hard drive failure, user error, catastrophe or accident. No downtime, the backup server will take the place of the primary server immediately.

Mirror database duplicates all primary server operations and transactions in the event of primary server failure. The website is served from a single web domain in the case of a mirror database. The mirror website is an exact replica of the original website and is frequently updated by the developer to ensure the content of the original website is mirrored. The mirror web server's common use is to manage the load or traffic.

However, mirror sites are used to render users by negating geographic distance in close proximity to the database. It may also happen that to satisfy a large audience, the original web server will be mirrored to a site with faster internet access.

3.13.4 Storage Devices

A computer for data storage is a system for storing and processing information. Computers or data storage devices can use either a portable (removable) recording medium or a permanent part (hard disks) to store or retrieve data. In either analog or digital type, the electronic data is stored. To make it easier for users to choose from a large document set To order to store large amounts of data, electronic libraries and information providers must pay attention. To do this, an array uses a number of hard disks. The current technology allows RAID (redundant set of independent disks) to be connected to the hard disks in sequence. RAID facilitates redundant processing of the same data to improve overall performance.

Digital libraries and data providers that allow a federated storage environment that init ially stores original service provider data and collects and indexes metadata on the int erface page

Web-based services provide access to online newspapers and other platforms rely on the original content providers to maintain their own content. The use of metadata, however, allows the system to discover information across the many repositories. The management of metadata uniformity and interoperability becomes very critical in this scenario.

3.13.5. Computer Network

Computer network is a communication system that links computers within a limited area or a greater geographic distance and includes circuits of communication. The communication network is devices such as data repeaters, switches, hubs, routers, optical fiber connectivity, modems and other things that make up a network's core hardware. The network media (carrier media), as it should be of high bandwidth, is of

paramount importance. The network media CAT 6 or OFC (optical fiber cable) is commonly used in the digital library.

3.13.6 Internet Connections

Internet connection refers to the most significant Internet facility in the context of the Internet service provider's link to the user concerned. The organization may have several alternative internet connections from the same or different internet service providers other than the backbone of the network. Web-based library services depend heavily on the type and speed of the library (bandwidth) connection. Different types of optical fiber cables (OFCs), very small opening terminals (VSATs) and broadband can be used for Internet backbone establishment. Any organization defines the Internet backbone based on the scope and size of the planned data transfer and its ability to carry multimedia high-speed traffic. Broadband connections limit the bandwidth and reliability of the link, In the event of any malfunction of the other two options being addressed; they are used as a backup link. Consequently, the option is between an optical fiber network and a VSAT network. VSAT is a small, software-driven satellite station with an antenna. The device supports all common protocols for Ethernet and TCP / IP

3.14 Library System Software

3.14.1 Scanner and Manipulation Software

Using a scanner, the procedure of converting to a computer-process able digital image over a print file is finished. Scanners work by throwing light at the digitized object or file and directing the reflected light through mirrors and lenses to a photosensitive component called a charged coupling device (CCD). The Light-sensitive CCD converts brightness levels into electronic signals that are then converted into digital signals and then into digital images. Nevertheless, technology called image scanning /

manipulation software is required to get the desired image quality with rich content. The scanning software is usually bundled with the computer of the scanners.

3.14.2 Optical Character Recognition Software

Optical character recognition (OCR) is a technique for translating images from handwritten, typed or printed text into machine-encoded text, whether mechanically or electronically. It is commonly used as a method of data entry from printed paper information records, whether passport papers, bank accounts, invoices, computerized receipts, business cards, fax, static data prints or any relevant documentation. After scanning, the digitization of books and other documents in the library needs to be transformed into the digitization of printed texts so that they can be edited, scanned, processed compactly and used in computer processes such as text-to-speech, text mining and machine translation Most software for document imaging and firmware scanning is bundled with software packages for OCR. Libraries may however search for standalone OCR packages such as Text Bridge (Xerox) and Omni Page, etc.

3.14.3 Database Management Software

DBMS is a compilation of programs that allows users to retrieve, update and store information from a database. The DBMS allows end users to routinely create, update, read and delete information in a database. Ensuring the data is regularly structured and easily accessible to the database and end users or application programmed. The digital library, which is a compilation in the form of digital files of a large number of books, articles and other documents, makes it important to have applications for database management. The DBMS not only provides a centralized repository for digital content, but also a recovery and search facility. Digital libraries can choose from a range of DBMS software, such as relational database management systems to

object-oriented database systems, depending on the digital library software and their requirements.

Relational DBMS is most commonly used for metadata storage. Linux and other open source software's broad adoption and increasing use as an enterprise computing platform has also promoted the growth of open source database management technology. Oracle, Informix, Sybase, SQL Server, etc. are the proprietary relational DBMS systems that can be accessed using SQL. CUBRID, Small SQL, Maria DB, etc. are some common open source software.

3.14.4 Internet Speed

Internet speed is a measure of how much data on an Internet connection can be transmitted. Most likely, the total available bandwidth in a library building is expressed in mbps, unless the library has upgraded to gigabit service already. Exponential increases in Internet bandwidth have occurred in recent years. In the early 1990s, it was appropriate to dial up link with 100 kbps bandwidth.

Today, however, high-speed broadband exceeding 10 mbps allows users to explore unrestricted web 2.0 and web 3.0 possibilities.

3.14.5 Documentary Sources

Library collection is its heart and soul. The library's efforts and all five library laws that promote the use of all possible means to serve as many people as possible have turned conventional libraries into electronic repositories.

3.15 Library Metadata Services

Metadata is created by definition of objects to encourage the discovery of relevant information. Metadata helps to organize electronic information, define locations, recognize similar objects, identify electronically, and support resource archiving and preservation

3.15.1 Standard of Metadata Format

So many digital libraries use Dublin Core and MARC-21 metadata standards. Large digital collections such as shared content libraries and other related information resources need a common and relatively consistent database system. Nevertheless, the metadata harvester has to come out with unique metadata specification, the scheme is applied remotely.

3.15.2 Administration of Metadata

Metadata management involves handling the metadata associated with the virtual object. The metadata may be functional or descriptive metadata depending on the core policy of the digital service provider and handler. Structural metadata describes digital objects physical and intellectual parameters such as number of pages, tables, sequence of a book's pages, etc. The metadata definition defines a virtual object's assets and individual instances.

Structural metadata allows loose coupling of the metadata with the digital object, allowing smooth migration of the metadata and digital object, further metadata modifications and being light in size allows efficiency in storage and search capabilities.

3.15.3 Methods of Metadata Harvesting

Meaning of Metadata harvesting is the aggregation of metadata records into a single database from multiple content providers so that users can search multiple content providers from a single interface around which services can be built. Metadata collection allows the collection of concise information on objects in distributed collections for a national collection or digital library or web service providers. For optimum results and seamless resource search capabilities, metadata interoperability between the distributed resources becomes very essential.

3.15.4 Literature Search and Retrieval

Component asset search and discovery requires an efficient and effective access platform that allows a user to query, browse and navigate online resources and services. Web-based services asset search and discovery consists of an interface that offers an easy, navigable and customizable interface. This allows multiple and cross platform search to local resources via Web-OPAC and indexes to digital libraries, databases and electronic journals. Libraries subscribe resources to cater their clientele by spending millions of rupees, however a miniscule of these resources are ever searched or are hardly able to be part of a search query. Having information available to users is the library manager's central responsibility. In addition, the user fancies the same experience with the library content discovery services in the age of Google where everything is available by creating request in a single search box. Library users want their catalogues to be like Google Search, where everything that exists or is indexed is available on a single window interface regardless of the content provider or service platform. As a commercial and open source product, there are many such platforms available. Some of the commercial products Libris Primo, SirsiDynix ® Enterprise, Biblio Commons, ProQuest ®, Aqua Browser ® Library, EBSCO Discovery and Knimbus are examples of open source products. The internet-based service model revolves primarily around the notion of single window search and discovery tools. The library services enabled by the web will see a long way with search and discovery tools developing and growing.

3.16 Interface for Searching and Browsing

For all web-based service modules, the search and browsing interface is the gate. The gateway becomes an important feature for resources and services from the web-based library. Web technology enables user-friendly interfaces to be created. The friendly

software with reliable and smooth browsing experience will go a long way in making positive user reviews and building a library's reputation as modern service institutions.

3.16.1 Web based Searching Interface

Most of web-based libraries support searching with varying degrees of capabilities. It can range from simple search to advanced, which may include different Boolean search techniques, proximity, wild cards, truncation, etc. Many libraries also support searching for relevance based on the relevance score of the documents retrieved.

3.16.2 Browsing Interface

In the present time users of Google and Facebook, supplying its users with streamlined infrastructure and a range of data and content is a primary requirement for a web-based library. Browsing lets a user browse and find sets of data base items combining attributes such as topics, year, subject, material type or design, physical or geographical locations, etc.

3.17 System Sustainability in Library

Sustainability of the computer system can be defined as' an activity ability to endure or function for a certain period of time or maybe indefinitely. The sustainability of the system is not limited to computer hardware and software. When library users in the web-based world become more and more familiar with new innovations. Libraries have been struggling to provide a seemingly effortless experience. The libraries must adhere to some system sustainability policy that must include data as well as software and hardware. Long-term data protection should be the priority of any such strategy. A disaster recovery plan should be in effect. On the one hand, open standards and open systems encourage long-term content protection and, on the other, enable

community members to develop new system software tools and components, thus contributing to the community.

3.18 Human Resource Development in Central Library

Human resources are one of the most important components and valuable resources of an organization. The success of organization depends on the commitment of staff to work. Librarian's position has grown in the digital environment era, where changes in formats, delivery models, and technologies are being seen. Innovative, lively and IT professionals are in great demand for web-based resources and services. In addition, librarians are needed to develop their skills and knowledge in order to provide successful service required to work in virtual environments.

3.18.1 Training Programmed

It is imperative for librarian to have requisite skills and competencies, including library principles, practices, concepts and most importantly technology to fully exploit the capabilities of technology. To acquire the necessary skills for developing and designing new creative technologies, they must have appropriate training. The training program should be structured from time to time to acquire the necessary skills such as developing web pages, handling web tools, building and maintaining computer networks, designing search interfaces, managing databases, managing websites, etc.

3.18.2 Library Budget

The provision of web-based library resources and services involving costs such as hardware, software, technology support, resource subscription costs, website hosting, training of staff and users, development of web-based tutorials, etc. for the use of these technologies involves huge costs. Without good support, academic library could not meet rising demand and users ' high expectations. The library will develop

strategic plans including allocating separate budgets to use web technology to provide high-class internet-based resources and services in a cost-effective manner in a dynamically changing environment.

3.19 Evaluation of Library Website

Library website evaluation is an essential part of delivering web-based library services. Library must know if the website fulfils its goals and works effectively and successfully. Website usage statistics are therefore a significant measure of library activity. Circulation of library document, information reports, paper creation, extension of library resources and facilities collection and usability. It practice will allow website administrators to evaluate website development and maintenance steps. In addition, data will be used effectively and efficiently for planning purposes and budget use.

3.20 Application of Web Based and Internet Technology to Support Traditional Library Activities

3.20.1 Library Acquisition and Collection Development

Now a day's technology has made the purchasing of documents simple and quick, both printed and digital. Many publishers and distributors, as well as online book shops, have made their websites available which library staff can conveniently search to obtain information about new books, magazines, etc. which help pick, order and maintain documents and check information on various levels, including prices, etc. Often available on subscription purchase model are digital resources, including electronic journals, electronic books, encyclopedias, dictionaries, directories, online databases, online courseware, etc. Libraries mindset has changed from ownership to data access. This phenomenon has led to the purchase of the right of access to data instead of the source.

3.20.2 Library Technical Services

Due to the internet and WWW, which can be used to access the latest authoritative tools related to classification and cataloguing, the mammoth task of preparing standard catalogue without much effort has become possible. The various links to tools such as the Library of Congress Classification Schedule, Library of Congress subject heading, MARC documentation, and OCLC user documentation, Cyber DDC and other thesauri and subject dictionaries are available on the web, which can be of assistance to the library professionals involved in book processing. Different references to resources such as Library of Congress classification schedule, Library of Congress subject heading, MARC documentation, OCLC user information, Cyber DDC and other thesauri and topic dictionaries are available on the web, which can support the library professional involved in book technical processing. Acquire through the websites of the library. Articles to the union catalogue of journals which have been subscribed to by a group of libraries may help in sharing resources.

3.20.3. Library Circulation Systems

The technology has made it much easier than before to share in-house files. They can be placed on the acquisition day itself in the Web-OPAC after the technical evaluation of newly purchased documents. Library users with an internet connection at school, hostel, or university can search and reserve the report in their classroom or at home. In addition, libraries that subscribe to online journals do not always need to provide access to it in the library, which can be made available via IP and user / ID authentication both on campus and outside.

3.20.4. Library Reference Sources

During the past decade, the availability on the internet of different reference sources such as encyclopedias, directories, dictionaries, etc. has increased exponentially. The

libraries are able to develop subject portals through the library website that would provide links to important reference sources. Meta sites such as Refer provide a basket full of reference sources with a single search interface to help users quickly and efficiently obtain information.

3.21 Web-based library Resources and Services

3.21.1 Web-based Library Resources

3.21.1.1 E-books

E-books are just the electronic copies of printed books and can be used with e-book technology and sold as a standalone device. It is followed by comprehensive links apart from textual problems, graphs, maps, diagrams, tables, etc. Such hyperlinks allow users to leap from one idea to another and to absorb information instantly. Apps such as searching for full text, adjusting font size, taking citation formation notice increases the book's usability. Multimedia will incorporate text from e-books and create a new form of monographic work.

3.21.1.2 Library E-journals Resources

With the advent of the internet, e-journals are becoming more popular. These are digital versions of printed journals with extensive hyperlinks and can be read online and offline. Electronic newspapers can be broadly defined as any newspaper, magazine, webzine, newsletter, or any other form of electronic serial publication available on the Internet. With the advent of the internet, e-journals are becoming more popular. These are digital versions of printed journals with extensive hyperlinks and can be read online and offline. Electronic newspapers can be broadly defined as any newspaper, magazine, e-zine, webzine, newsletter, or any other form of electronic serial publication available on the Internet.

3.21.1.3 Library E-databases Resources

These are large collections of databases readable by machine, as well as bibliographic and full text. These databases are maintained by commercial agencies and accessed via lines of communication. They are subscribed by many libraries for easy access and use for the current information. The downside is that when the system is down for some reason, the information cannot be accessed. Sources include Ei Compendex, SciFinder Scholar, Science Network, and Current Material, IEL Online, Elsevier Science Direct, Taylor & Francis, Springer Connect, and more. These electronic databases are delivered by vendors / publishers via the Internet. Libraries that subscribe to these databases online can easily access them via the web.

3.21.1.4 Patents

Internet helps the fastest access media for patent information across countries. Patent information can be accessed by the user through inventor name, applicant name, classification number, etc. Full text patent service is not available free of charge. Internet patent news offices provide a list of free subscriptions to all patents issued worldwide by email during the previous week. The useful sources of patent information are Orbit etc.

3.21.1.5 Collection of E-theses and Dissertations

An electronic thesis or e-thesis defines a digital thesis, which is usually accessed via the Internet. Thesis submitted to the universities as a requirement for the award of Masters and PhD is a vital source of information for the ongoing and new research. Several universities and institutions have drawn up guidelines, rules and procedures for sending doctoral theses electronically. They either build their own institutional repository of theses / dissertations or submit to the scholarly community at a repository such as Shodhganga.

3.21.1.6 Standards

Standard is a useful source for materials, goods, systems and services and guarantees that materials, products, processes and services are appropriate for this purpose. They play an important role in global economic design, manufacturing, and trade. They are used to improve product quality, to improve safety, to promote market access and trade and to build confidence among consumers. The important sources of information for standards are ASME, ASTM International, IEC and BIS, etc.

3.21.1.7 Subject Gateway

The subject portal is a website that provides access to online information on specific topics that can be searched and browsed. The gateway redirects users towards the initial digital content holders. It is specially designed for users to be able to access high-quality information on the Internet in a given subject area quickly and efficiently and to address the limitation of search engines that index only a small fraction of the total Internet resources. Infoport is an INFLIBNET subject gateway for Indian electronic resources.

3.21.1.8 Institutional Repository

Institutional repository is a digital archive of institutional intellectual production, generated within the university or research institute that promotes free access to intellectual content online. Institutional repository is a set of services that a university or institute uses to disseminate the institution's created digital materials (Lynch 328). The institutional repository can increase an institution's visibility and allow for global access to its research output. The institutional repository's knowledge resources may be an institution's theses, papers, conference objects, monographs, patents etc.

3.21.1.9 CD-ROM Databases

The beginning of CD-ROM databases began in the 1980s. With features of high storage capacity, longevity and ease of transportation CD-ROM databases became popular among users before web advent. The goods which were made available earlier via printed or online vendors have been discontinued in favor of CD-ROM facilities. Many publishers have now stopped publishing bibliographic CD-ROM databases in favor of a web-based version. The IIT libraries have made their CD-ROM databases accessible on local network such as Chemical Abstract, Indian patent databases.

3.21.1.10 Open Access Journals

Open access stands for free online access to peer reviewed academic journals that maximizes the accessibility and user-friendliness of research results. The word open access is commonly used to access the articles published in scholarly journals online. Even the major libraries weren't able to meet the burden of subscribing to all the users services. To meet their demand librarians have started to provide access to open access journals. Users on-site / off-site prefer open access journals like DOAJ, OAJSE etc. Proliferation of e-resources became possible with the advent of the internet.

3.22 Web-based Library Services

3.22.1 Web-based Library OPAC Service

Sometimes it is called Web-OPAC, or Web PAC. Web-OPAC's emergence as the "fourth generation catalogue in the mid 1990s allowed users to search a library catalogue remotely via an easy to use interface" (Khurshid 275). It incorporated the characteristics that characterize WWW facilities. In searching and browsing the Web-OPAC is similar to OPAC. The main difference between the two is that, in terms of access or use, the Web-OPAC is universal and can be searched from any corner of the

globe. Web-OPAC uses HTML files which provide hyperlinks to the disciplines or subject areas. The websites of the library become point of access to the catalogue and other web-based library resources. The web-based frameworks are implemented with almost streamlined software packages for library management.

In order to remain relevant to users ' access to resources in the era of Google and other search services rather than the library catalogue, it is imperative that libraries add features such as federated search, open URL link, customization etc. So that users can more quickly and efficiently find resources through a single interface. With the introduction of these functions, OPAC's weakness in accessing resources can be improved.

3.22.2 Federated Search Service

Libraries subscribe their users to number of e-resources. Searching for each tool catalogue and having desired information becomes a tedious job. Federated search allows the user to cross-search multiple resources with one query only. There is no need to consult individually with the information resources. The search result removes duplicates that are then displayed in one set of results. It saves users time searching multiple single to a time databases. Web Feat, Meta Lib, etc. are popular federated search portal products.

3.22.3 FRBR Model Service

FRBR stands for the functional necessity of bibliographic documents, is a "conceptual model of the bibliographic universe to represent persons, relationships and attributes" (Tillett 24). By collocating records based on the relationship between the entities model, FRBR provides better search, retrieval and better display. Entities reflect an intellectual entity defined in bibliographic records: function, language, representation and posts. They may represent those in charge of the intellectual content. We can

depict work subjects such as the object of principle and the job. Clustering knowledge according to these groups produces better outcomes. In digital environments the FRBR relationship will be very useful. It will make browsing and navigation much easier across clustered bibliographic documents, facilitating better access to information, and fostering linkages between end users and resources. Virtua of VTLS integrated the FRBR functionality into the program.

3.22.4 Open URL Service

OPAC libraries may support the Open URL framework. It is a standardized format which allows libraries to link resources when necessary. This may include enriching content such as book reviews and images from book-jackets. “This can also include linking to the most appropriate copy of full-text journal articles or e-books” (Khurshid 278).

3.22.5 Streaming Media Service

Streaming media is a sequential delivery of multimedia content over the network mostly on request” (Kataria 585). It is a platform that uses the standard HTTP, TCP / IP and HTML protocols to transmit audio or video from data streaming service provider to end user. Besides these features, OPAC may include features such as pertinence ranking, spell checking mechanism. OPAC will support listing, ranking, analysis, comment and tagging functionality, etc., and should integrate with forums, instant messaging, and social networking sites by using user input and creating metadata to create a more responsive catalogue.

3.22.6 Digital Reference Service

With electronic information resources and network environment the concept of the traditional reference service has been changed. Web is now used as a communication medium to send questions and get answers easily and quickly to the users. The system

now allows reference librarians to reach out to network users instead of waiting at the reference desk. The web-based reference service can be narrowly divided into two groups based on the mode of request reception and information distribution.

3.22.7 Ask-A-Librarian and Virtual Reference Desk Service

Ask-a-library and virtual reference desk is an asynchronous method of providing information that links users to individuals with specialized knowledge and search performance skills. Once the question is read, it is forwarded to the person who knows about it, and the answer is either sent by mail or posted on the web to the user.

3.22.8 Real Time Digital Reference Service

This is a symmetric service that allows the user to communicate in real time from anywhere with the actual live reference librarian. The reference librarian will perform a reference interview, provide the users with instant answers and provide timely feedback. “Libraries are offering Internet chat-based service using software like Live Person, AOL Instant Messenger, etc” (Arora 21). This service is an alternative to the automated e-mail information service as it takes relatively short time and addresses substantially more problems.

3.22.8.1 Advantage

- Easily accessible and capable of reaching both remote and local users;
- Distributed service;
- Providing information when needed;
- 24x7 service available, meeting user expectations of offering online services.

Broadly speaking, virtual reference service allows libraries to remain relevant in a changing knowledge world in which search is still a key component of library support.

3.22.9 Electronic Current Awareness Service

Overload of knowledge and the current information needs of the user have led to the development of the new online awareness program. It is an essential function of the library to make the organization's user promptly aware of such new information which will most likely contribute with the highest possible degree of competence to perform their individual tasks. Current CAS procedures and strategies included individual notification of published information to users directly via email, which is the easiest way to do so. Library can refer to their web pages or connect them directly to some place. The various online publishers provide users such as Elsevier (Science Direct) and Springer (via Springer Link) with Table of Content service.

3.22.10 Electronic Document Delivery Service

Web-based document sharing provides the opportunity to access information that occurs at remote sites. The Distribution of the Document refers to the supply of documents in electronic form or their copies to users which may include the conversion of printed documents into electronic form. The success of the well-established electronic document delivery system lies in the availability of research journals in electronic format, affordable scanning technology and improved electronic delivery mechanisms. Most of publishers and aggregators including OCLC, Wiley, and so on offer full-text articles via their websites. To deliver scanned papers, software packages such as Prospero, Ariel, copy, etc. are used.

3.22.11 Inter Library Loan Service

Web-based ILL is a conventional updated ILL service that replaced the manual system based on paper. The traditional practice of ILL was time-consuming and hard labor. All web-enabled libraries provide their users with ILL services through electronic documents and ILL management tools, such as Ariel and Avis applications.

Such tools allowed the libraries to efficiently and easily share their resources. It is now possible for information professionals to assist consumers in interlibrary loans and borrowing and to produce the desired document that is not present in their holdings.

3.22.12 Electronic Selective Dissemination of Information

Researchers and scientists in academic and research and development organizations have a specific time-limited need. To meet their specific requirements electronic SDI is designed to provide them with current information of interest at their desk. E-SDI allows users to regularly receive information through email, via profiles that represent their information needs.

3.22.13 Virtual Library Tours

Data about the central library and its departmental libraries, their various parts including acquisition, distribution, serial control, etc. with their respective layout and floor plans can be made available through the website which serves as a virtual guide to physical facilities. Flicker and YouTube may be the best web-based platforms to share images and videos of library facilities and services.

3.22.14 Web-based User Education

Web is becoming an important tool for librarians to improve their learning environment. Focusing on instructions is imperative for librarians with the complexities with growing online resources including online journals, online databases, etc. and services. Web-based tutorials are the combination of good information, logically related links with simple verbal descriptions, animated and interactive presentations. Web-based library websites can be used in the following field.

3.22.15 Library Calendar

The library calendar lists activities or shows notifications for upcoming events such as book fairs, lectures, conferences, vacations etc.

3.22.16 FAQ

Many libraries have made available through the website a list of frequently asked questions (FAQs) along with their general responses on resources and services such as how to issue library cards / books or reserve papers, loan length, late fees, etc. These are merely stock of library questions and answers, and are not normally interactive. Ask ERIC is an Internet answering question service provided by ERIC clearing house.

3.22.17 Web-forms Service

Older libraries used postal mail or email to connect in two occasions. Now most library websites use web-forms to invite user feedback / suggestions, and provide separate web-forms for different queries. Web-form has surmounted email limitations and added value to the online library operation. Web forms may be used for purposes; such as for reference queries, request for document on ILL/DDS, status of circulation account (reserve/cancel/renewal status), feedback/ suggestions for services and for recommending new book /journal etc.

3.22.18 Web Application Tools and Web-Based Library Services

Academic libraries all over the world are striving hard to offer high quality of web services as they are facing stiff competition with other resource discovery tools like Google, etc. Libraries need to find new ways for users to interact with library resources and services, because the mere presence of web services does not appeal to users. Web application platforms introduce fundamental changes to how libraries work. Academic libraries may use these application tools to create new environment to promote their online-based resources and services and involve users in two ways of

communication. Web application platforms are the name given to the new World Wide Web (WWW) or Web 2.0 applications and services offered by the second generation “shift from the passive experience of static read only pages to the participatory experience of dynamic and interactive web pages” (Naqvi 3). Concept of Web 2.0 was introduced in a “conference brainstorming session between O’Reilly and Media Live International” (OReilly 17).

Such web application tools are a platform for information publishing and sharing which enables users to add, upload, rate or change information. The idea of collaborative work, social networking and convenience in the use of these devices has brought about a significant change in the actions of internet users worldwide.

3.22.18.1 Benefits Web Application Tools

- The use of the library's web application resources is to develop library services by adding new functionalities.
- Such resources provide libraries with enormous opportunities to provide specialized services to better serve current users and to meet potential users at a time of need by incorporating such tools into websites and engaging users in their activities and seeking input to enhance library services.
- The incorporation of these resources will improve the quality of library services and give new promotional and marketing dimensions to their activities.

Academic libraries can improve their web services by using web application functionality that offer libraries a new dimension to include their users in "acquiring, disseminating, arranging and sharing information" (Clause 7), making their work easier, more efficient and bridging the gap between user and information.

3.22.19 Information Acquisition

Academic libraries can use resources such as blogs and wikis to collect acquire information from sources external to libraries. The blog includes a "hierarchy of chronologically ordered text, pictures, and media objects" (Chua and Gho 204). These may be retained for internal communication with visitors, promotional and marketing of their programs, input and suggestions by libraries. This can be used by libraries for creating new knowledge, tutorials and subject guides, as well as for collaborative activities between libraries, library staff and staff and users.

3.22.20 Information Dissemination

Libraries can quickly distribute / disseminate information about their resources and services using RSS feeds. RSS, known as completely easy syndication, is able to keep users up-to-date with "the latest news and updates on new items in the collection and services" (Maness). Libraries can easily use RSS feeds to distribute / disseminate knowledge about their resources and services. If a library subscribes to many newspapers or magazines, all updates about those magazines and newspapers can be obtained via RSS, and can then be sent to users in accordance with their interests.

3.23 Conclusion

Web- based library services are becoming more prevalent and advanced as the web becomes a worldwide commonplace and successful players in the e-world Libraries have continue to discuss concerns around web design and implementation. This chapter discussed to web-based services offers to student's researchers and LIS Professionals how to locate access and use them significant data. The study revealed that research universities libraries in central India lag behind in providing web forms to users in various web-based library services, which are effective tools for interaction and communication with library users.

References

Chua, Alton Y K and Dion Goh. (2010): "A Study of Web 2.0 Applications in Library Websites." Library and Information Science Research 32.3 203-211. Elsevier. Web 22 Jan. 2018.

Clausen, Helge. "User-oriented Evaluation of Library and Information Centre Web sites" New Library World, Vol. 100(199):5-10.Emerald.Web 24 Jan.2018.

Coombs, K. A. (2007): "Building a Library Website on the Pillars of Web 2.0." Computers in Libraries 27.1 11-17.

http://shatua.tripod.com/DRTCseminar.html. Web 2 Feb.2019

Haruna, B., Kiran, K. Tahira, M. (2017). Modeling web-based library service quality and user loyalty in the context of a developing country. The Electronic Library, 5(3), 507-519.

Kataria, Sanjay and John Paul Anbu K. (2009): "Applications of Web 2.0 in the enhancement of services and resources in academic libraries: an experiment @JIIT University, Noida, India." ICAL-Library Services 583-589.Web. 5 Dec. 2018.

Moyo, Lesley M. (2004): "Electronic Libraries and the Emergence of New Service Paradigms." Electronic Library 22.3 220-230.Emerald.Web.2 Jan 2020.

O'Reilly, T. (2007): "What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software?" Communication & Strategies 117-37.Web. 4 Dec. 2018.

Si, L., Wanigasooriya, P. & Ranaweera, A. (2017).Evaluation and Assessment of E-Service Quality of University Libraries in Sri Lanka. European Academic Research. 4. 10646-10671

Tillett, B. (2005): What is FRBR? A Conceptual Model for the Bibliographic Universe. Australian Library Journal 54.124-30.Web. 10 Jan. 2018.

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CHAPTER-4

PROFILE OF THE CENTRAL LIBRARIES

CHAPTER-4

PROFILE OF THE CENTRAL LIBRARIES

4.1 Introduction

Chapter 4th outlines their historical background, a brief overview of North India, profiles of the universities studied, and subjects and courses offered by selected universities.

4.2 India at Glance

India is a Democratic nation in South Asia and ruled by the parliamentary system; with the assistance of the Indian Constitution, which was adopted in the Constituent Assembly on 26 November 1949 and entered into force on 26 January 1950. It is the ranked seventh largest country by population, the second most populous country in the world with more than 1.2 billion people, with the Union of States also known as Bharat. It covers a large part of the Indian subcontinent and is bordered on all sides, on the south by the Indian Ocean, on the south-west by the Arab Sea and on the south-east by the Bay of Bengal, shares land and borders with many countries such as China, Nepal and Bhutan in the north-east; on the west by Pakistan and Burma (Myanmar) and on the east by Bangladesh. India is a federation made up of 28 states and eight union territories.

4.2.1 Map of India

Img. 1 Shows states in India

(Source: - http://india.gov.in/my-government/constitution-india)

4.3 Introduction of North India

North India is generally known as Uttar Bharat / Arayavart or Sumali, and as the historic base of the Maurya, Gupta, Mughar, Sur, Maratha, Sikh and British Indian empires. North India's predominant geographical features are the Indo- Gangetic plain that spans Punjab, Haryana, Rajasthan, Uttar Pradesh and Delhi states. North India is one of the most climatically diverse regions on Earth. There are more than 642 universities in North India, viz. 243 State Universities 15 Central Universities, 130 Deemed and 53 Private Universities and 33 nationally important University and other centers of excellence.

4.4 Name of Central Universities in North India

Table no. 4.1

Name of the Universities	Name of the State	Establishment Year
Aligarh Muslim University	Uttar Pradesh	1857
Babasaheb Bhimrao Ambedkar University	Uttar Pradesh	1996
Banaras Hindu University	Uttar Pradesh	1916
University of Allahabad	Uttar Pradesh	1887
University of Delhi	Delhi	1922
Jawaharlal Nehru University	Delhi	1969
Jamia Milia Islamia University	Delhi	1920
University of Haryana	Haryana	2009
University of Himachal Pradesh	Himachal Pradesh	2009
University of Jammu	Jammu	2009
University of Kashmir	Kashmir	2009

University of Punjab	Punjab	2009
Indira Gandhi National Open University	Delhi	1985
Hemwati Nanadan Bahuguna garhwal University	Uttarkhand	1989

4.5 List of Universities offered Ph.D. Programmed in Library and Information Science

Name of University	**Est. Year**
Aligarh Muslim University, Aligarh	1857
Babasaheb Bhimrao Ambedkar University, Lucknow	1996
Banaras Hindu University, Varanasi	1916
University of Delhi, Delhi	1922
University of Himachal Pradesh, Himachal Pradesh	2009

4.6 Profile of Universities

4.6.1 Aligarh Muslim University (AMU)

AMU was established as a college in 1857 with the aid of Raja Jai Kishan, the great Muslim reformer and statesman, Sir Syed Ahmad Khan. The college was initially associated with Calcutta University, and subsequently became associated with Allahabad University in 1885. This was the first purely residential educational institutions established in India either by the government or the public. Over the years it has given rise to a new educated class of Indian Muslims who have been involved in the British Raj political system. When Lord Curzon visited the college in India in 1901, Vice-Roy praised the work carried out and called it "sovereign value."

It was also during this time that it started to grow into a university with a campaign. Expansions were made to accomplish this aim, and more academic programs were added to the college's curriculum. In 1907 a girl's school was founded. By 1920 the college was converted to the Muslim University of Aligarh.

Img.3 snapshot of AMU Website
(Source-http://www.amu.ac.in/)

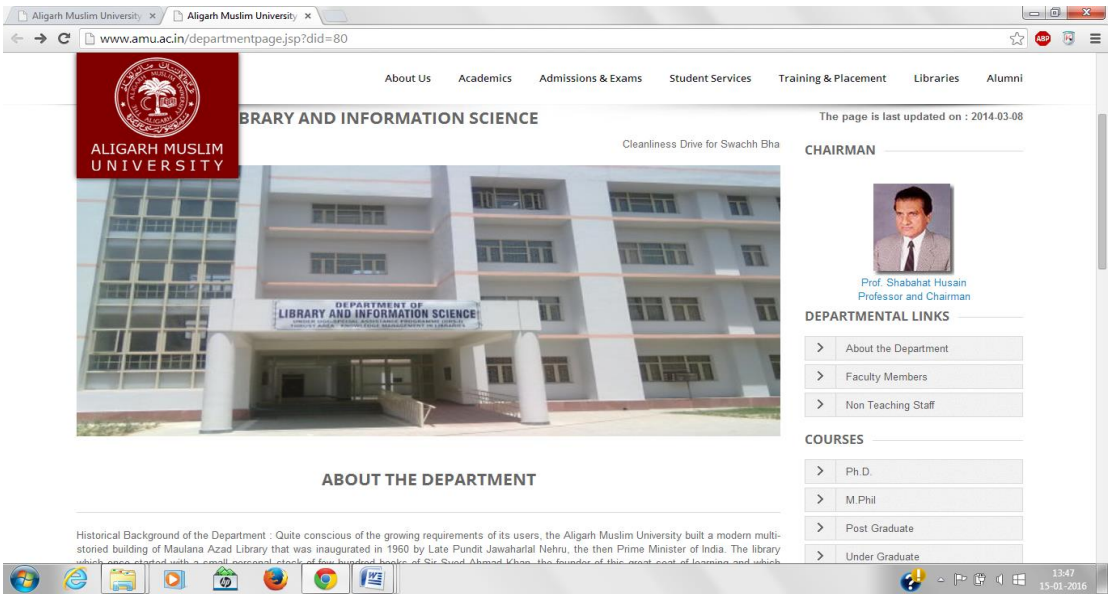
4.6.1.1 Subject and Departments in AMU

SUBJECT AND DEPARTMENTS IN AMU		
Agri. Eco. & Business Mgmt.	Fine Arts	Saidla
Agricultural Microbiology	Foreign Languages	Sanskrit
American & European Studies	Ilmul Amraz	Tahaffuzi wa Samaji Tib
Amraz e Jild wa Zohrawia	Forensic Medicine	Shia Theology
Amraz e Niswan wa Atfal	Geography	Social Work
Anaesthesiology	Hindi	South African and Brazilian Studies
Anatomy	Geology	Sociology
Applied Chemistry	History	South Asia and Indian Ocean Region Studies
Applied Mathematics	Home Science	Statistics & Operations Research
Applied Physics	Islamic Studies	Strategic & Security Studies
Arabic	Ilaj bit Tadbeer	Sunni Theology
Architecture	Ilmul Advia	Surgery
Asia-Pacific Studies	Interdisciplinary Department of Remote Sensing and GIS Applications	Tashreehul Badan
Biochemistry (JNMC)	Linguistics	West Asian Studies and North African Studies
Biochemistry (Life Sciences)	Library & Info. Sc.	Urdu
Botany	Mass Communication	Wildlife Sciences
Business Administration	Mathematics	Zoology
Cardiothoracic Surgery	Mechanical Engineering	Pathology
Chemical Engineering	Medicine	Paediatrics & Preventive Dentistry

Chemistry	Microbiology	Persian
Chinese Studies	Moalijat	Petroleum Studies
Civil Engineering	Modern Indian Languages	Pharmacology
Commerce	Museology.	Philosophy
Community Medicine	Neuro Surgery	Physical Education
Computer Engineering	Obstetrics & Gynecology	Physics
Computer Science	Opthalmology	Physiology
Conservative dentistry &Endodontics	Oral Pathology/Oral Medicine & Radiology	Plant Protection
Dermatology	Oral & Maxillofacial Surgery	Plastic Surgery
Economics	Orthodontics and Dentofacial Orthopedics and Dental Anatomy	Political Science
Education	Orthopaedic Surgery	Post Harvest Engg. & Tech.
Electrical Engineering	Paediatrics	Prosthodontics and Dental Material
Electronics Engineering	Paediatric Surgery	Psychiatry
English	Periodontics and Community dentistry	Psychology
ENT	Tashreeh wa Munafeul Aza	Radio Diagnosis
Law	TB & Respiratory Diseases	Radio Therapy

4 .6.1.2 Brief Introduction of Library and Information Science Department (AMU)

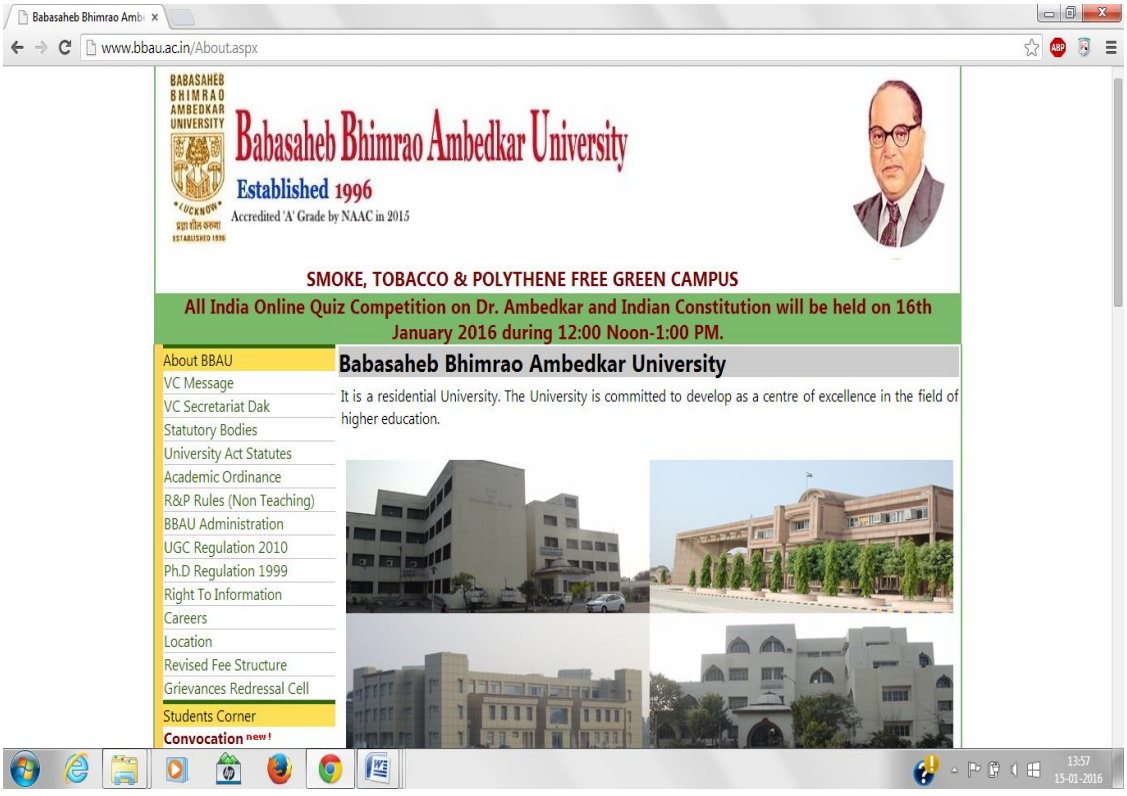
The establishment of the Department of Library and Information Science in AMU was founded a long way back in 1950-51 with the preamble of a 'Certificate Course in Library Science,' by former University Librarian Late Prof. S. Bashiruddin. The Certificate course is gaining a lot of popularity so that after a few years the University decided to run two courses a year. Encouraged by the success of the certificate course, Late Prof. S. Bashiruddin launched 'Bachelor of Library Science' for the first time in the country in 1958-59 with full time lecturers. In 1968-69 the course on the Credential was discontinued. The Master in Library Science was eventually implemented in 1970-71. Another progressive step the Department took in the year 1986-87 was to incorporate Library Science as a subsidiary discipline at B.A. Stage within the Arts and Social Sciences Faculties. The Department began M.Phil in 1990-91, when he realized the need and value of research in the subject. M.Phil /Ph. D. Course.



Img. 4 snapshot of Library and Information Science Department of AMU (Source-http://www.amu.ac.in/departmentpage.jsp?did=80)

4.6.2 Brief Introduction about Babasaheb Bhimrao Ambedkar University (BBAU)

The Babasaheb Bhimrao Ambedkar University, Lucknow was established on January 10, 1996 on a campus of 250 acres called 'Vidya Vihar' on the Raebareli road. It is one of the country's leading central universities that former Prime Minister Late Mr. Rajiv Ghadhi inaugurated. The university's main aim is to provide for and promote the educational needs of the oppressed people, particularly the SC / ST communities and Women. This residential university is jurisdiction over the entire state of Uttar Pradesh.



Img.5 snapshot of BBA University website

(Source-http://www.bbau.ac.in/About.aspx)

4.6.2.1 Main Subject and Departments in BBAU

The department of this university is divided into under various schools, the list given below present the name of schools with department in it. Which are as follows:-

Name of Schools and Departments
School for Ambedkar Studies
➢ Department of Economics ➢ Department of History ➢ Department of Political Science ➢ Department of Sociology ➢ Department of Social Exclusion and Inclusive Studies
School for Bio-Science Bio-Technology
➢ Department of Applied Animal Science ➢ Department of Applied Plant Science ➢ Department of Bio Technology ➢ Department of Pharmaceutical Sciences
School for Environmental Science
➢ Department of Environmental Microbiology ➢ Department of Environmental Science
School for Education
➢ Centre for the Professional Development of Teacher Educators and Teacher Education Curricula ➢ Grant for School of Education
School for Home Sciences
➢ Department of Human Development and Family Studies

School for Info. Science Technology
➢ Department of Computer Science ➢ Department of Information & Technology ➢ Department of Library & Information Science ➢ Department of Mass Communication & Journalism
School for Legal Studies
➢ Department of Human Rights ➢ Department of Law ➢ Centre of Post Graduate Legal Studies
School for Management Studies
➢ Department of Rural Management
School for Physical Sciences
➢ Department of Applied Mathematics ➢ Department of Applied Chemistry ➢ Department of Applied Physics ➢ Department of Applied Statistics
UIET
➢ University Institute of Engineering and Technology
CIIPP
➢ Centre for Industry Institution Partnership Program

4.6.2.3 Brief introduction of Department of Library and information Science (BBAU)

The university offered Master of Library and Information Science (MLIS), bachelors of library and information science, master of philosophy and Ph.D. Programmes are offered by Library and Information Science Department of BBAU at the moment. This department's main objective is to educate individuals for carrier as a librarian, expertise and information specialist by engaging them in practical events, workshops, conferences, debates and other events related to education, but the department focuses primarily on specialized teaching and research. The Department has advanced infrastructural facilities such as Data Tech Lab with state-of-the-art technology such as XEON Server, 10 PCs with 256 kbps leas track, Scanner, OHP, Laser Printer etc.

Img.6 Snapshot of Library and Information Science Department of BBAU

(Source-http://www.bbau.ac.in/SIST/DLIS/Dept_Library.aspx)

4.6.3 Introduction of Banaras Hindu University, Varanasi (BHU)

The Banaras Hindu University was founded in 1916 by the great nationalist leader, Pandit Madan Mohan Malviya, with the help of great personalities such as Dr. Annie Besant under Parliamentary Law-B.H.U. Act 1915 with the following aims:-

4.6.3.1 Objectives of BHU

- To facilitate the study of the Hindu Shastras and Sanskrit literature in specific as a way of preserving and promoting for the benefit of the Hindus in particular and of the world as a whole, the best philosophy and culture of the Hindus and all that was good and great in India's ancient modern civilization;
- Encouraging learning and study in all fields, primarily in the arts and sciences;
- To promote and disseminate such science, technical and professional information in combination with the requisite practical training as is best calculated to assist in the promotion of indigenous industries and the growth of the country's material resources;
- Encouraging the growth of faith and morality in younger generations as an integral part of education.

It is a globally reputed learning centre, located in Varanasi's holy city. It has played a stellar role in the freedom movement, and has become India's largest learning hub.

The University consists of 3 Institutes, 14 Faculties, 140 Departments, 4 Inter Displinary Canters, a constituent female college, and 3 Constituent Schools, covering a wide range of subjects covering all branches of humanities, social science , technology, medicine , science, fine arts, and performing arts. It has 6 centres of

Advanced Studies, 10 Departments under Special Assistance Programme and a large number of specialized Research Centres.

Img.7 BHU

4.6.3.2 Subject and Departments in BHU

The following snapshot shows the name of the academic program in various topics offered by the University of Banaras Hindu.

Img. 8 Snapshot of Programs offered by BHU

(Source-http://www.bhu.ac.in/academic/)

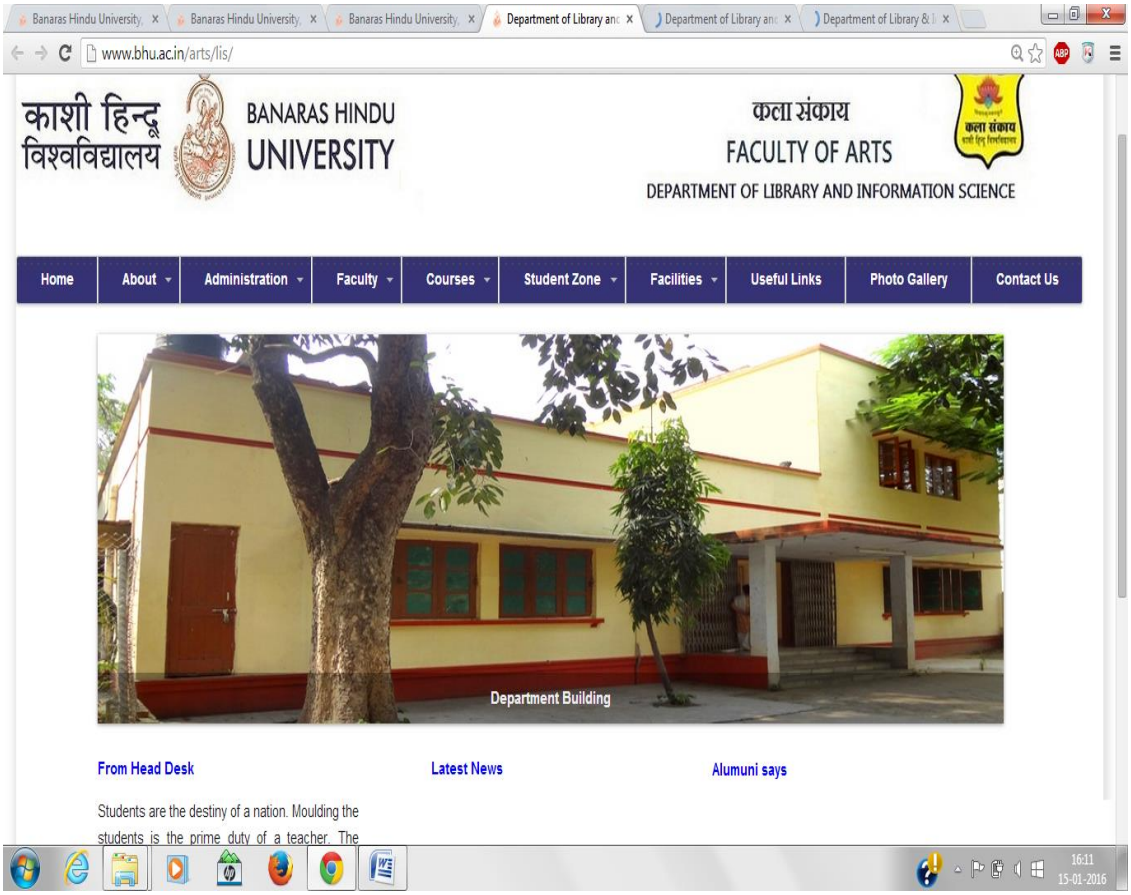
4.6.3.3 Brief Introduction Library and Information Science Department (BHU)

The Library and Information Science Department of Banaras Hindu University was founded in 1941. It is one of India's leading Department of Library and Information Technology Education. This Department has been served by the great eminent scholars of Library and Information Science, namely Dr. S. R. Ranganathan, Professor P. N. Kaula, C. G. Vishwanathan, J. S. Sharma, Professor B. Guha, Professor J. B. Subramanian, Professor Y. P. Dubey and Professor S. N. Singh etc.

BHU's LIS Department launches Diploma Course in Librarianship, second of its kind in India after University of Madras in 1942. Diploma course was changed to Bachelor Degree Course in 1961, with the requisite improvements in course material. As of 2005, the course was discontinued. In the 1965 second after the University of Delhi,

Department initiated a one-year Master in Library and Information Science (M.L.I.S.) program to prepare specialist librarians for specialist library.

From 2005, the Department conducts 2-years integrated Master of Library & Information Science (M.L.I.S.) Programme, Research Programme for the award of Doctor of Philosophy (Ph.D.) degree and Department has recently started a special course of study (self finance) Post Graduate Diploma in Manuscriptology (PGDM) which aims to provide education and training of handling Manuscripts - its storage, preservation, conservation, study and use.



Img. 9 Snapshot of Library science department of BHU

(Source-http://www.bhu.ac.in/arts/lis/history.html)

4.6.4 Introduction of University of Delhi (DU)

Established in 1922, Delhi University is the country's flagship university and is renowned for its high teaching and research standards.

At the time of the University's founding, there were only three colleges in Delhi: St. Stephen 's College, established in 1881, Hindu College, established in 1899, and Ramjas College, founded in 1917, which were then affiliated with it. Thus the University had a modest start with just three schools, two faculties (Arts and Science) and about 750 students. The university has developed into one of India's biggest universities.

There are currently 16 faculties, 86 academic schools, 77 colleges and 5 other recognised institutes spread throughout the city, with 132435 regular students in attendance.

4.6.4.1 Subject and Departments in DU

Applied Social Sciences and Humanities
➢ Business Economics ➢ Slavonic and Finno-Ugrian Studies
Arts
➢ Arabic ➢ Boddihist studies ➢ English ➢ Germanic and Romance Studies ➢ Hindi ➢ Library and Information Science ➢ Linguistics ➢ Modern Indian Languages and Literary Studies ➢ Persian

➢ Philosophy ➢ Psychology ➢ Punjabi ➢ Sanskrit ➢ Urdu
Commerce and Business Studies
➢ Commerce ➢ Financial Studies
Education
Education
Interdisciplinary and Applied Sciences
➢ Institute of Informatics and Communication ➢ Bio- Physics ➢ Electronic Sciences ➢ Genetics ➢ Microbiology ➢ Physical Education and Sports sciences ➢ Plant Molecular Biology
Law
➢ Law
Management Studies
➢ Business Management and Industrial Administration
Mathematical Sciences
➢ Computer Science ➢ Mathematics ➢ Operational Research ➢ Statistics
Medical Sciences
Music and Fine Art
➢ Fine Art ➢ Music

Open Learning
➢ Distance and Continuing Education
Science
Social Science
Technology

4.6.4.2 Brief Introduction of Library and Information Science Department

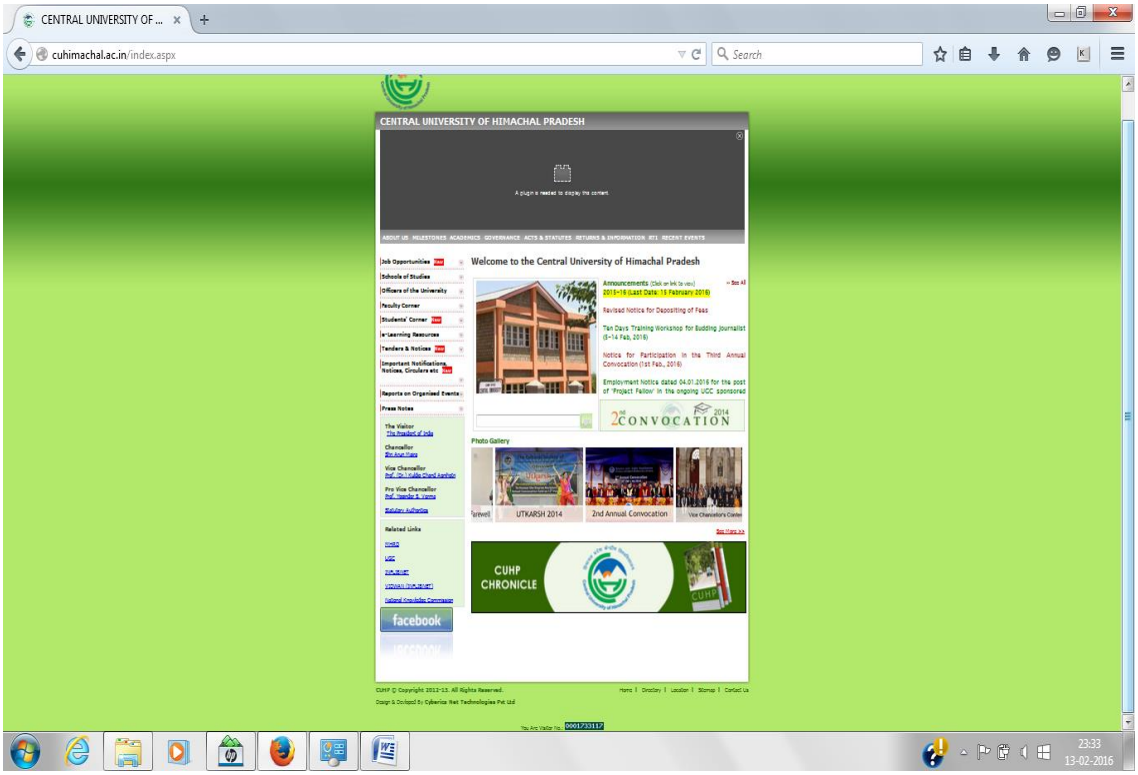
This was the country's first Library Science Department to be set up in 1946, with the efforts of (late) Dr. S. R. Ranganathan, Prof. S. Dasgupta, and Sir Maurice Gwyer. Over the past 66 years of its history, Library Education has played a major role in the nation as a whole. This Department has already taken 3334 students from their Library Science degrees. 68 Ph.D., 145 M.Phil, 1219 M.L.I.Sc and 2299 B.L.I.Sc. & this department granted Diploma degrees. The Department has sufficiently equipped the students with a strong ICT system not just for classroom teaching but also for hands on practice. It provides internet search facilities including email facilities. The Department has already developed its own very strong reputation here and abroad.

Img.10 Snapshot of Library science department of DU

(Source http://dlis.du.ac.in/)

4.6.5 Introduction of University of Himachal Pradesh (HPU)

The Central University of Himachal Pradesh was established in 2009 under the Parliament's Central Universities Act 2009 (No. 25 of 2009), after the announcement that the Prime Minister, in his address to the country, had declared the establishment of a Central University in each of the states that had not yet had a central university On August 15, 2007. The University is funded and regulated by the University Grants Commission (UGC). The University became functional with the assumption of charge by the first Vice Chancellor on 20th January 2010. The University is funded and governed by the Grants Commission of Universities (UGC). On 20 January 2010, the University became functional with the first vice-chancellor assuming the responsibility.



Img.11 Snapshot of HP University Website

(Source-http://cuhimachal.ac.in/index.aspx)

4.6.5.1 Subject and Departments in HPU

School of Health & Allied Sciences
➢ Department of Nursing & Patient Care ➢ Department of Physiotherapy ➢ Department of Rehabilitation Sciences ➢ Department of Pharmaceutical Sciences ➢ Department of Pathology & Diagnostics ➢ Department of Nutrition & Food Technology
School of Engineering Sciences & Technology
➢ Department of Civil & Environmental Engineering ➢ Department of Electrical Engineering & Energy Technology ➢ Department of Electronics & Communication Engineering ➢ Department of Mechanical & Aerospace Engineering ➢ Department of Chemical Engineering & Chemical Technology ➢ Department of Computer Engineering & Robotics

➢ Department of Pharmaceutical Technologies
School of Planning , Architecture & Design
➢ Department of Architecture ➢ Department of Landscape Architecture ➢ Department of Interior Design ➢ Department of Planning & Design ➢ Department of Design
School of Fine Arts & Art Education
➢ Department of Performing Arts ➢ Department of Visual Arts ➢ Department of History of Art, Art Education & Art Appreciation
School of Journalism, Mass Communication & New Media
➢ Department of Journalism & Creative Writing ➢ Department of Mass Communication & Electronic Media ➢ Department of Photography, Films & Television ➢ Department of Advertising and Marketing Communication
School of Law & Jurisprudence
➢ Department of Constitutional Law ➢ Department of Administrative Law ➢ Department of Criminal Law ➢ Department of Corporate & Taxation Law ➢ Department of Labour Laws & Industrial Relations ➢ Department of International Law ➢ Department of Personal Law
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- Department of Urdu

School of Mathematics, Computer Science & Information Sciences

- Department of Mathematics
- Department of Statistics & Actuarial Science
- Department of Computer Science & Informatics
- Department of Library & Information Science

References

http://india.gov.in/my-government/constitution-india

http://www.google.co.in/search?q=north+zone=map+pics1366bib

http://www.amu.ac.in/)

http://www.amu.ac.in/departmentpage.jsp?did=80

http://www.bbau.ac.in/About.aspx

www.bbau.ac.in/SIST/DLIS/Dept_Library.aspx

http://www.bhu.ac.in/academic/)

http://www.bhu.ac.in/arts/lis/history.html

http://www.du.ac.in/du/index.php?page=faculties-departments

http://dlis.du.ac.in/

http://cuhimachal.ac.in/index.aspx

http://cuhimachal.ac.in/cuhp_about_genesis.aspx

http://cuhimachal.ac.in/cuhp_academics_schools.aspx

CHAPTER-5

DATA ANALYSIS AND INTERPRETATION

CHAPTER -5

DATA ANALYSIS AND INTERPRETATION

In order to recognize the research objectives, information was collected on numerous perspectives of web-based library services obtained from librarians and research scholars of the central universities of North India. The Librarian questionnaire aimed to find out details of the current status of central libraries in terms of network facilities, various web-based resources and services offered by their library, the usage of web application tools for the efficient use of web-based resources and services, and their views on the complexity of web-based library services. The user's questionnaire was prepared to know the knowledge, use, opinion about the quality of web-based services, web-based services that offer quality and web-based service result quality, and the users' issues with using such web-based services.

5.1 Analysis of Data Collected from the Librarians

Table 5.1 Availabilities of hardware: In today's electronic world, the hardware is an essential component for automated operations in any organization. The library staff should have the necessary number of hardware to configure the web-based resources and services to provide web-based library resources and services. Without this hardware, university libraries won't be able to grow Web-based applications and library tools. The libraries collected data on the availability of the appropriate hardware provided in Table 5.1.

Table 5.1.1 Availabilities of Hardware

S.N.	Hardware	BBAU	AMU	BHU	DU	CUH
1	Printer	✓	✓	✓	✓	✓
2	CCTV Camera	✓	✓	✓	✓	
3	Bar code printer	✓	✓	✓	✓	
4	Scanner for digitization	✓	✓	✓	✓	
5	LCD Projector	✓	✓	✓	✓	
6	FAX	✓	✓	✓	✓	
7	Web camera	✓	✓	✓	✓	✓
8	Power backup	✓	✓	✓	✓	
9	Multifunction printer	✓	✓	✓	✓	
10	Web server	✓	✓	✓	✓	✓
11	Database server	✓	✓	✓	✓	

Table 5.1.1 shows that hardware tools available in the library majority of the library have It infrastructures such as printer, CCTV camera, Bar code printer, scanner for digitization, LCD Projector, Fax, Web camera, Power backup, Multifunction printer, Web printer, and the Web server. However, it is noticed that the CUH libraries have an only printer and web camera

Table 5.1.2 Availabilities of Software

S.N.	Software	BBAU	AMU	BHU	DU	CUH
1	Operating software	✓	✓	✓	✓	✓
2	LMS	✓	✓	✓	✓	✓
3	Library automation software	✓	✓	✓	✓	✓
4	OPAC	✓	✓	✓	✓	✓
5	Digital library software	✓	✓	✓	✓	✓

Table 5.1.2 indicates that the availability of software, it is clear from the table that all university libraries have operating software, library application software and digital library applications were use to provide library services.

Table 5.1.3 Types of Internet Connection

S.N.	Software	BBAU	AMU	BHU	DU	CUH
1	LAN	✓	✓	✓	✓	✓
2	WAN					
3	MAN					
4	WI-FI	✓	✓	✓	✓	

The table 5.1.3 indicates that all universities have two types of connectivity like LAN and BBAU, AMU, BHU, DU university library use WI-FI, while the CHU library has not WI-FI connection. National Knowledge Network was the main Internet services provider.

Table 5.1.4 Availability of Web-based Library Services

S.N.	Software	BBAU	AMU	BHU	DU	CUH
1	24/7 hours	✓	✓	✓	✓	✓
2	Only working hours					
3	Any others					

It is clear from the table 5.1.4 shows that all selected university libraries were offering web-based library services 24x7 hrs.

Table 5.1.5 Medium of Accessibility

S.N.	Medium	BBAU	AMU	BHU	DU	CUH
1	Remote access	✓	✓	✓	✓	-
2	User ID/Password	✓	✓	✓	✓	✓
3	Campus wide through IP authentication	-	-	-	-	-
4	Any other	-	-	-	-	-

Table 5.1.5. shows that the BBAU, AMU BHU, DU, and CHU central library provided users to access through ID/Password, followed by BBAU, AMU BHU and DU provide remote access facility to access their resources. While Only CUH libraries have not remote access facility.

Table 5.1.6 Frequency of Updating of Information on the Website

S.N.	Frequency	AMU	BBAU	BHU	DU	CUH
1	Daily	✓	✓	✓	✓	-
2	Next day	-	-	-	-	✓
3	Weekly	-	-	-	-	-
4	Monthly	-	-	-	-	-

Table 5.1.6 reveals that the majority of universities library websites of BBAU, AMU, BHU, and DU were updated in daily, whereas library website of CUH was updated on next day basis.

Table 5.1.7 Reasons why Libraries Provides Web Based Services through their Own Websites

S.N.	FACTORS	AMU	BBAU	BHU	DU	CUH
1	Easy access and faster services	√	√	√	√	√
2	To increase the visibility of library	√	√	√	√	√
3	To make services available 24x7	√	√	√	√	√
4	Enhance and effective use of library services	√	√	√	√	√
5	Due to technological changes	√	√	√	√	√

6	Easy to use web resources permitting self service	√	√	√	√	√
7	Staff efficiency improved technologically	√	√	√	√	√
8	Marketing of library service	√	√	√	√	√
9	Save users time by providing personalized services	√	√	√	√	√
10	Due to change in the users' perception regarding access to services/information	√	√	√	√	√

Table 5.1.7 shows that all the selected university libraries replied that why web-based services provide through their library website, it is clear form table that all library were provide because easier access and faster service, increased library accessibility, made services available 24x7, improved the efficient use of library services due to technological change, improved personnel productivity technologically.

Table 5.1.8 Availability of Web-based Resources on Library Website

S.N.	**Availability**	**AMU**	**BBAU**	**BHU**	**DU**	**CUH**
1	E-books	√	√	√	√	√
2	E-journal	√	√	√	√	√
2	E- theses/dissertations	√	√	√	√	√
3	Open access journals databases	√	√	√	√	√
4	Institutional Repository Gateway	√	√	√	√	√

5	Online subject video library	√	√	√	√	√
6	E-Databases	√	√	√	√	√
7	Patents/Standards	√	√	√	√	√
8	CD-ROM	√	√	√	√	√
9	E-newspaper clipping	√	√	√	√	√
10	Any others					

Table 5.1.8 clearly shows that the entire selected university library focuses on providing access to subscription databases, open access journals databases, and e-journals through web-based library services in the main. All the libraries proceeded by providing e-newspaper clippings, and e-databases. Libraries also provide video collection, patents/standards, e-theses / doctoral theses, e-books, institutional repository gateway and CD-ROM.

Table 5.1.9 Rate of Scholars' Satisfaction with Library Infrastructure

S.R.	Infrastructure	Highly satisfy	Satisfy	Neutral	Dissatisfy	Highly dissatisfy
1	Services	20 22.72	54 61.36	14 15.90	00	00
2	Resources	15 17.04	60 68.18	13 14.77	00	00
3	Basic infrastructure	10 11.36	50 56.81	28 31.81	00	00

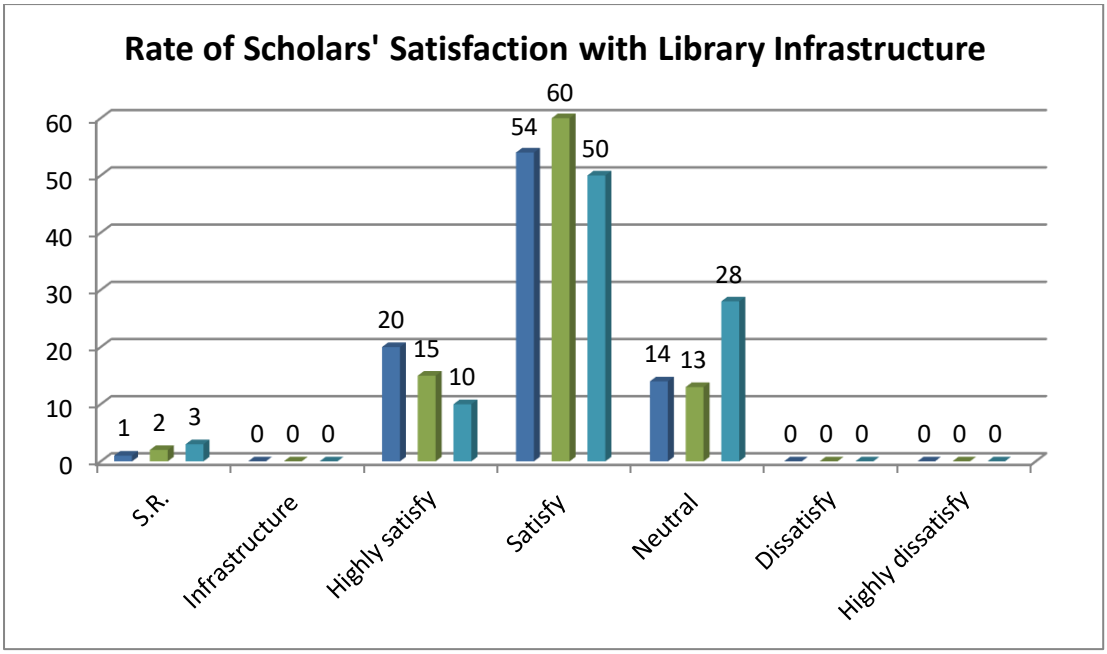


Figure 5.1.9 Rate of Scholars' Satisfaction with Library Infrastructure

Table and figure 5.1.9 shows about scholars' satisfaction with library infrastructure. The study reveals that the majority of (61.36%) scholars were satisfied with library services, while (15.90%) scholars were neutral with services. Followed by majority of (68.18) scholars were satisfied with library resources, while (14.77%) scholars were neutral with services. And the majority of (56.81%) scholars were satisfied with the library basic infrastructure, while (11.36%) scholars were highly satisfied.

5.2 Analysis of Data Collected from the Research Scholars

Table 5.2.1: Awareness of Web-based Library Resources and Services

S. N.	Respondents	Yes	No	Percentage
1	Awareness	88	00	(100)
	Total	88	00	00

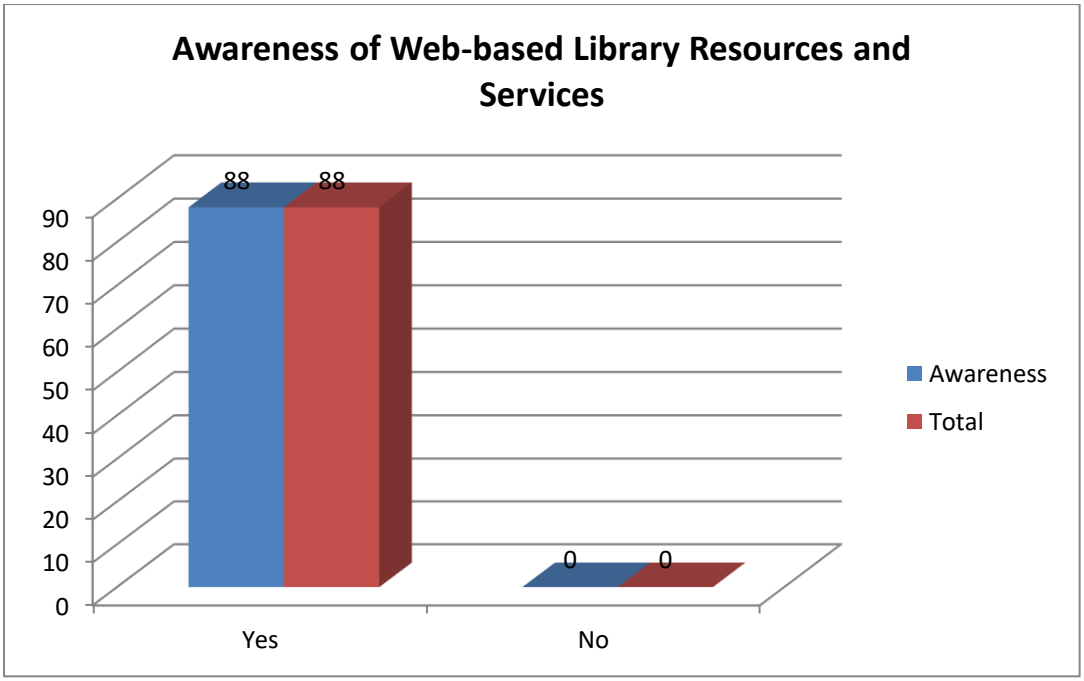


Figure 5.2.1: Awareness of Web-based Library Resources and Services

Table and figure 5.2.1 shows that awareness of web-based library resources and services. It is clear from the table that (100%) research scholars were aware from web-based library resources and services.

Table 5.2.2: Frequency of Library Visits

S.N.	Frequency	Responded	Percentage
1	Daily	62	70.45
2	Weekly	16	18.18
3	Fortnightly	4	4.54
4	Monthly	16	18.18
5	Occasionally	6	6.81
	Total	**88**	**100**

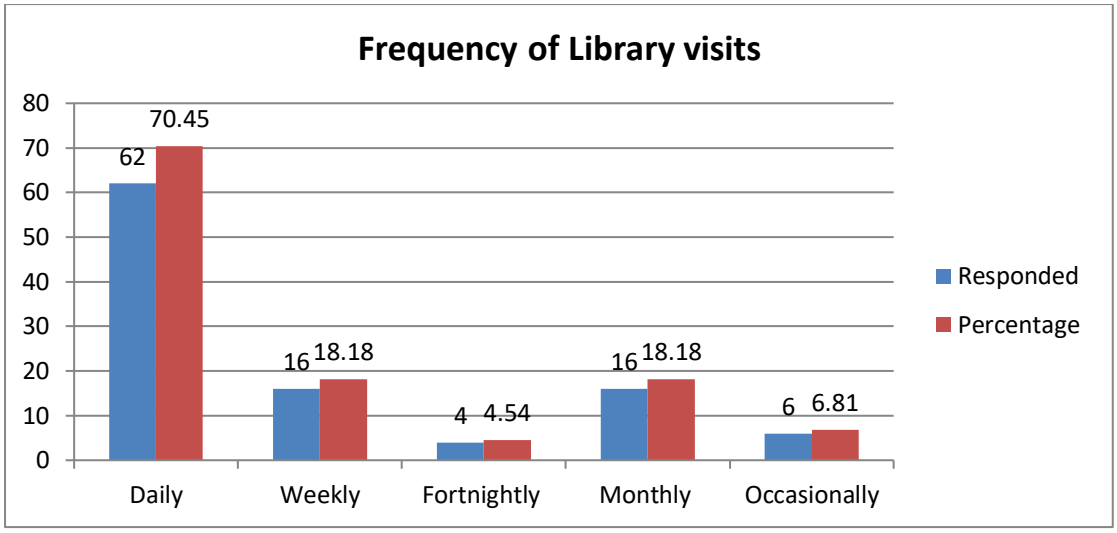


Figure 5.2.2: Frequency of Library visits

Table and figure 5.2.2 shows that frequency of visits library. It is observed from table that majority of (70.45%) respondents were visits library daily, followed by (18.18%) respondent were visits library weekly, while (6.81%) respondent mentioned that they visit the library occasionally and (4.54%) respondents are visit library to fortnightly.

Table 5.2.3 Media Preferences by Research Scholars

S.N.	Media	Print media	Digital media	Web-based media	TV	Social media	Total
1	Which media use most	56 (27.5)	50 (24.50)	58 (28.43)	10 (4.90)	30 (14.70)	204
2	Which media fulfill required information	48 (30.96)	26 (16.77)	60 (38.70)	9 (5.80)	12 (7.75)	155
3	Media use for massages	18 (12.67)	20 (14.08)	40 (28.16)	16 (11.26)	48 (33.80)	142
4	Which media impacts on academic work	46 (26.74)	40 (23.25)	50 (28.73)	6 (3.44)	30 (17.24)	172

Notes: Multiple answers permitted

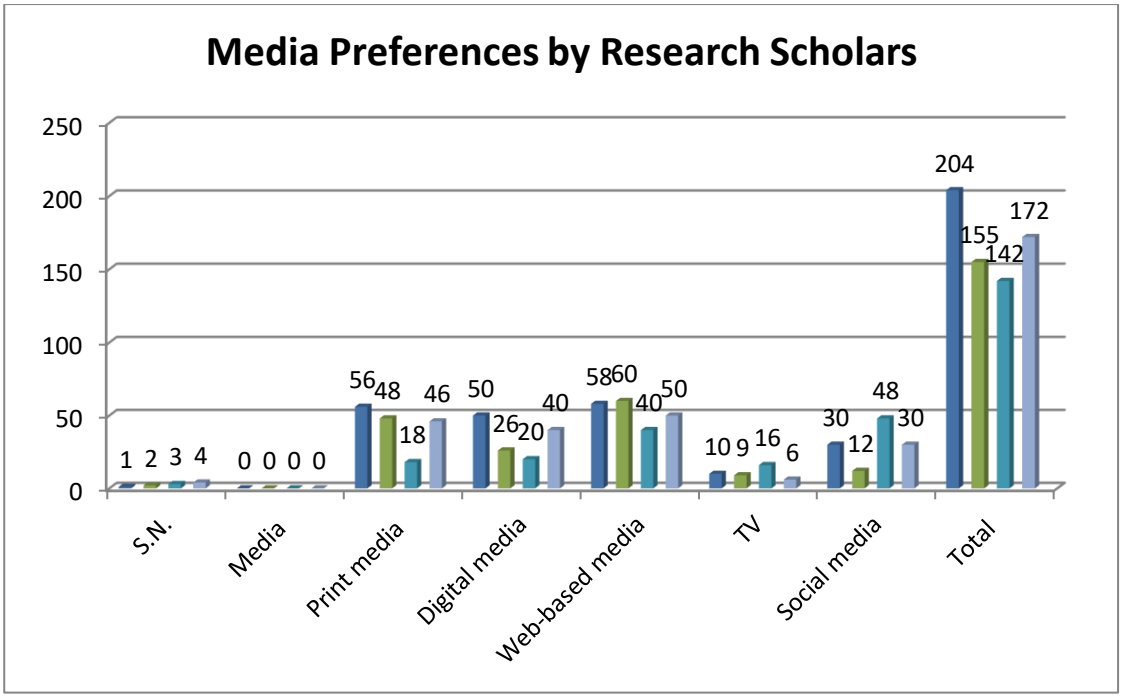


Figure 5.2.3 Media Preferences by Research Scholars

Table and figure 5.2.3 shows that media Preferences by research scholars. It is clear from table that majority of (28.43%) respondents were used web-based media, followed by (27.5%) respondents were use print media, while (24.50%) respondents were use digital media, followed by (14.70%) respondents were used social media, while only (4.90%) respondents were use TV, media for access the required information, it is clear from table majority of (38.70%) respondents were replied that web-based media fill required information, while (5.80%) respondents were satisfied with TV, followed by majority of (38.80%) respondents were communicate through SNS, and only (11.26%) respondents were use TV. Media impact on academic work table shows that majority of (28.73%) respondents were opinion that web-based media impact on his academic work, followed by (26.74%) respondents were opinion that print media impact on his academic work, and only (3.44%) %) respondents were opinion that TV media impact on his academic work.

Table 5.2.4 Places of access Web-based Library Resources and Services

S. N.	Place	Total	Percentage
1	Deportment	78	18.61
2	Campus	88	21.00
3	At home	50	11.93
4	In cyber library	65	15.51
6	In cyber cafe	60	14.31
7	In hostel	78	18.61
8	Any other	00	00
	Total	**419**	

Notes: Multiple answers permitted

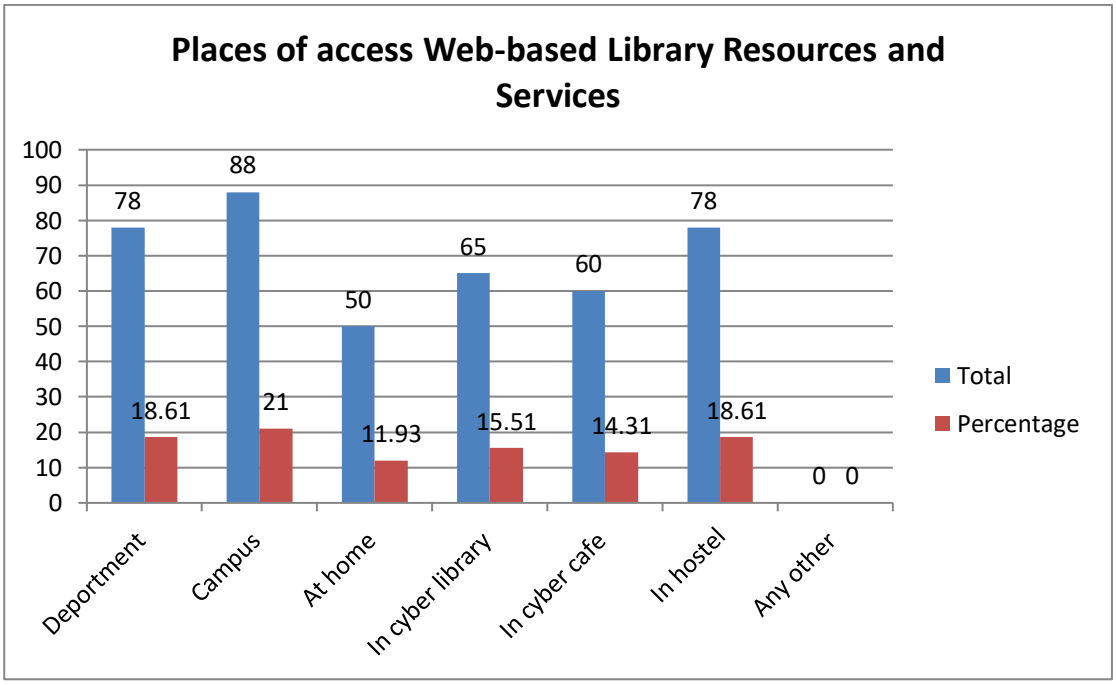


Figure 5.2.4 Places of access Web-based Library Resources and Services

Table and figure 5.2.4 shows that places of access web-based library resources and services, it is clear from table that majority of (21.00%) respondents were access in campus, followed by (18.61%) respondents were accessed in their deportment, same as (18.61%) respondents were accessed in their hostel, while (15.51%) respondents were

accessed in cyber library, and (14.31%) respondents were accessed in cyber café, and followed by (11.93%) respondents were accessed at their home.

Table 5.2.5 Library offers Web-based Library Resources

S.N.	Resources	Use		Highly	Satisfy	Neutral	Dissatisfy	Highly dissatisfy
		Yes	No					
1	Emerald insight	78 (88.63)	10 (11.36)	14 (17.96)	50 (64.10)	8 (10.25)	6 (7.69)	00
2	Elsevier	80 (90.90)	8 (9.09)	18 (18.5)	46 (57.5)	10 (12.5)	6 (7.5)	00
3	JSTOR	76 (86.36)	12 (13.63)	10 (13.15)	44 (57.89)	14 (18.42)	8 (10.52)	00
4	Springer	64 (72.72)	24 (27.27)	4 (6.25)	48 (75)	4 (6.25)	8 (12.50)	00
5	Any others	70 (79.54)	10 (11.36)	14 (24.28)	50 (71.42)	00	6 (8.57)	00

Notes: Multiple answers permitted

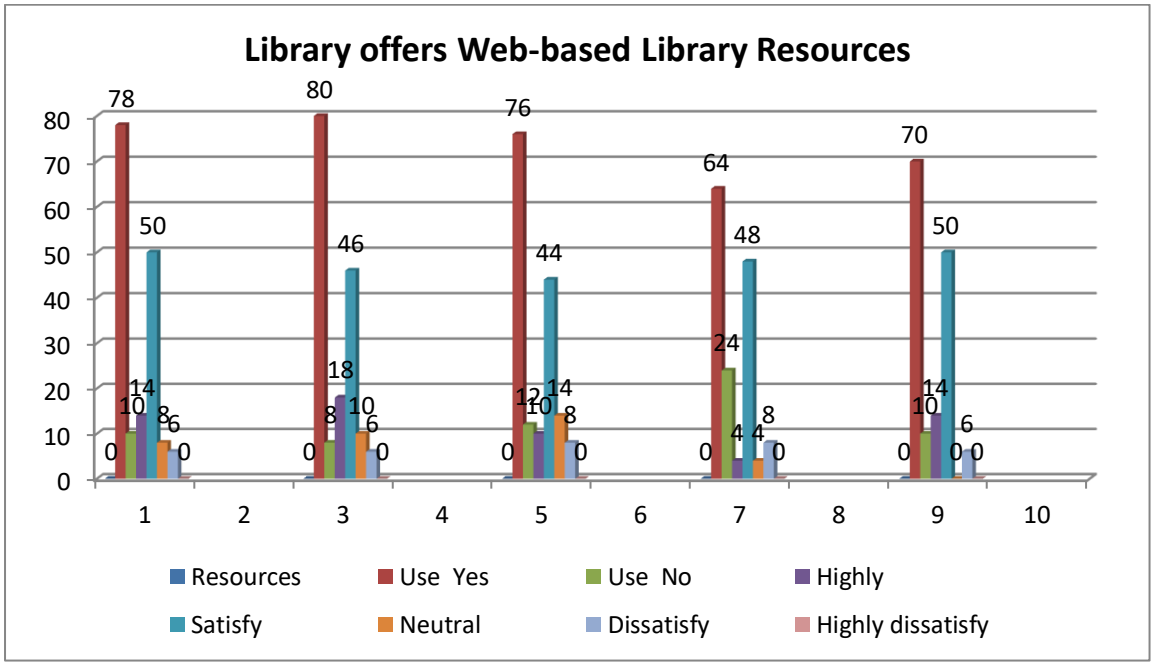


Figure 5.2.5 Library offers Web-based Library Resources

Table and figure 5.2.5 shows that use and satisfaction level on various web-based library resources among research scholars. It is observed from table that majority of (90.90%) respondents were use Elsevier and only (9.09%) respondents do not use, whereas (57.5%) respondents were satisfied with this resource, while (18.5%) respondents were highly satisfied, (12.5%) respondents were neutral, and (7.55%) respondents were dissatisfied, followed by (88.63%) respondents were use Emerald insight resource, and (11.36%) respondents do not use, whereas (64.10%) respondents were satisfied, followed by (17.96%) respondents were highly satisfied, (10.25%) respondents were neutral with resource, and (7.69%) respondents were dissatisfied. Followed by (86.36%) respondents were use JSTOR and (13.63%) respondents do not use, whereas (57.89%) respondents were satisfied, while (18.42%) respondents were neutral, (13.15%) respondents were highly satisfied and (10.52%) respondents were dissatisfied. Followed by (72.72%) respondents were use Springer, while (27.27%) respondents do not use, whereas (75%) respondents were satisfied, (12.50%) respondents were dissatisfied, while (6.25%) respondents were highly satisfied, and (79.54%) respondents were use to others web resources like Google scholar, ProQuest, EBSCO, whereas (71.42%) respondents were satisfied with this resources, while (8.57%) respondents were dissatisfied.

Table 5.2.6 Tools used to access Web-based Library Resources

S.N	Tools	No. of Responses	Percentage
1	Types of web address directly	30	9.61
2	Use of search engine	54	17.30
3	By URL	50	16.03
4	By keyword	62	19.88
5	By author name	32	10.25
6	By article name	40	12.83
7	Web OPAC	44	14.10
8	Any other	00	00
Total		**312**	

Notes: Multiple answers permitted

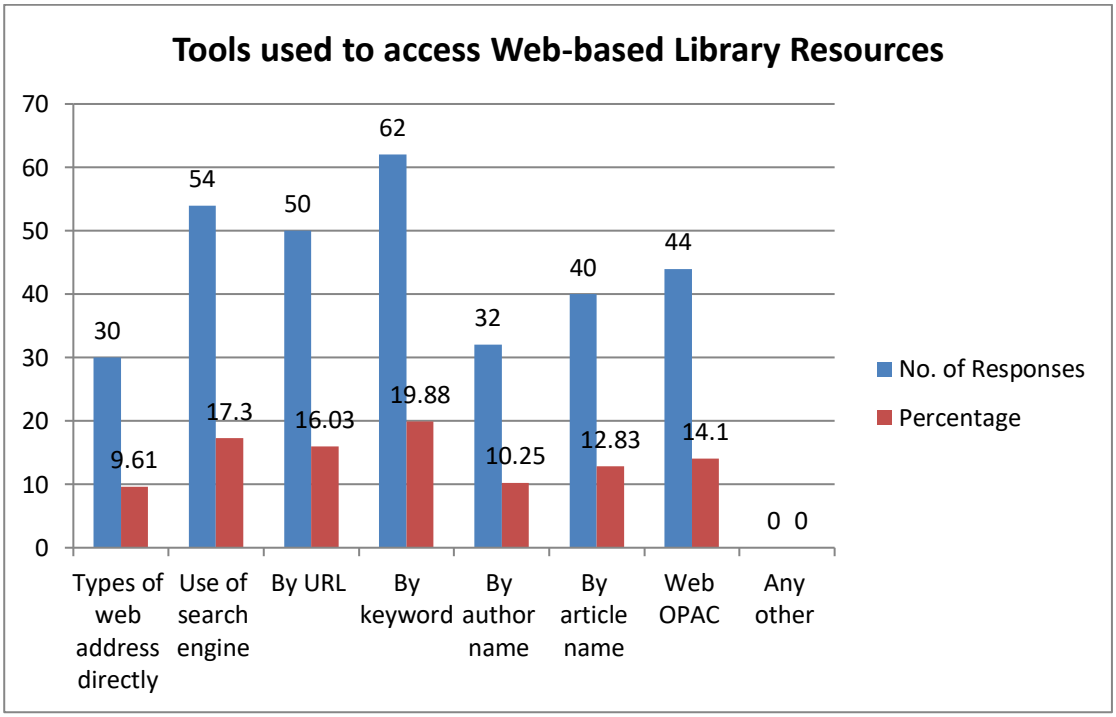


Figure 5.2.6 Tools used to access Web-based Library Resources

Table and figure 5.2.6 Illustrated the different tools were used by research scholars to access web-based resources. It is noticed from the table that majority of (19.88%)

respondents were search by keyword to access information, followed by (17.30) respondents were used search engine to access resources, followed by (16.03%) respondents were search by URL, followed by (14.10%) respondents were accessed through Web OPAC to required information. While (12.83%) respondents were accessed web-based resources through article name, and (10.25%) respondents were accessed web based resources through author name.

Table 5.2.7 Usefulness of Web-based Library Resources

S.N.	Useful	Response	Percentage
1	Save time and money	70	18.52
2	Easy access and faster service	62	16.40
3	Interaction with library staff	4	1.05
4	24×7 availability of services	52	13.75
5	It allow self service	32	8.46
6	Easy downloading	42	11.11
7	Quick in searching	58	15.34
8	Accessibility from anywhere	50	13.22
9	Simultaneous access by many at a time	8	2.11
10	Any other	00	00
Total		**378**	

Notes: multiple answers permitted

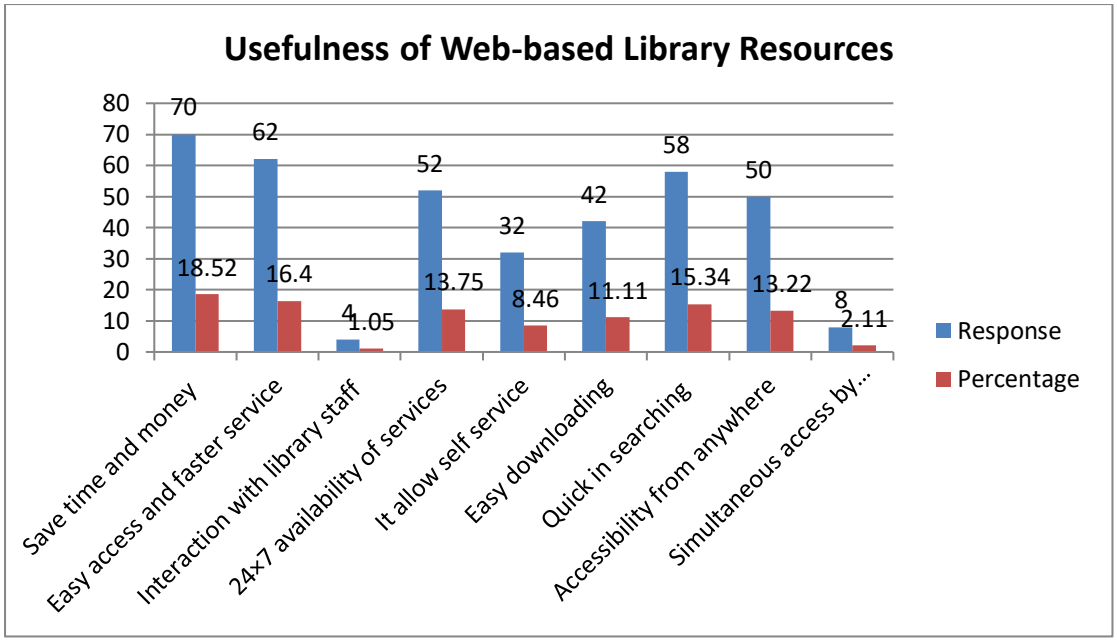


Figure 5.2.7 Usefulness of Web-based Library Resources

Table and figure 5.2.7 expounded the usefulness of web-based library resources and services, it is clear from table that majority of (18.52%) respondents were indicated that web-based library resources and services useful to save time and money, While (16.40%) respondent's opinions that it is easy access and faster services, followed by (15.34%) respondents agree with web-based library resources and services it is facilitated to quick searching, while (13.75%) respondents indicated that it was availability 24×7 hours services, followed by (13.22%) respondents were indicate that it is Accessibility from anywhere, and (11.11%) indicated that it is Easy to downloading, while only (1.05%) respondents opinion were it is helpful for Interaction with library staff.

Table 5.2.8 Access of various Web-based Library Resources

S. N	Resources	Access		Highly satisfy	Satisfy	Neutral	Dissatisfy	Highly dissatisfy
		Yes	No					
1	E- books	72 (81.82)	16 (18.18)	8 (11.11)	50 (69.44)	8 (11.11)	6 (8.33)	00
2	E-journals	80 (90.90)	8 (9.09)	22 (30.55)	48 (60)	4 (5)	6 (7.5)	00
3	E-thesis/dissertation	76 (86.36)	12 (13.63)	16 (21.05)	50 (65.75)	4 (5.26)	6(7.89)	00
4	Open access journals databases	74 (84.09)	14 (15.90)	20 (27.02)	48 (64.86)	6 (8.10)	00	00
5	Intuitional repository gateway	50 (56.81)	38 (43.18)	6 (12)	34 (68)	10 (20)	00	00
6	E databases	56 (63.63)	32 (36.36)	10 (17.85)	38 (67.85)	8 (14.28)	00	00
7	E- news clipping	46 (52.27)	42 (47.72)	4 (8.69)	18 (39.13)	24 (52.17)	00	00
8	CD-ROM	32 (36.36)	56 (63.63)	2 (6.25)	18 (56.25)	12 (37.5)	00	00
9	E-patents /standards	24 (27.27)	64 (72.72)	2 (8.33)	6 (25)	16 (66.66)	00	00

Notes: Multiple answers were permitted

The following table 5.2.8 shows that use of various web-based library resources, It is clear from the table majority of (90.9%) respondents were used E-journals, while (9.09%) respondents do not used, whereas (60%) respondents were satisfied, while (30.55%) respondents were highly satisfied, followed by (7.5%) respondents were dissatisfied. Followed by (81.82%) respondents were used their library E- books, and (18.18%) respondents do not used, whereas (69.44%) respondents satisfied, while (11.11%) respondents were highly satisfied, same as (11.11%) respondents were neutral, and (8.33%) respondents were dissatisfied. Followed by (86.36%)

respondents were use library E thesis/dissertation, while (13.63%) respondents do not use, followed by (65.75%) respondents were satisfied, (21.05%) respondents were highly satisfied, and only (5.26%) respondents were neutral. Followed by (84.09%) respondents were used library Open access journals databases, and (15.90%) respondents do not use, whereas (64.86%) respondents were satisfied, while (27.02%) respondents were highly satisfied, and only (8.10%) respondents were neutral. Followed by (56.81%) respondents were use Intuitional repository gateway, and (43.18%) respondents do not use, whereas (68%) respondents were satisfied, (20%) respondents were neutral, and (12%) respondents were highly satisfied. followed by (63.63%) respondents were used library E databases, and (36.36%) respondents do not use, whereas (67.85%) respondents were satisfied, (17.85%) respondents were highly satisfied, while (14.28%) respondents were neutral. Followed by (52.27%) respondents were used E- news clipping, and (47.72%) respondents do not use, whereas (52.17%) respondents were neutral with E- news clipping, and (39.13%) respondents were satisfied, while only (8.69%) respondents were highly satisfied. Followed by majority of (63.63%) respondents do not use CD-ROM resources, while only (36.36%) respondents were used this facilities, whereas (56.25%) respondents were satisfied, and (37.5%) respondents were neutral. Followed by (72.72%) respondents do not use E-patents /standards, while only (27.27%) respondents were use this, whereas (66.66%) respondents were neutral with this facilities, and (25%) respondents were satisfied.

Table 5.2.9 Accessibility of full text Online Database

S. N	Open access resources	Access		Highly satisfy	Satisfy	Neutral	Dissatisfy	Highly dissatisfy
		Yes	No					
1	Cambridge university press	24 (27.27)	64 (72.72)	4 (16.66)	6 (25)	12 (50)	2 (8.24)	00
2	Economics & political weekly	32 (36.36)	56 (63.63)	10 (20)	8 (25)	12 (37.5)	2 (6.25)	00
3	Emerald	76 (76.36)	12 (13.63)	24 (31.57)	40 (52.63)	4 (5.26)	8 (10.52)	00
4	JSTOR	58 (65.90)	30 (34.09)	6 (10.34)	42 (72.41)	4 (6.89)	6 (10.34)	00
5	Science direct	64 (72.72)	24 (27.27)	12 (18.75)	44 (68.75)	6 (9.37)	2 (3.12)	00
6	Projects mouse	34 (38.63)	54 (61.36)	6 (17.64)	18 (52.94)	6 (17.64)	4 (11.76)	00
7	Springer link	46 (52.27)	42 (47.72)	10 (21.73)	30 (65.21)	4 (8.69)	2 (4.34)	00
8	Taylor & Francis	62 (61.36)	26 (29.54)	8 (12.90)	48 (77.41)	2 (3.22)	4 (6.45)	00
	Any other	00	00	00	00	00	00	00

Notes: multiple answers permitted

Table 5.2.9 shows the status of use and satisfaction level of Online database access, it is observed from table that majority of (76.36%) respondents were used Emerald, and (13.63%) respondents do not use, whereas (72.41%) respondents were satisfied, while (31.57%) respondents were highly satisfied, and (10.52%) respondents were dissatisfied. Followed by (65.90%) respondents were used JSTOR, and (34.09%) respondents do not use, whereas (72.41%) respondents were satisfied, while (10.34%) respondents were highly satisfied, same as (10.34%) respondents were dissatisfied. followed by (72.72%) respondents were use Science direct, while (27.27%) respondents do not use, whereas (68.75%) respondents were satisfied, (18.75%) respondents were highly satisfied, while (9.37%) respondents were neutral, and

(3.12%) respondents were dissatisfied. Followed by (61.36%) respondents were used Projects mouse, and (38.63%) respondents do not use, whereas (52.94%) respondents were satisfied, (17.64%) respondents were highly satisfied, same as (17.64%) respondents were neutral, and (11.76%) respondents were dissatisfied. Followed by (52.27%) respondents were use Springer, and (47.72%) respondents do not use, whereas (65.21%) respondents were satisfied, while (21.73%) respondents were highly satisfied, and (4.34%) respondents were dissatisfied. Followed by 62(61.36%) respondents were used Taylor & Francis, while (29.54%) respondents do not use, whereas (77.41%) respondents were satisfied, (12.90%) respondents were highly satisfied, while (6.45%) respondents were dissatisfied.

Table 5.2.10 Problems faced to access Web-based Resources

S.N.	Reason	Total	Percentage
1	Lack of aware online database	14	15.55
2	Don't know actual source	10	11.11
3	No interest	14	15.55
4	Preference of print media	10	11.11
5	Lack of ICT infrastructure	16	17.77
6	Slow internet speed	6	6.66
7	Lack of knowledge & training	6	6.66
8	Unable to find relevant information	2	2.22
9	Insufficient resources in their subject area	12	13.33
	Any other please specify	00	00
	Total	**90**	**100**

Notes: Multiple answers permitted

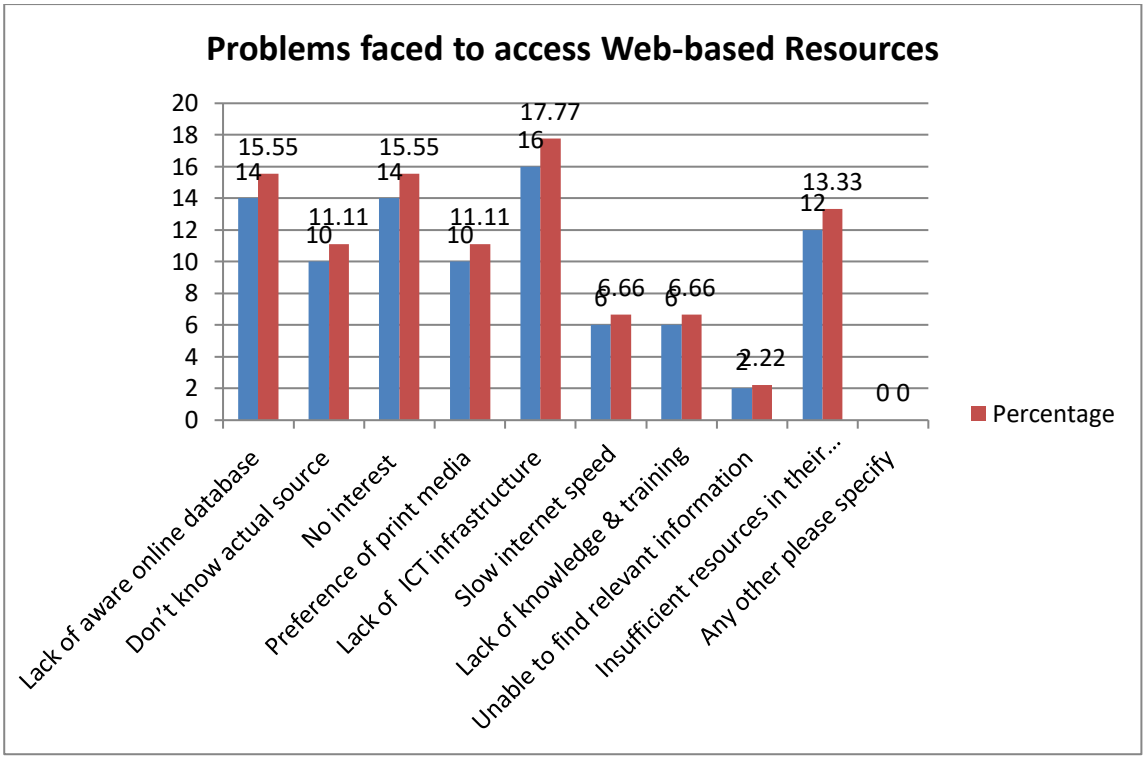


Figure 5.2.10 Problems faced to access Web-based Resources

Table and figure 5.2.10 Indicate that problem faced by research scholars in accessing web-based library resources. It is clear from table that majority of (17.77%) respondents were faced problem due to lack of ICT infrastructure, while (15.55%) respondents were faced problem due to lack of awareness about online database, same as (15.55%) respondents were lack of interest. While (11.11%) respondents are not use because they don't know actual source. same as (11.11%) respondents do not use because they preferred only print media, followed by (6.66%) respondents were do not use due to Slow internet speed, same as (6.66%) respondents were faced problem due to Lack of knowledge & training.

Table 5.2.11 Access and satisfaction with Open Access Resources

S. N	Open access resources	Access		Highly satisfy	Satisfy	Neutral	Dissatisfy	Highly dissatisfy
		Yes	No					
1	DOAJ	74 (84.09)	14 (15.90)	16 (21.62)	44 (59.45)	14 (18.91)	00	00
2	Open DOAR	60 (68.18)	28 (31.81)	8 (13.33)	38 (63.33)	14 (23.33)	00	00
3	OAJSE	38 (43.18)	50 (56.81)	00	22 (57..89)	16 (42.10)	00	00
4	LII of India	30 (34.09)	58 (65.90)	00	16 (53.33)	14 (46.66)	00	00
5	DOAB	36 (40.90)	52 (59.09)	00	22 (61.11)	14 (38.88)	00	00
6	Shodhganga	86 (97.73)	2 (2.27)	28 (32.56)	54 (62.79)	4 (4.65)	00	00
7	Shodhgangotri	60 (68.18)	28 (31.81)	10 (16.66)	46 (76.66)	4 (10)	00	00
8	Vidyamitra	46 (52.27)	42 (47.72)	12 (69.56)	32 (69.56)	2 (4.34)	00	00
9	E-pg Pathshala	62 (70.45)	26 (29.54)	14 (22.58)	46 (74.19)	2 (3.22)	00	00

Notes: Multiple answers permitted

Table 5.2.11 shows that access and satisfaction level of various open access resources. It is observed from table that majority of (97.73%) respondents were used Shodhganga, whereas (62.79%) respondents were satisfied, while (32.56%) highly satisfied, and only (4.65%) respondents were neutral. Followed by (84.09%) respondents were accessed DOAJ, while (15.90%) respondents were do not used, whereas (59.45%) respondents were satisfied, (21.62%) respondents were highly satisfied, and (18.91%) respondents were neutral. Followed by (68.18%) respondents were use Open DOAR, and (31.81%) respondents do not used, whereas (63.33%)

respondents were satisfied, (23.33%) respondents were neutral, and (13.33%) respondents were highly satisfied. followed by majority of (56.81%) respondents do not use OAJSE, while only (43.18%) respondents were used, whereas (57..89%) respondents were satisfied, and (42.10%) respondents were neutral. Followed by (68.18%) respondents were used Shodhgangotri, and (31.81%) respondents do not use, whereas (76.66%) respondents were satisfied, (16.66%) respondents were highly satisfied, and (10%) respondents were neutral. Followed by (70.45%) respondents were used E-pg Pathshala, and (29.54%) respondents do not use, whereas 74.19%) respondents were satisfied, (22.58%) respondents were highly satisfied, and (3.22%) respondents are neutral. Followed by (52.27%) respondents were used Vidyamitra and (47.72%) respondents do not used, whereas (69.56%) respondents were satisfied, while (69.56%) respondents were neutral, and (4.34%) respondents were dissatisfied. Followed by majority of (59.09%) do not use DOAB, and (40.90%) respondents were use this facilities, whereas (61.11%) respondents were satisfied, and (38.88) respondents were neutral. Followed by (65.90%) respondents do not use LII, while (34.09%) respondents were used this facilities, and (53.33%) respondents were satisfied, (46.66%) respondents were neutral.

Table 5.2.12 Problems faced to accessing of various Open Access Resources

S.N	Problems	No. Of user	No. of %
1	Access only subscribes resources	50	25
2	Unreliable information	40	20
3	Insufficient information	30	15
4	Access only print resources	40	20
5	Any other	40	20
	Total	160	100

Notes: Multiple answers permitted

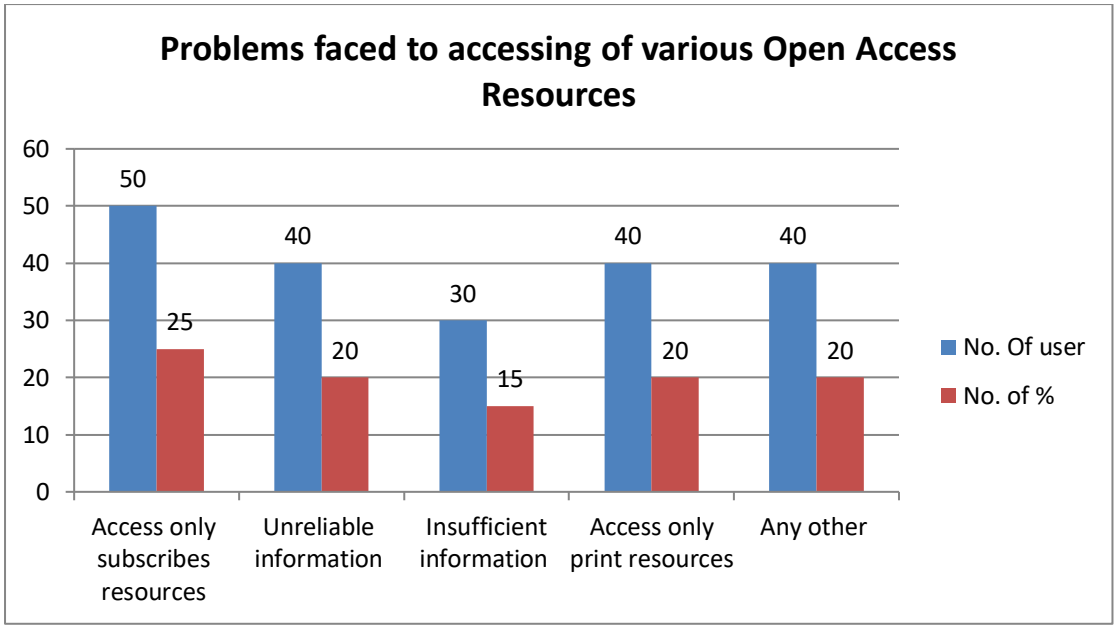


Figure 5.2.12 Problems faced to accessing of various Open Access Resources

It is clear from Table and figure 5.2.12 that majority of (25%) respondents were Accessed only subscribes resources, while (20%) respondents were unable to access authentic information, Same as (20%) respondents were access only prints resources. Followed by (18.75%) respondents were faced due to irrelevant information. And (20%) respondents were facing problem due to other issue like lack of promotion, lack of up-to-Date and lack of training/ orientation programmed.

Table 5.2.13 Purpose of using Web-based Library Resources

S. N	Purpose	Use		Highly satisfy	Satisfy	Neutral	Dissatisfy	Highly dissatisfy
		Yes	No					
1	For research work	80 (90.90)	8 (9.09)	30 (30.5)	48 (60)	2 (2.5)	00	00
2	For writing article/books/projects	80 (90.90)	8 (9.09)	20 (25)	56 (70)	4 (5)	00	00
3	For up-to-date	76 (86.36)	12 (13.63)	16 (21.05)	52 (68.42)	6 (7.89)	2 (2.63)	00

4	For assignment	54 (61.36)	34 (38.63)	2 (3.70)	42 (77.77)	10 (18.51)	00	00
5	For lecture	39 (44.31)	49 (55.68)	1 (2.56)	26 (66.66)	12 (30.76)	00	00
6	Any other	00	00	00	00	00	00	00

Notes: multiple answers permitted

Table 5.2.13 shows that purpose of using Web-based library resources by research scholar. it is observed from table that majority of (90.90%) respondents were used for research work, whereas (60%) respondents were satisfied, while (30.5%) respondents are highly satisfied, and only (2.5%) respondents were neutral, followed by (90.90%) respondents were used for writing article/books/projects, whereas (70%) respondents were satisfied, (25%) respondents were highly satisfied, and (5%) respondents were dissatisfied. Followed by (86.36%) respondents were used for keep up-to-date, whereas (68.42%) respondents were satisfied, while (21.05%) respondents were highly satisfied, and (7.89%) respondents were neutral. Followed by (61.36%) respondents were use assignment purpose, whereas (77.77%) respondents were satisfied, (18.51%) respondents were neutral, while (3.70%) respondents were highly satisfied, and (44.31%) respondents were use web based resources for lecture purpose, whereas (66.66%) respondents were satisfied, (30.76%) respondents were neutral, and (2.56%) respondents were highly satisfied.

Table 5.2.14 Rate of Satisfaction with Web-based Library Resources

S.N.	Level	Yes	Percentage
1	Highly satisfy	6	6.81)
2	Satisfy	64	72.72
3	Neutral	14	15.90
4	Dissatisfy	4	4.54
5	Highly dissatisfy	00	00
	Total	**88**	

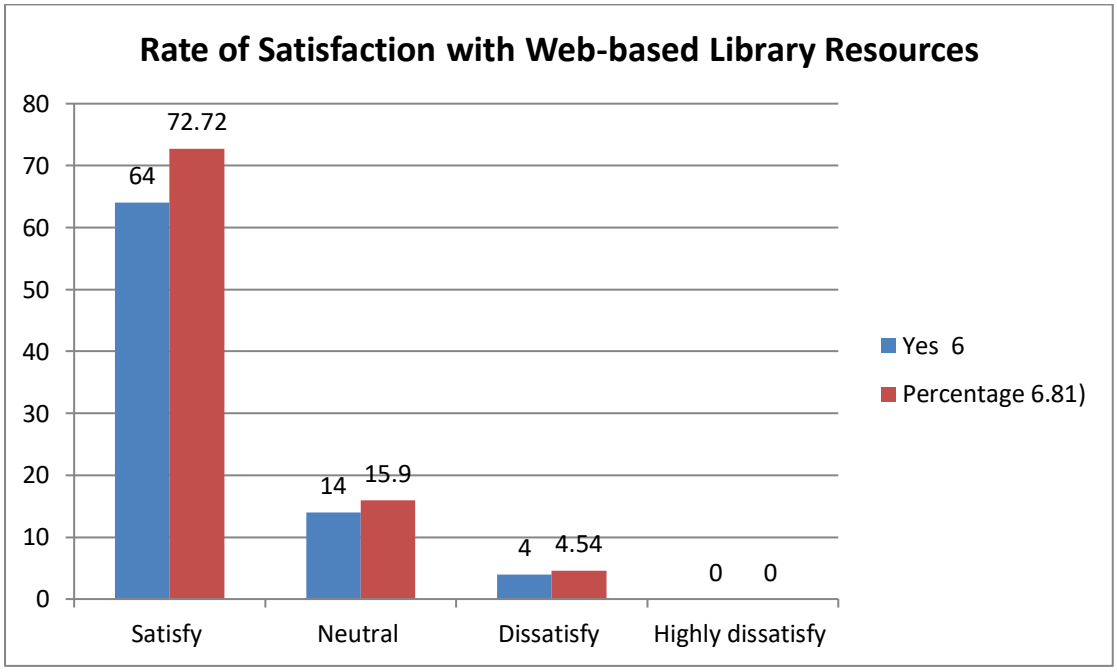


Figure 5.2.14 Rate of Satisfaction with Web-based Library Resources

It was observed from table and figure 5.2.14 that majority of (72.72%) respondents were satisfied with web-based library resources, followed by (15.90%) respondents were neutral with web-based library resources, followed by (6.81%) respondents were highly satisfied with web- based library resources and (4.54%) respondents were dissatisfied.

Table 5.2.15 Reasons of not satisfied with Web-based Library Resources

S.N.	Reasons	Yes	Percentage
1	Less opening time	00	00
2	Charge to access e-resources	20	40
3	Lack of proper guidance	12	24
4	Lack of printing facilities	6	12
5	In sufficient e resources	10	20
6	Technical problems	2	4
7	Lack of probabilities	00	00
8	Failure of hardware and software	00	00
	Total	**50**	**100**

Notes: Multiple answers permitted

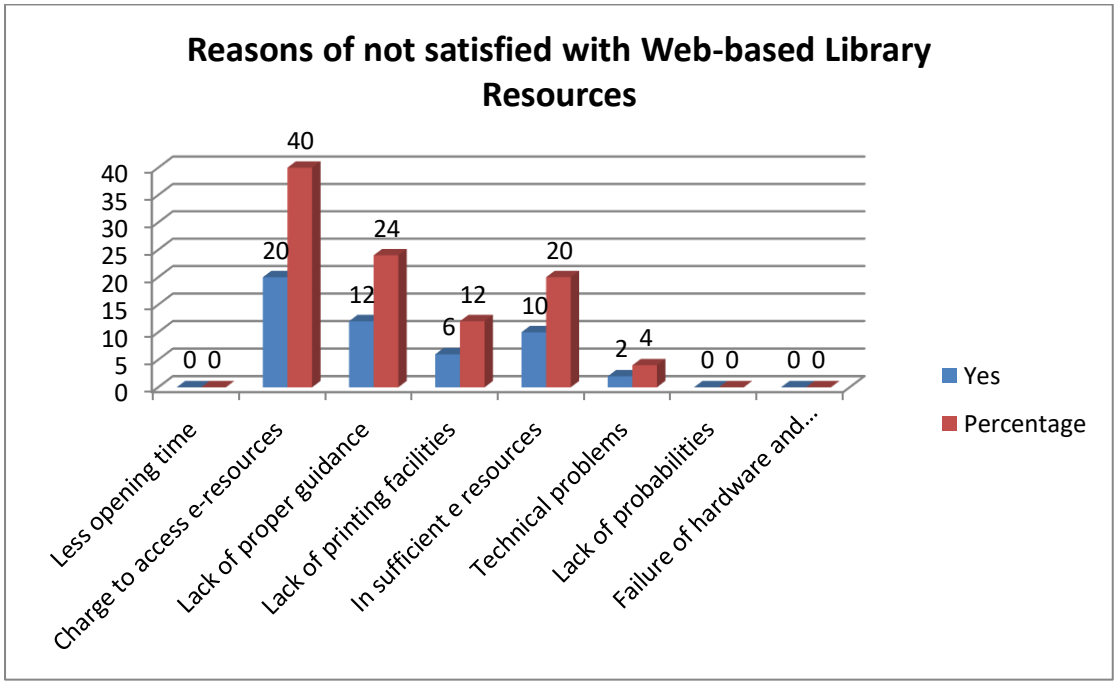


Figure 5.2.15 Reasons of not satisfied with Web-based Library Resources

Table and figure 5.2.15 shows the reasons that not access Web-based resources, it is clear from table that majority of (40%) respondents were not satisfied due to high

cast, while (24%) researchers were faced problems due to lack of proper guidance, followed by (12%) researchers not satisfied due to Lack of printing facilities, and (4%) researchers faced Technical problems.

Table 5.2.16: Search Techniques used to Accessing Web-based Library Resources

S. N	Techniques	Search		Highly satisfy	Satisfy	Neutral	Dissatisfy	Highly dissatisfy
		Yes	No					
1	Boolean operator	70 (79.55)	18 (20.45)	16 (22.85)	46 (64.28)	6 (8.57)	2 (2.85)	00
2	Truncation	54 (61.36)	34 (38.63)	4 (7.40)	30 (55.55)	12 (22.22)	2 (3.70)	00
3	Proximity location	44 (50)	44 (50)	2 (4.54)	24 (54.54)	16 (36.36)	2 (4.54)	00
4	Field specific	66 (75)	22 (25)	2 (3.03)	48 (72.72)	14 (21.21)	2 (3.03)	00
	Controlled vocabulary or subject	36 (40.91)	52 (59.09)	00	30 (83.33)	4 (11.11)	2 (5.55)	00
	Keyword	66 (75)	22 (25)	4 (6.06)	54 (81.81)	8 (12.12)	00	00
	Any other	00	00	00	00	00	00	00

Notes: Multiple answers permitted

Table 5.3.16 shows that Search Techniques used to Accessing Web-based Library Resources. It is clear from table that majority of (79.55%) respondents were used Boolean operator to access web based library resources, whereas (64.28%) respondents were satisfied, while (22.85%) respondents were highly satisfied, followed by (8.57%) respondents were neutral and (2.85%) respondents were dissatisfied. Followed by (61.36%) respondents were used Truncation technique, whereas (55.55%) respondents were satisfied, while (22.22%) respondents were

neutral, followed by (7.40%) respondents were highly satisfied, and only (3.70%) respondents dissatisfied. Followed by (50%) respondents were used proximity location techniques, same as (50%) respondents do not used, whereas (54.54%) respondents were satisfied, (36.36%) respondents were neutral, and only (4.54%) respondents were highly satisfied. Followed by (75%) respondents ware used Field specific technique, followed by (25%) respondents do not use this technique, whereas (72.72%) respondents were satisfied, and (21.21%) respondents were neutral while (3.03%) respondents were highly satisfied. Followed by (40.91%) respondents were used Controlled vocabulary or subject to access web based services, and (59.09%) respondents were not used, whereas (83.33%) respondents are satisfied, while (11.11%) respondents were neutral, and (5.55%) respondents were dissatisfied, While (75%) respondents were use Keyword technique to access web based service, and (25%) respondents were not used, whereas (81.81%) respondents were satisfied with this technique, followed by (12.12%) respondents were dissatisfied and (6.06%) were highly satisfied

Section 3 Web-based Library Services

Table 5.3.1 Web-based Acquisition Services

S. N	Acquisition Service	Use		Highly satisfy	Satisfy	Neutral	Dissa tisfy	Highly dissatisfy
		Yes	No					
1	List of new arrival materials	68 (77.27)	20 (22.72)	4 (5.88)	48 (70.59)	10 (14.70)	6 (8.82)	00
2	Alert services for new arrivals	42 (27.27)	46 (52.27)	00	28 (66.66)	8 (19.04)	6 (14.28)	00
3	Request for document	50 (56.82)	38 (43.18)	4 (8)	28 (56)	16 (32)	2 (4)	00

Notes: Multiple answers permitted

Table 5.3.1 shows that web-based acquisition service, it is clear from table that majority of (77.27%) respondents were used List of new arrival materials services, whereas (70.59%) respondents were satisfied, while only (5.88%) respondents were highly satisfied. Followed by only (27.27%) respondents were used alert service, whereas (66.66%) respondents were satisfied, and (19.04%) respondents were neutral, and (19.04%) were dissatisfied. Followed by (56.82%) respondents were used request for document service, while (43.18%) respondents were not used, followed by (56%) respondents were satisfied, while (32%) were neutral with this service, (4%) respondents were dissatisfied, and (8%) respondents were highly satisfied with Request for document service.

Table 5.3.2: Web-based Cataloguing Services

S. N	Cataloguing section	Use		Highly satisfy	Satisfy	Neutral	Dissatisfy	Highly dissatisfy
		Yes	No					
1	Access to web OPAC	76 (86.36)	12 (13.64)	14 (18.42)	56 (73.68)	4 (5.26)	2(2.63)	00
2	Access to Union catalogue	36 (32.36)	52 (59.09)	00	30 (39.47)	4 (5.26)	2 (2.63)	00
3	Access to subscribed e journal through consortium	66 (75)	22 (25)	10 (15.15)	46 (69.69)	6 (9.09)	4 (6.06)	00
4	Access to subscribed e journal	66 (75)	22 (25)	4 (6.06)	56 (85)	4 (6.06)	2 (3.03)	00
5	Access to electronic indexes	48 (54.55)	40 (45.45)	00	34 (71)	12 (25)	2 (4.16)	00
6	Download multimedia files	52 (59.09)	36 (41)	6 (11.53)	34 (65.38)	10 (19.23)	2 (4)	00
	Any other	00	00	00	00	00	00	00

Table no. 5.3.2 shows that web-based cataloguing service in library. It is observed from table that majority of (86.36%) respondents were used Web OPAC service and (13.64%) respondents do not used, whereas (73.68%) respondents were satisfied, while (18.42%) respondents were highly satisfied. Followed by majority of (59.09%) respondents do not used union catalogue service and (32.36%) respondents were used, whereas (39.47%) respondents were satisfied, while (2.63%) respondents were dissatisfied. Followed by majority of (75%) respondents were used access to subscribed e journal through consortium facilities, and (25%) respondents were not used, whereas majority of (69.69%) respondents were satisfied, while (15.15%) respondent were highly satisfied, and (6.06%) respondents were dissatisfied. Followed by (75%) respondents were Access subscribed e journal, whereas (85%) respondents were satisfied, while (6.06%) respondents were highly satisfied, and (3.03%) respondents were dissatisfied. Followed by (54.55%) respondents were use electronic index service, whereas (71%) respondents are satisfied, and (4.16%) respondents were dissatisfied. And (59.09%) respondents were Download multimedia files, while (41%) respondents do not use. Whereas (65.38%) respondents were satisfied with this service, and (11.53%) respondents were highly satisfied.

Table 5.3.3 Web-based Circulation Services

S. N	Circulation Service	Use		Highly satisfy	Satisfy	Neutral	Dissatisfy	Highly dissatisfy
		Yes	No					
1	User accounts	56 (63.64)	32 (36.36)	6 (10.71)	42 (75)	6 (10.71)	2 (3.57)	00
2	Issue/return services	66 (75)	22 (25)	8 (12.12)	56 (84.84)	00	2 (3.03)	00
3	Reservation of	44	44	2	32	6	4	00

	document	(50)	(50)	(4.54)	(72.73)	(13.64)	(9.09)	
4	Renewal of loaned document	40 (45.45)	48 (54.55)	4 (10)	28 (70)	4 (10)	4 (10)	00
5	Interaction with user for query	46 (52.27)	42 (42.73)	2 (4.35)	32 (69.56)	6 (13.04)	6 (13.04)	00
6	Circulation policy	32 (36.36)	56 (63.64)	6 (18.75)	16 (50)	10 (31.25)	00	00
7	Posting of overdue details of the user	36 (40.90)	52 (59.09)	2 (5.55)	20 (55.55)	10 (27.78)	4 (11.11)	00

Notes: multiple answers permitted

Table 5.3.3 shows that web-based circulation service. It was observed from table that majority of (75%) respondents were used Issue/return services and only (25%) respondents do not used, whereas (84.84%) respondents were satisfied, while (12.12%) respondents were highly satisfied, and only (3.03%) respondents were dissatisfied, followed by (63.64%) respondents have User accounts in library, and (36.36%) respondents do not have User accounts, whereas (75%) respondents were satisfied with user accounts service, (10.71%) respondents were neutral, while (10.71%) respondents were highly satisfied with user accounts service, while only (3.57%) respondents were dissatisfied, Followed by (50%) respondents were used Reservation of document, same as (50%) respondents were not used, Whereas (72.73%) respondents were satisfied with Reservation of document, (13.64%) respondents were neutral, while (16.66%) respondents were dissatisfied, and only (4.54%) respondents were highly satisfied. Followed by (45.45%) respondents were used Renewal of loaned document and (54.55%) respondents were not used, whereas (70%) respondents were satisfied, while (10%) respondents were dissatisfied, and same as (10%) respondents were highly satisfied. Followed by (52.27%) respondents

were used Interaction with user for query service, and (42.73%) respondents were not used, whereas (69.56%) respondents were satisfied, while (13.04%) respondents were neutral, same as (13.04%) respondents were dissatisfied and only (4.35%) respondents were highly satisfied. Followed by majority of (63.64%) respondents were do used Circulation policy service, while (36.36%) respondents were used, whereas (50%) respondents were satisfied, while (31.25%) respondents were neutral, and (18.75%) respondents were highly satisfied. Followed by (59.09%) respondents do not used Posting of overdue details of the user service, and (40.90%) respondents were used, whereas (55.55%) respondents were satisfied with service, followed by (27.78%) respondents were neutral, and (5.55%) users were highly satisfied.

Table 5.3.4: Use of Web-based Library in Reference Services

S. N	Reference section	Use		Highly satisfy	Satisfy	Neutral	Dissatisfy	Highly dissatisfy
		Yes	No					
1	Virtual reference des/ask-a librarian	46 (52.27)	42 (47.72)	4 (8.69)	20 (43.47)	12 (26.08)	10 (21.73)	00
2	Inter-library loan web based services	38 (43.18)	50 (56.81)	4 (10.53)	20 (52.63)	10 (26.31)	4 (10.53)	00
3	Current awareness services	48 (54.54)	40 (45.45)	4 (8.33)	26 (54.16)	10 (20.83)	8 (16.66)	00
4	Selective dissemination of information	46 (52.27)	42 (47.72)	2 (4.34)	22 (47.82)	16 (34.78)	6 (34.78)	00
5	Document delivery service	34 (38.63)	54 (61.36)	2 (5.88)	8 (23.53)	18 (52.94)	6 (17.64)	00
6	Online current awareness bulletin	42 (59.09)	46 (52.27)	00	20 (47.61)	14 (33.33)	8 (19.04)	00
7	Virtual reference services	26 (29.54)	62 (70.45)	00	4 (15.38)	14 (53.84)	8 (30.76)	00

Notes: Multiple answers permitted

Table 5.3.4 shows that Web-based library services in reference section, It was observed from table that majority of (54.54%) respondents were used Current awareness services, and (45.45%) respondents do not used, whereas (54.16%) respondents were satisfied, (20.83%) respondents were neutral, while (16.66%) respondents were dissatisfied, and only (8.33%) respondents were highly satisfied. Followed by (46.27%) respondents were used Virtual reference des/ask-a librarian, and (47.72%) respondents do not used, whereas (43.47%) respondents were satisfied, while (26.08%) respondents were neutral, (21.73%) respondents were dissatisfied, while only (8.69%) respondents were highly satisfied. Followed by (43.18%) respondents were used Inter-library loan web based services, and (56.81%) respondents do not used, whereas (52.63%) respondents were satisfied, while (26.31%) respondents were neutral, (10.53%) respondents were dissatisfied, and only (10.53) respondents were highly satisfied. Followed by (52.27%) respondents were used Selective dissemination of information, and (47.72%) respondents do not used, whereas (47.82%) respondents were satisfied, while (34.78%) respondents were neutral, (13.04%) respondents were dissatisfied, while only (4.34%) respondents were highly satisfied. Followed by (38.63%) respondents were used Document delivery service, and (61.36%) respondents do not used, whereas (29.41%) respondents were satisfied, while (52.94%) respondents were neutral, and only (17.64%) respondents were dissatisfied with Document delivery service. Followed by (59.09%) respondents were used online current awareness bulletin, and (52.27%) respondents do not used, whereas (47.61%) respondents were satisfied, while (33.33%) respondents were neutral, and (19.04%) respondents were dissatisfied. Followed by most of (70.45%) respondents do not used Virtual reference services, while only (29.54%) respondents were used, followed by (53.84%) respondents were neutral, (30.76%) respondents were dissatisfied, and (15.38%) respondents were highly satisfied.

Table 5.3.5: Web-based Periodical Services

S. N	Services	Use		Highly satisfy	Satisfy	Neutral	Dissatisfy	Highly dissatisfy
		Yes	No					
1	Status of recommendation journal	76 (86.36)	12 (13.64)	4 (5.26)	40 (52.63)	24 (31.57)	8 (10.52)	00
2	Article Alert services	68 (72.27)	20 (22.73)	00	36 (52.94)	16 (23.52)	16 (23.52)	00
3	Recommendation for subscribed new journal	64 (72.72)	24 (27.27)	00	32 (50)	20 (31.25)	12 (18.75)	00
4	E article delivery	64 (72.72)	24 (27.27)	00	24 (37.5)	24 (37.5)	16 (25)	00
	Any other	00	00	00	8(100)	00	00	00

Notes: multiple answers permitted

Table 5.3.5 shows that web-based periodical service. It is observed from table majority of (86.36%) respondents were used Status of recommendation journal service, whereas (52.63%) respondents were satisfied, while (31.57%) respondents were neutral, (10.52%) respondents were dissatisfied, and only (5.26%) respondents were highly satisfied. Followed by (72.27%) respondents were used Article Alert services, whereas (52.94%) respondents were satisfied, followed by 923.52%) respondents were neutral, while same as (23.52%) respondents were dissatisfied. Followed by (72.72%) respondents were used Recommendation for subscribed new journal service, whereas (50%) respondents were satisfied, while (31.25%) respondents were neutral and (18.75%) respondents were dissatisfied. Followed by (72.72%) respondents were used E-article delivery services, whereas (37.5%) respondents were satisfied, same as (37.5%) respondents were neutral and (25%) respondents were dissatisfied.

Table 5.3.6: Satisfaction level on Web-based Library Services

S.N.	Level	Responded	Percentage
1	Highly satisfy	14	15.90
2	Satisfy	62	70.45
3	Neutral	10	11.36
4	Dissatisfy	2	2.27
5	Highly dissatisfy	00	00

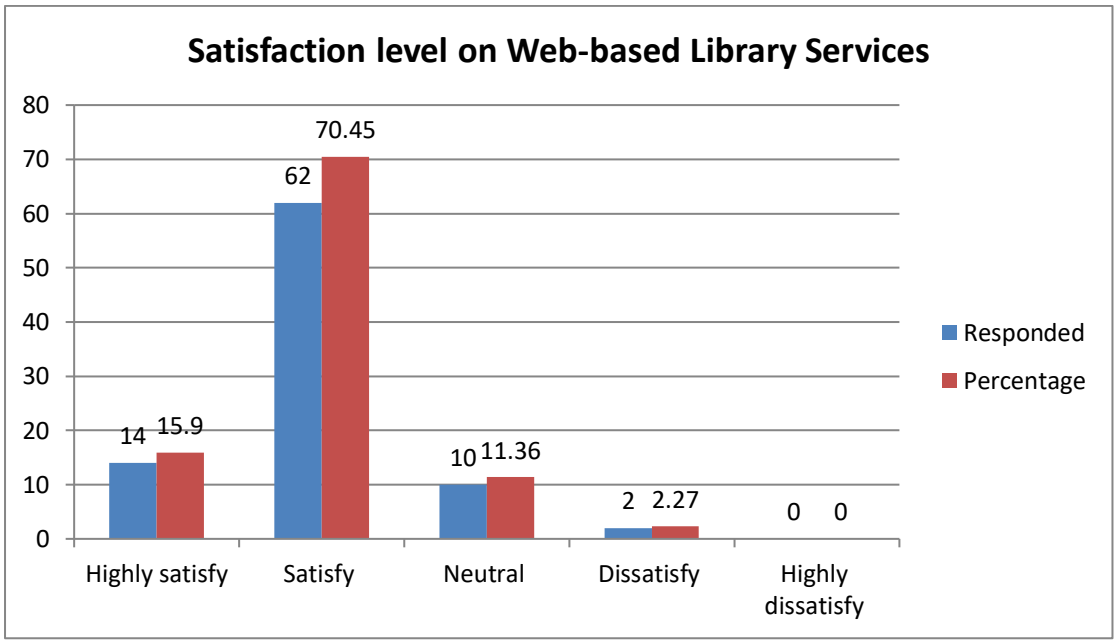


Figure 5.3.6: Satisfaction level on Web-based Library Services

Table and figure 5.3.6 shows that satisfaction level on web-based library services. It is clear from table that majority of (70.45%) research scholars were satisfied, while (15.90%) research scholars were highly satisfied, followed by (11.36%) researchers were neutral and (2.27%) scholars were dissatisfied.

Table 5.3.7: Problems faced to use Web-based Library Services

S.N.	Problems	Responded	Percentage
1	Less opening time	50	11.76
2	Charge to access e resources	40	9.41
3	Lack of paper guidance	60	14.11
4	Lack of printing facilities	70	16.47
5	In sufficient e resources	65	15.29
6	Technical problem (network)	70	16.47
7	Lack of probability in contrast with original print materials	40	9.41
8	Failed hardware and software	30	7.05
	Total	425	

Notes: Multiple answers permitted

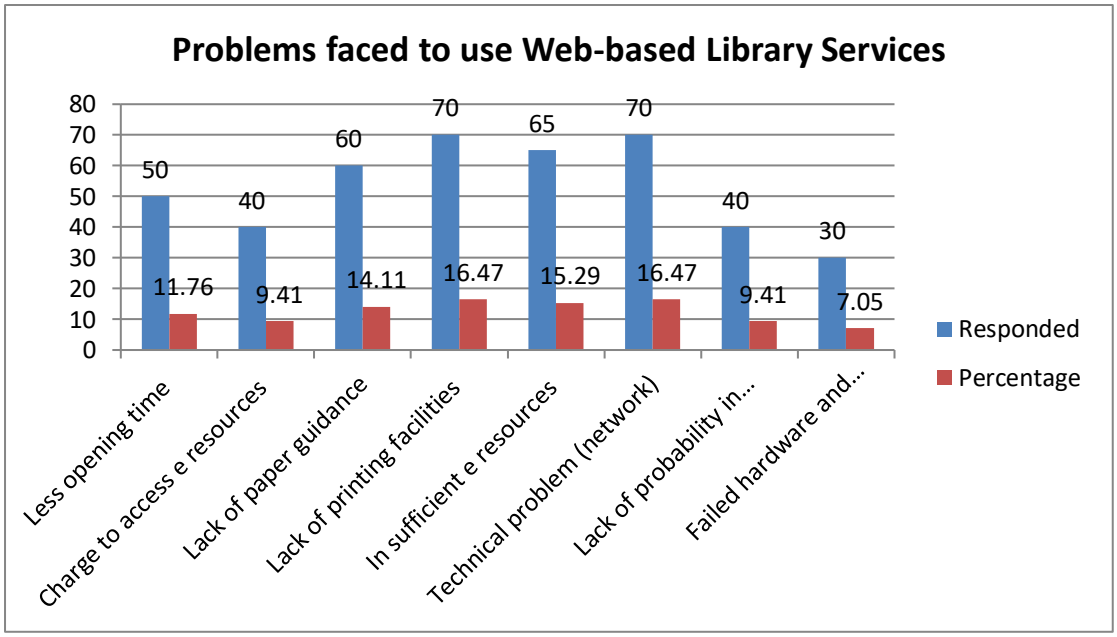


Figure 5.3.7: Problems faced to use Web-based Library Services

Table and figure 5.3.7 Shows that Problems faced to use Web-based Library Services, It is clear from table that majority of (16.47%) respondents were not used with web based services due to Technical problem, while same as (16.47%) respondents were not used due to Lack of printing facilities, followed by (15.29%) respondents were not satisfied due to insufficient e- resources, followed by (14.11%) respondents were Lack of paper guidance, followed by (9.41%) respondents not satisfied due to Lack of probability in contrast with original print materials,

Table 5.3.8: Use and Satisfaction level on Miscellaneous Web-Based Library Resources and services

S. N	Periodical section	Use		Highly satisfy	Satisfy	Neutral	Dissatisfy	Highly dissatisf
		Yes	No					
1	E-mail Based service	66 (75)	22 (25)	4 (6.06)	58 (87.87)	4 (6.06)	00	00
2	Feedback form	42 (47.72)	46 (52.27)	00	32 (76.19)	10 (23.80)	00	00
3	FAQ	34 (38.63)	54 (61.36)	00	26 (76.47)	8 (23.52)	00	00
4	Library holidays	58 (65.90)	30 (34.10)	8 (13.79)	42 (72.41)	8 (13.79)	00	00
5	Library news	56 (63.63)	32 (36.36)	6 (10.71)	44 (78.57)	6 (10.71)	00	00
6	Map of library	52 (59.10)	36 (40.90)	2 (3.84)	34 (65.38)	16 (30.76)	00	00
8	Helpdesk services	34 (34.63)	54 (61.36)	2 (5.88)	30 (88.23)	2 (5.88)	00	00
9	Exhibition/seminar/ conferences	56 (63.63)	32 (36.36)	2 (3.57)	46 (82.4)	8 (14.28)	00	00
10	Photo gallery	60	28	4(6.67)	48	8	00	00

		(68.18)	(31.81)		(80)	(13.33)		
11	Library forums	42 (47.72)	46 (52.27)	2 (4.76)	32 (76.19)	8 (19.04)	00	00
12	Virtual library service	28 (31.81)	60 (68.18)	2 (7.14)	20 (71.41)	6 (21.42)	00	00

Notes: Multiple answers permitted

The table 5.3.8 show that use and satisfaction level on miscellaneous web based library resource. It is observed from the table that majority of (75%) respondents were used E mail Based service, whereas (87.87%) respondents were satisfied, while (6.06%) respondents were highly satisfied, while same as (6.06%) respondents were dissatisfied. Followed by (47.72%) respondents were fill Feedback form, whereas (76.19%) respondents were satisfied, and (23.80%) respondents were neutral, followed by majority of (61.36%) respondents were not used FAQ service while only (38.63%) respondents were used FAQ service, whereas (76.47%) respondents are satisfied, followed by (65.90%) respondents were used Library holidays list, whereas (72.41%) respondents were satisfied, and (13.79%) respondents were highly satisfied. Followed by (63.63%) respondents were update from library news service, whereas (78.57%) respondents were satisfied, while (10.71%) respondents were highly satisfied. Followed by (59.10%) respondents were used library maps, whereas (65.38%) respondents were satisfied, while (30.76%) respondents were neutral, and (3.84%) respondents were highly satisfied. Followed by majority of (61.36%) respondents were not used Helpdesk services, and only (34.63%) respondents were used, followed by (63.63%) respondents were used library Exhibition/seminar/conferences service, whereas (82.4%) respondents were satisfied, while (14.28%) respondents were neutral, and only (3.57%) respondents were highly satisfied. followed by (68.18%) respondents were used Photo gallery service, whereas

(80%) respondents were satisfied, while (13.33%) respondents were neutral with. Followed by (52.27%) respondents were used Library forums service, whereas (76.19%) respondents were satisfied, while (19.04%) respondents were neutral, and only (4.76%) respondents were highly satisfied. And (68.18%) respondents were use Virtual library service whereas (71.41%) respondents were satisfied.

Table 5.3.9: Overall Problems faced to access Web-based Library resources and Services

S.N.		Yes	No.	Total
1	Problem face by Researchers	60 68.18	28 31.82	88

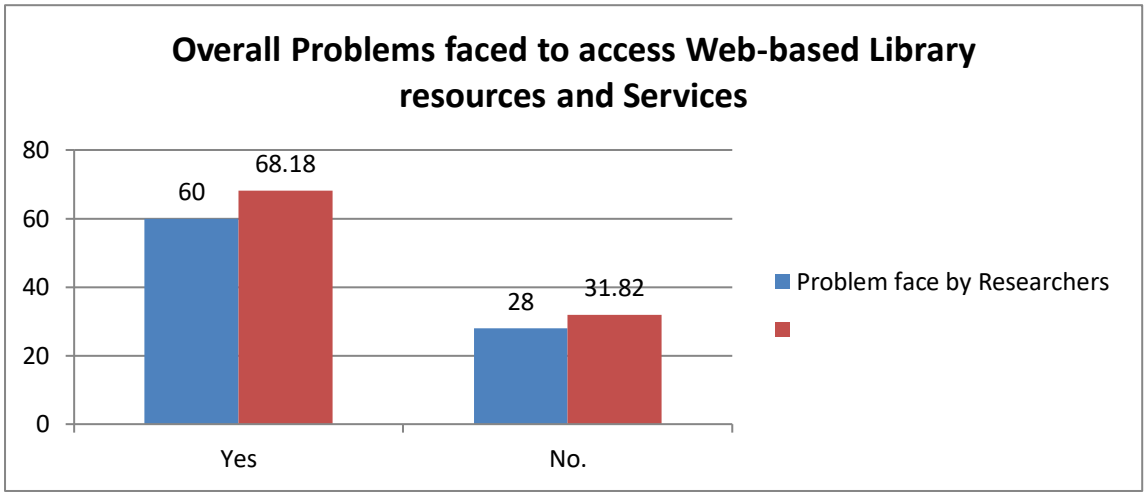


Figure 5.3.9: Overall Problems faced to access Web-based Library resources and Services

It is evident from table and figure 5.2.9 that how many scholars faced problem to access web-based library resources and services. It is clear from table that majority of (68.18%) research scholars were not faced problems to access it. While (31.82%) respondents were faced problems during access Web-based Library resources and Services.

Table 5.3.10: Types of Problems faced by Research Scholars

S.N.	Types of problem	Yes	Percentage
1	Slow internet speed	55	18.77
2	Difficulty in finding relevant information	40	13.65
3	Overload of information on the internet	43	14.67
4	Privacy problem	30	10.23
5	It takes too long to view/download pages	45	15.36
6	Language problem	50	17.06
7	Lack of knowledge	30	10.24
	Total	**293**	

Notes: multiple answers permitted

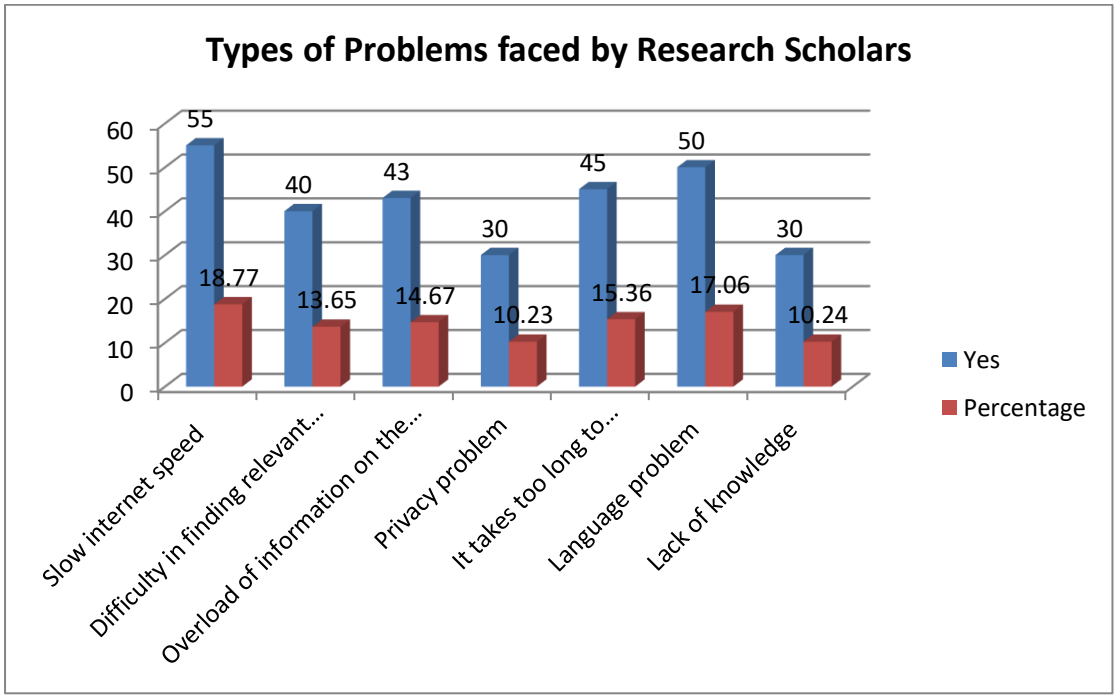


Figure 5.3.10: Types of Problems faced by Research Scholars

Table and figure 5.3.10 shows that overall problem faced by scholars. It is clear from that majority of (18.77%) respondents were faced problem due to slow internet speed,

while (17.06%) respondents were faced language problem, followed by (13.65%) respondents were face problem in relevant information, followed by (15.36%) respondents were faced problem in downloading, while (14.67%) respondents were faced problem due to Overload of information on the internet, followed by (10.23%) respondents were faced problem due to Privacy issue, whereas (10.24%) respondents were Lack of knowledge.

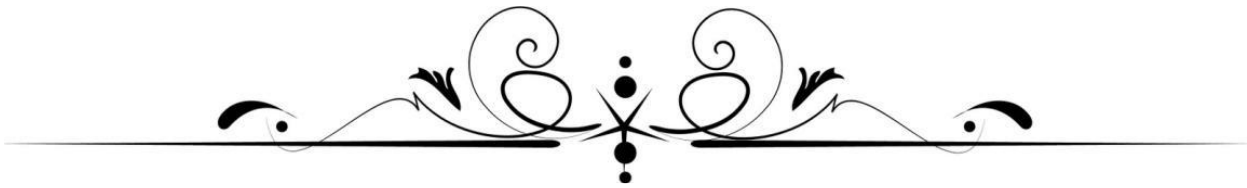
Table 5.3.11: Users Orientation Programs

S. N	Programmed	Join		Highly satisfy	Satisfy	Neutral	Dissatisfy	Highly dissatisfy
		Yes	No					
1	Training from university library	50 (56.81)	38 (43.18)	8 (16)	24 (48)	12 (24)	6 (12)	00
2	Self instruction	72 (81.81)	16 (18.18)	14 (19.44)	46 (63.88)	12 (16.66)	00	00
3	External courses	36 (40.90)	52 (59.09)	8 (22.22)	16 (44.44)	10 (27.77)	2 (5.55)	00
4	Guidance from colleague	66 (75)	22 (25)	22 (33.33)	38 (57.57)	6 (9.09)	00	00
5	Guidance from library staff	46 (52.27)	42 (47.72)	2 (4.34)	32 (69.56)	12 (26.08)	00	00
6	External resources	22 (25)	66 (75)	2 (9.09)	10 (45.45)	10 (45.45)	00	00
	Any other	00	00	00	00	00	00	00

Notes: Multiple answers permitted

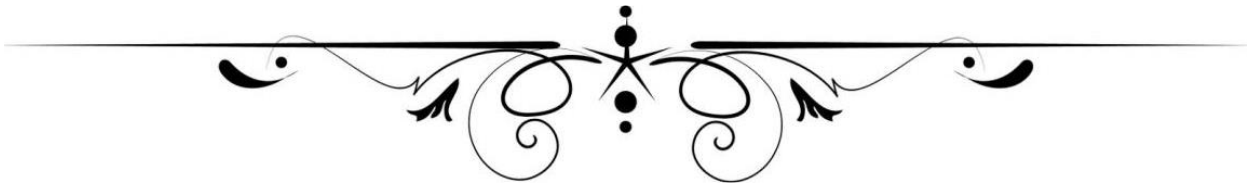
Table 5.3.11 shows Orientation Programs where users learn how to access web-based library resources and services. It is observed from the table majority of (81.81%)

respondents were learned from Self instruction, whereas (63.88%) respondents were satisfied, while (19.44%) respondents were highly satisfied, and (16.66%) respondents were neutral. (56.81%) respondents were learned from university training programmed, followed by (48%) respondents were satisfied, while (16%) respondents were highly satisfied, followed by (24%) respondents were neutral, and (12%) respondents were dissatisfied. Followed by (59.09%) respondents were joined external courses, whereas (44.44%) respondents were satisfied, while (22.22%) respondents were highly satisfied, and (27.77%) respondents were neutral, followed by (75%) respondents were learned from his colleague, whereas (57.57%) respondents were satisfied, while (33.33%) respondents were highly satisfied. Followed by (52.27%) respondents took the suggestion from library staff, whereas (69.56%) respondents were satisfied with library staff suggestion, while (26.08%) respondents were neutral and (4.34%) respondents were highly satisfied. Followed by (25%) respondents were learning from External resources.



CHAPTER-6

FINDINGS, SUGGESTIONS & CONCLUSION



CHAPTER -6

FINDINGS, SUGGESTIONS & CONCLUSION

This chapter presents observations and conclusions based on the analysis of the data and the following inferences from the analysis are as follows:

6.1 Findings based on the Librarians Questionnaire

Availabilities of Hardware

Findings of the availability of hardware, the majority of libraries are fitted with hardware equipment such as printer, CCTV camera, bar code printer, digitization scanners, LCD projectors, fax, Web camera backup, Web server database server operating systems, and multifunction printers. And CUH library has an only printer, power backup, and web server.

Availabilities of software

Findings with regard to the availability of software, it is clear from the study that all libraries have software like operating software, library management software, library automation software, web design software, and digital library software.

Frequency of updating information on the website

It is found that the majority of library websites of BBAU, AMU DU, and BHU update daily. While CUH library updates his library the next day.

Reasons why Libraries provides Web-based Services through their Library own Websites

Findings with regard to the reason of provide web-based services. it is clear from the study following reason library provides web-based services like easier access and faster service, increased library accessibility, made services available 24x7, improved the efficient use of library services due to technological change, improved personnel productivity technologically.

Availability of Web-based Resources on Library Website

With regard to the availability of web-based resources, findings reveal that the entire selected university library providing subscription databases, open access journals databases, e-journals, e-newspaper clippings, and e-databases, Tools including video collection, patents/standards, e-theses / doctoral theses, e-books, institutional repository gateway, and CD-ROM.

Medium of Accessibility

With the regard of the medium of accessibility, the study reveals that the majority of university libraries have the facility to access web-based resources and services through remote access and ID/Password.

6.2 Findings Based on the Scholars' Questionnaire

Frequency of Library Visits

Frequency of visits to libraries is clear from the study that the majority of (70.45%) scholars visit the library daily. while only (4.54%) scholars visit the library in Fortnightly.

Places of access Web-based Resources and Services

Findings with regard to access web-based library resources and service, the study found that the majority of (21.00%) respondents is access web-based resources and services in their campus, followed by (18.61%) respondents are accessed in their deportment same as (18.61%) respondents is accessed from their hostel, while (15.51%) respondents are accessing from a cyber library, and (14.31%) respondents are accessing in the cyber cafe and followed by (11.93%) respondents is accessing from home.

Rate of Satisfaction with web-based Services

Findings with regard to the rate of satisfaction from web-based services, the study found that the majority of (70.45%) scholars are satisfied to use web-based services. While (15.90%) scholars are highly satisfied and only (2.27%) scholars are dissatisfied to use web services.

Rate of Satisfaction with web-based Resources

Findings with regard to the rate of satisfaction from web-based services, the study found that the majority of (72.72%) scholars is satisfied with web-based library resources, while (6.81%) scholars are fully satisfied to use web-based library resources, followed by only (4.54%) respondents is dissatisfied.

6.3Major Findings

1. **To identify and analyze Web-Based Library Resources and Services offered through the websites of Central University Libraries.**

Availability of Web-based open access Resources

Study results on web-resources availability show that some widely accessible web-resources in all university libraries are e-books, e-journals, E- thesis/dissertation, E-news clipping open-access journals, academic archives, e-databases, Intuitional repository gateway, and patents/standards.

Availability of Web-based Resources

Results on the availability of web resources indicate that certain widely accessible web resources in all university libraries are Emerald insight, Elsevier, JSTOR, scholarly archives, Springer, Google Scholar, ProQuest, EBSCO, and LISA.

Accessibility of full-text Online Database

Results on the availability of web resources indicate that certain widely accessible full-text online database resources in all university libraries are Cambridge university press, Economics & political weekly, JSTOR, Emerald, Springer, Science direct, Projects mouse, and Taylor & Francis.

Availability of Web-based Services

Web-based Reference/Information Services

The findings to web-based reference/information availability Services show that libraries have various reference and information resources, but it has been noted that all university libraries have introduced knowledge distribution and current awareness resources, Virtual reference des/ask-a librarian, Inter-library loan web-based services, Current awareness services, Selective dissemination of information, Document delivery service and Online current awareness bulletin.

Web-based Acquisition Services

Findings of the study reveal that web-based acquisition services, it is found that all university libraries provide some common services such as a list of new arrivals, Alert services for new arrivals, Request for document and acquisition policies, etc.

Web-based Circulation Services

Results on web-based circulation services show circulation services provided to users by All university libraries like provide User accounts, circulation (issue/return), Reservation of document, Renewal of loaned document, Interaction with the user for the query, Circulation policy, Posting of overdue details of the user.

Web-based Cataloguing Services

Findings of the study with observe to the availability of web-based cataloguing services like web-OPAC, Union catalogue, subscribed e-journal through the consortium, subscribed e-journal, electronic indexes, and Download multimedia files.

Search Technique use Accessing Web-based Library Resources

The study found that all libraries provide the facility to search techniques by Keyword, Controlled vocabulary or subject, Field-specific, Proximity location, Truncation, Boolean operator.

Web-based Periodical Services

Findings on the availability of Web-based library periodical services suggest Status of recommendation journal, Article Alert services, Recommendation for the subscribed new journal, E article delivery, Identify the most cited paper in the various field online, these services offered by library online and vice versa.

Miscellaneous Web-Based Library Resources

On the availability of miscellaneous web-based resources on the Internet, the findings revealed that all libraries provide E-mail Based service, Feedback form, FAQ, Library holidays, Library news, Map of the library, Helpdesk services, Exhibition/seminar/conferences, Photo gallery, and Library forums.

2. To find out the availability of web technologies and its application for effective use of Web-Based Library Resources and Services.

Web-based Resources

Finding of study with regard to the availability of technique to access web-based resources, the study reveals that the Boolean operator searching technique (79.55%) scholars are the most preferred search technique to searching web-based resources. Followed by maximum (64.28%) respondents are satisfied to use this technique. It was noted that scholars found the Controlled vocabulary or subject (40.91%) as the least preferred services among search techniques.

Web-based Acquisition Services

Finding of study with regard of availability of technique to access web-based services, study reveals that majority of (77.27%) scholars us to access web-based services through List of new arrival, and (70.59%) is satisfied to use this technique, while only (8.82%) scholars are dissatisfied.

Web-based Circulation Services

With regard to Web-based Circulation Services, findings of the study reveal the Issue/return services (75%) is the preferred service among scholars, while circulation policy (36.36%) as the least preferred services among various services.

3. **To know the level of satisfaction among the Research Scholars under the study.**

Satisfaction with overall Web-based Library Resources

The findings of the study with regard to satisfaction level with resources, findings reveal that maximum (72.72%) scholars are satisfied with web-based resources. it was noted that only (4.54%) scholars were dissatisfied with the web-based resources.

Satisfaction with overall Web-based Library Services

The findings of the study with regard to satisfaction level resources, findings reveal that maximum (70.45%) scholars are satisfied with web-based services. it was noted that only found (2.27%) scholars dissatisfied with the web-based resources.

Rate of scholar's satisfaction with Library Infrastructure

The findings of the study with regard to satisfaction level on library infrastructure. The study reveals that (61.36%) scholars are satisfied with library services, Followed by the majority of (68.18) scholars are satisfied with library resources, and (56.81%) scholars are satisfied with library basic infrastructure.

4. **To know the awareness and use of Web-Based Library Resources and Services among the Research Scholar of Central Universities Libraries**.

Awareness of Web-based Library Resources and Services

- Awareness of scholars regarding the availability of web-based library resources and services, findings reveal that (100%) scholars are aware of web-based library resources and services.

University Library offers Web-based Library Resources

- The study revealed that the maximum number of research scholars used Elsevier i.e. (90.90%), whereas the majority of scholars (57.5%) are satisfied, while at least (7.5%) of scholars dissatisfied.
- The study revealed that research scholars used Emerald insight (88.63%) whereas the majority of (64.10%) scholars are satisfied, while (17.96%) of scholars are highly satisfied and least (7.69%) of scholars are dissatisfied.
- From the study, it is found that (86.36%) of research scholars use JSTOR further it is observed that the majority of (57.89%) scholar is satisfied and (10.52%) scholars are dissatisfied.
- The study reveals that (72.72%) of scholars use Springer for the required information, whereas (75%) of scholars are satisfied to use it. While (12.50%) of scholars are dissatisfied.

Use of various Web-based Library Resources

- The study revealed that majority of (90.90%) research scholar is preferred to use e-journals provides by the library, whereas most of (60%) scholars are satisfied, while (30.55%) scholars are highly satisfied and only (7.5%) research scholars is dissatisfied
- It was noted that scholars found the various web-based resources (27.27%) as the least preferred E-patents /standards resources among various resources, and 25% of research scholars are satisfied, while (66.66%) of scholars are dissatisfied

Access and satisfaction with Open Access Resources

- The study revealed that majority of (97%) research scholar is preferred to use Shodhganga, whereas the majority of (62.79%) of scholars are satisfied, while (4.65%) of scholars are neutral.

Use of Web-based library in Reference Services

- Findings with regard to the use of Web-based library services in the reference section, the study revealed that the majority of (54.54%) of respondents is used Current awareness services whereas (54.16%) respondents is satisfied, (20.83%) respondents is neutral. It is further noted that Virtual reference services (29.54%) is the least preferred service among scholars.

Use of Web-based Acquisition Services

- Findings of study with regard to web-based acquisition services reveal that (77.27%) of scholars use to find the list of new arrivals online useful in knowing the new titles added to the collection under web-based acquisition services in the libraries whereas (70.59%) scholars are satisfied. The study also found that Alert services for new arrivals (27.27%) are the least preferred service and (66.66%) of scholars are satisfied.

Use of Web-based Circulation Services

- With regard to web-based circulation services, findings of the study reveal that issue/return (75%) is the preferred service among scholars, and (84.84%) of scholars are satisfied. It was noted that users found the circulation policy online (36.36%) as the least preferred service among various services, whereas (50%) of scholars is satisfied.

Use of Web-based Cataloguing Services

- With regard to web-based Cataloguing services, findings of the study reveal that OPAC (86.36%) is the preferred service among scholars, and (73.68%) of scholars are satisfied.

5. **To find out the problem faced in using Web-Based Library Resources and Services.**

Problems faced using Web-based Resources

The study revealed that the majority of (17.77%) of scholars have a lack of ICT infrastructure.

Problem faced to accessing of Open Access Resources

- Findings of the study with regards to accessing web-based resources that the majority of (25%) of scholars access only subscribes resources, while (15%) of scholars face problem due to Insufficient information.

Reasons for not satisfied with Web-based Library Resources

- Findings of the study with regards to not satisfied with Web-based resources that the majority of (36.36%) of respondents are not satisfied, while (3.63%) of researchers faced Technical problems.

Problem faced using Web-based Library Services

Findings of the study with regards to not satisfied with Web-based services that the majority of (16.47%) respondents were not satisfied with web-based services due to technical problems, while (9.41%) not satisfied due to Lack of probability in contrast with original print materials.

6.4 Hypotheses Testing

The Following hypotheses formulated of this study:

Selected Central University Libraries have adequate infrastructure for Web-Based Resources and Services for LIS Research Scholars;

The above hypothesis accepted as the libraries have adequate infrastructure for providing web-based library resources and services (table 5.1.1, 5.1.2, 5.1.3. and 5.3.12)

Table 5.1.1 Availabilities of Hardware

S.N.	Hardware	BBAU	AMU	BHU	DU	CUH
1	Printer	✓	✓	✓	✓	✓
2	CCTV Camera	✓	✓	✓	✓	
3	Bar code printer	✓	✓	✓	✓	
4	Scanner for digitization	✓	✓	✓	✓	
5	LCD Projector	✓	✓	✓	✓	
6	FAX	✓	✓	✓	✓	
7	Web camera	✓	✓	✓	✓	✓
8	Power backup	✓	✓	✓	✓	
9	Multifunction printer	✓	✓	✓	✓	
10	Web server	✓	✓	✓	✓	✓
Database server		✓	✓	✓	✓	

Table 5.1.1 shows that hardware tools available in the library majority of the library have It infrastructures such as a printer, CCTV camera, Bar code printer, scanner for digitization, LCD Projector, Fax, Web camera, Power backup, Multifunction printer, Web printer, and a Web server. However, it is noticed that the CUH libraries have an only printer and web camera

All the Central University Libraries are providing Web-Based Library Resources and Services According to the need of LIS Research Scholars;

The above hypothesis is proved and accepted as all central university libraries are providing web-based library resources and services. Further, it is also found that libraries are also providing different types of web-based resources and services and maximum scholars are use and satisfied (table 5.2.5, 5.2.6, 5.2.8, 5.2.11, 5.3.1, 5.2.2, 5.2.3, 5.2.4, 5.2.6 and 5.2.9)

LIS Research Scholars have sufficient awareness about web-based library resources and services;

Table 5.2.1 reveals that though all the scholars are aware of the existing web-based library resources and service and they are effectively utilizing the web-based resources and services (table 5.2.5, 5.2.6, 5.2.8, 5.2.11, 5.3.1, 5.2.2, 5.2.3, 5.2.4, 5.2.6 and 5.2.9) this indicates that they are maximum aware of web-based. This is evident from the fact that scholars have cited well use of training/orientation programmed (5.3.12) thus hypothesis is proved and accepted.

LIS research scholars of selected university are satisfied with Web--based library resource and services.

The above hypothesis is proved and accepted as maximum research scholars are satisfied with library provide web-based resources and services (Table 5.1.9, 5.2.14, 5.3.7, 5.2.5, 5.2.6, 5.2.8, 5.2.11, 5.3.1, 5.2.2, 5.2.3, 5.2.4, 5.2.6 and 5.2.9).

6.5 Conclusion

The conventional method of providing library services has been changed with the advent of the Internet and online technologies. The World Wide Web provides libraries great opportunities to provide their customers with information and facilities online, which in print media is difficult. Academic libraries are at the forefront of technical progress. They are also at the forefront of incorporating technology and exploiting the capabilities of emerging technology in delivering innovative and integrated services. Librarians must learn required library management skills and abilities Principles and procedures. Librarians need to acquire sufficient technical training to provide them with the skills they need to promote better services in a new climate. Study results indicate that libraries make good use of web technology capacity. Users' demand and preferences have shifted with new technologies emerging. They need to learn how to use web application software like Blog, RSS streams, Instant Messaging, a wiki to boost and update your library Services and infrastructure. The research results indicate that users are aware of the resources and services offered by the library, and the majority of scholars use the resources and services given to them. The outcome of this research offers descriptive information to librarians interested in either building or developing websites and resources for libraries. They will also learn how modern and improved library resources can be used using the specific features of web application software.

6.6 Suggestions

The following recommendations are made to improve and efficiently use the web-based tools and facilities in the libraries of the central university libraries, based on the results of the report.

1. Libraries should promote the use of web-forms by their users. These web-forms are an important medium of communication and interaction between the library and the users.
2. Libraries should develop periodic and continuous user-oriented programmed Assessing and reviewing websites and tools and facilities (Online and Offline) to observe effectively use.
3. To make good use of the variety of Web-based tools and services available Users of electronic library system libraries need both Competencies in computer literacy and in technology literacy. The library should organize a program like orientation programmed / training/workshop orientation for them.
4. Libraries should organize conferences/workshops/training on a regular basis Profit from library employees to remind them of the latest technology so that They will establish expertise in network-based delivery of resources and Facilities
5. The professional staff should be promoting effective online support for question formulation and adjustment.
6. Libraries need to create their website, Web designing applications are widely available through using such tools, the IT department reliance will be minimized and they will be able to upgrade their website in real-time.

7. The library should promote their services through the use of new creative resources like Facebook forum, twitter, library blog, etc. for best use of its services and Facilities.
8. Real-time digital reference service/online chat is found to be offered by A few bibliothèques. These are the means of offering a reference service at any time. And everywhere. For real time comparison, the Instant Messaging service can be used Hey, operation.
9. In order to review and evaluate websites and tools and facilities (both online and offline) to observe the correct usage, libraries should develop daily and ongoing user-oriented evaluation policies. This will enable academic librarians to be familiar with user requirements and will strengthen and build new tools and services as a result. Libraries may use online resources such as Google analytics, easy counters, etc. to track website usage.
10. Students should add a credit-based course at the initial level to make resources more used by the library. In order to create a supportive atmosphere for improvement, these courses should be augmented with web-based training tutorials.
11. Users of central university libraries have been found to be aware of the availability of web-based library resources and services, but these resources and services are not completely used. This is because the users may not have attended the library-organized orientation program/training/workshop.

BIBLIOGRAPHY

BIBLIOGRAPHY

Aharony, Noa. (2012). "An Analysis of American Academic Libraries Websites: 2000-2010." Electronic Library 30.6 pp. 764-776.Emerald.Web.12 may.2017.

Anaraki, Leila Nemati, and Fahimeh Babalhavaeji. (2013). "Investigating the Awareness and Ability of Medical Students in Using Electronic Resources of the Integrating Digital Library Portal of Iran: a Comparative Study." Electronic Library 31.1 70-83. Emerald. Web.14 may. 2017.

Anunobi, Chinwe V, and Andrew U Ogbonna. (2012)."Web 2.0 use by Librarians in a State in Nigeria." Developing Country Studies 2.4 pp.57-66.Web. 29 May 2018.

Arif, M., Ameen, K., & Rafiq, M. (2017). Assessing distance education students satisfaction with web-based services: A Pakistani's perspective. Online Information Review, 41(2), 202–218.

Arora, Jagdish. (2001): "Web-based Digital Resources and Services: Trends and Innovations."CALIBER n.pag.Web.14 May 2017. <http://ir.inflibnet. ac. in/handle/1944/105>

Balaji Bi, Preedip, and Vinit Kumar. (2011). "Use of Web technology in Providing Information Services by South Indian Technological Universities as Displayed on Library Websites." Library Hi Tech 29.3 pp.470-495. Emerald. Web. 14 May 2017.

Bharadwaj, R.K. &Walia, P.K. (2012). Web-Based Information Sources and Services: A Case Study of Stephen's College, University of Delhi. Library Philosophy and Practice (e-journal).

Bwalya, Tuesday. (2014).”Internet and Web-based library Services Provision among Academic Libraries in Zambia: a Comparative study of the University Zambia and Copperbelt University Libraries.”International Research: Journal of Library and Information Science 4.4 475-493.Web.13 may.2017.

Chandrashekara J., Mohan B. S and Nayana H. (2016). “Web-based Library Services in Visvesvaraya Technological University Research Centres Libraries in India: an Analysis of the Researcher’s Perspective.” J. Adv. Res. Lib. Inform. Sci.

Chen, Dora Yu-Ting, Samuel Kai-Wah Chu, and Shu-Qin Xu. (2012). “How Do Libraries Use Social Networking Sites to Interact with Users.” ASIST pp.28-31.Web.20 May. 2018.

Chua, Alton Y K and Dion Goh. (2010). “A Study of Web 2.0 Applications in Library Websites.” Library and Information Science Research 32.3 pp. 203- 211.Elsevier.Web.10 may. 2017.

Chua, Alton Y K and Dion Goh. (2010): “A Study of Web 2.0 Applications in Library Websites.” Library and Information Science Research 32.3 203-211. Elsevier. Web 22 Jan. 2018.

Clausen, Helge. “User-oriented Evaluation of Library and Information Centre Web sites” New Library World, Vol. 100(199):5-10.Emerald.Web 24 Jan.2018.

Coombs, K. A. (2007): “Building a Library Website on the Pillars of Web 2.0.” Computers in Libraries 27.1 11-17.http://shatua.tripod.com/DRTCseminar.html. Web 2 Feb.2019

Deshmukh, Shamkant, Sonia Bhavsar, and Sandeep Bhavsar. (2012).“Open Source Software for Federated Search.” DESIDOC Journal of Library & Information Technology 32.5 pp. 427-430.Web.9 May. 2017.

Devi, K. K. & Verma, M. (2017). Content Evaluation and the Design Trends of National Institutes of Technology (Nits) Library Websites of India: An Evaluative Study. Journal of Indian Library Association. 53. 135-174. Retrieved on Feb 2018.

doi: https://doi.org/10.1016/j.lisr.2012.02.005

Halub, L P. (1999): "The Value of Web-based Library Services at Cedras-Sinai Health System." Bulletin of the Medical Library Association 87.3 pp.256- 60.

Harinarayana, N.S. and V. N Raju. (2010). "Web 2.0 Features in University library Websites." Electronic Library 1 69-88. Emerald. Web. 11 may. 2017.

Haruna, B., Kiran, K. Tahira, M. (2017). Modeling web-based library service quality and user loyalty in the context of a developing country. The Electronic Library, 5(3), 507-519.

http://digitalcommons.unl.edu/libphilprac/1263

Islam, Md. Anwarul and Muhammad Jaber Hossain. (2014). "Marketing Information Resources and Services on the Web."Electronic Library 32.5742- 759.Emerald. Web. 15 Jan 2020.

June 2015. Khalid, Mahmood, and John V. Richardson Jr. "Impact of Web 2.0 Technologies on Academic Libraries: a Survey of ARL Libraries." Electronic Library 31.4 (2013): 508-520. Emerald. Web.14 may.2017.

Kataria, Sanjay and John Paul Anbu K. (2009): "Applications of Web 2.0 in the enhancement of services and resources in academic libraries: an experiment @JIIT University, Noida, India." ICAL-Library Services 583-589.Web. 5 Dec. 2018.

Khalid, M. & Richardson, J. V. (2013).Impact of Web 2.0 Technologies on Academic Libraries: a Survey of ARL Libraries. Electronic Library, 31(4), 508-520. Retrieved on 20 Jan 2018.

Khan, Imran. (2013). "Library, Librarian and Library Services in Web 2.0 Environment." International Journal of Digital Library Services 3.4. 14-36.Web.5 May 2017.

Kiran, K., & Diljit, S. (2012). Modeling Web-Based library service quality. Library and Information Science Research, 34(3), 184-196. Retrieved Jan 2, 2016

Krishnamurthy, M, and Winnie Chan. (2013). "Implementation of Library Portals for Information Resources: a Case Study of Indian Statistical Institute, Bangalore (ISIB)." International Information and Library Review 37 pp.45- 50.Web.10 May 2017.

Library Web Sites /Web Pages." (2012). New Review of Information Networking 17.2 69-92.Taylor and Francis.Web.14 May. 2017.

Lihitkar, Shalini R. (2011): "Establishing a Virtual Reference Service." DESIDOC Journal of Library & Information Technology 31.1 pp.31-34.Web.7 may. 2014.

Liu, Shu. (2008). "Engaging Users: the Future of Academic Library Websites." College Research ibraries69.1

Lwoga, Edda Tandi. (2014). "Integrating Web 2.0 into an Academic Library in Tanzania". Electronic Library 32.2 183-202.Emerald.Web. 10 May. 2017.

Madhusudhan, M and V Nagabhushanam. (2012). "Web-based Library Services in University Libraries in India: An Analysis of Librarians' Perspectives." Electronic Library 30.5 pp. 569-588.Emerald.Web.8 May. 2017.

Malik, Amara, and Khalid Mahmood. (2013). "Infrastructure Needed for Digital Reference Service (DRS) in University Libraries: an Exploratory Survey in Punjab." 62.6/7 420-428.Emerald.Web.14 may.2017.

Mc Menemy, D. (2012). Emergent digital library services in public libraries: a domain study. New Library World,113 (11/12), 507-527. Retrieved Jan 2, 2017 doi: https://doi.org/10.1108/03074801211282902

Mierzecka, A. & Suminas, A. (2018). Academic library website functions in the context of users' information needs. Journal of Librarianship and Information Science. 50. 157-167.

Mohammed, Abubakar, Aminu Garba, and Hafiz Umar. (2014)."University Library Websites in Nigeria: An Analysis of Content."Information and Knowledge Management 49.3 17-22.Web. 22 May. 2017.

Moyo, Lesley M. (2004): "Electronic Libraries and the Emergence of New Service Paradigms." Electronic Library 22.3 220-230.Emerald.Web.2 Jan 2020.

Muhammad, Arif, and Khalid Mahmood. (2012), "The Changing Role of Librarians in the Digital World: Adoption of Web 2.0 technologies by Pakistani librarians."Electronic Library 30 pp. 469-479.Emerald.Web.26 May 2017.

O'Reilly, T. (2007): "What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software?" Communication & Strategies 117-37.Web. 4 Dec. 2018.

Okon, E.E., Inyang, I.J. &Etim, I.A. (2015).Marketing of Web-Based Library Resources in Nigerian Universities. Library Philosophy & Practice (e-journal), paper 1263. Retrieved June 27, 2018, from http://digitalcommons.unl.edu/libphilprac/1263

Pirshahid, S.E., Naghshineh, N. & Fahimnia, F. (2 016). Knowledge and use of Web 2.0 by librarians in university libraries of East Azerbaijan, Iran. The Electronic Library, 34(6), 1013-1030. DOI: https://doi.org/10.1108/ EL -10- 2014- 0192. Retrieved on 20 Jan 2018.

Punchihewa, C.N.D. (2018). How do Sri Lankan University Libraries Employ Web 2.0 Tools in Providing Web-Based Library Services? : A Comparative Study. Journal of the University Librarians Association of Sri Lanka. 21. 18-39.

Rahman, Ata-Ur, and Farzana Shafique. (2011). "Use of Web 2.0 and its Implications for Libraries Perceptions of Information Professionals in Pakistan." Library Philosophy and Practice (e-journal) n.pag. http://www. web pages.uidaho.edu/~mbolin/rehman-shafique.htm. Retrieved on 12 May. 2017

Ram, Shri. "Information Literacy through Web2.0 integrated Web OPAC an Experiment at Jaypee Group of Institutions." DESIDOC Journal of Library & Information Technology 30.3 pp. 43-50.Web.17 may. 2017.

Sarasvathy, P., Prasada, G. & Jagdeesha. (2016). Digital Library Environment in Changing Scenario: User's Survey of Mysore University, Mysore. International journal of library and information studies. http://ijlis.org/img /2016_Vol_6_Issue_2/90-96.pdf. Retrieved on 20 Jan 2020.

Sarkar, Tanmay De. (2013): "Prevalence of Widget Applications on Library Websites: an Analytical Study." New Library World 114.3/4 110-131.Emerald.11 May. 2017.

Shafique, Farzana, and Ann Rielding. (2013). "Survival Avenues for Pakistani Libraries in the Era of Emerging Technologies: Adoption of Library 2.0 and Library 3-D." Electronic Library 31.4 pp.412-432.Emerald.Web.12 May. 2017.

Shikhaanand, (2016), UGC Approved Central Universities – North India.

Shiva kumara swamy, K.N. (2019). Use of Web-Based Library Services in Mysore City Engineering Colleges in Karnataka, India: A Study. Library Philosophy and Practice (e-

journal).2370. DOI: https://digitalcommons. unl.edu/libphilprac/ 2370. retrieved on 22. Jan 2020

Si, L., Wanigasooriya, P. & Ranaweera, A. (2017).Evaluation and Assessment of E-Service Quality of University Libraries in Sri Lanka. European Academic Research. 4. 10646-10671

Singh, Gurpreetand Samyal, and Kumar Jatinder. (2014). "IIT Libraries: Evaluation of Web-based Information Resources and Services."SRELS Journal of Information Management, Vol 51(5), p. 1–7.

Singh, N. K. (2012). Digital Reference Service in University Libraries: A Case Study of the Northern India. International Journal of the Library and Information Studies, 2(4), 1-17. Retrieved Jan 2, 2016https://doi.org/10.1108/OIR-07-2016-0172. Retrieved on 2 Feb 2018.

Singh, Nguyen Hong, and Hoang Thi Hong Nhung, (2014). "Users' Searching Behaviour in Using Online Databases at Vietnam National University - Ho Chi Minh City." Proceedings of the IATUL Conferences. Paper 27. (n.d.): n.pag. Web. .<http://docs.lib.purdue.edu/iatul /2012/ papers/27

Sun, Hao-Chang, et al. (2011). "Role Changing for Librarians in the New Information Technology Era", New Library World 112.7/8 pp.321-333. Emerald. Web. 12 may, 2017.

Technical Education. (2013), Ministry of Human Resource Development, Government of India. National Informatics Centre.

Thomas, C. and R.H. McDonald, "Millennial Net Value (s): Disconnects between Libraries and the Information Age Mindset."

Tillett, B. (2005): What is FRBR? A Conceptual Model for the Bibliographic Universe. Australian Library Journal 54.124-30.Web. 10 Jan. 2018.

Xiao, Daniel, Pixey Anne Mosley, and Alan Cornish. (1997): "Library Services through the WWW."Public access to Computer systems Review 8.41-8.Web.15 May. 2017.

Zarei, H. &Abazari, Z. (2011). A study of web based services offered by Asian national libraries. The Electronic Library, 29(6), 841-850. Retrieved Jan 2, 2016 from doi: https://doi.org/10.1108/02640471111188051.

Zhixian, Yi. (2014). "Australian Academic Librarians' Perceptions of Effective Web 2.0 Tools Used to Market Services and Resources." Journal of Academic Librarianship xxx xxx-xxx.Elsevier.Web.30 May 2017.

https://doi.org/10.1108/EL-10-2015-0211

http://www.shiksha.com/humanities-social-sciences/articles/ugc-approved-central-universities-north-india-blogId-13001 Retrieved on May 2017

https://doi.org/10.1108/OIR-07-2016-0172. Retrieved on 2 Feb 2018.

https://doi.org/10.1177/0961000616664401. Web.13 may, 2018.

https://doi.org/10.4038/jula.v21i1.7909. Web.13 Jan 2019.

http://india.gov.in/my-government/constitution-india

http://digitalcommons.unl.edu/libphilprac/768/ Retrieved October 18, 2018

http://www.google.co.in/search?q=north+zone=map+pics1366bib

http://www.amu.ac.in/)

http://www.amu.ac.in/departmentpage.jsp?did=80

http://www.bbau.ac.in/About.aspx

www.bbau.ac.in/SIST/DLIS/Dept_Library.aspx

http://www.bhu.ac.in/academic/)

-http://www.bhu.ac.in/arts/lis/history.html

http://www.du.ac.in/du/index.php?page=faculties-departments

http://dlis.du.ac.in/

http://cuhimachal.ac.in/index.aspx

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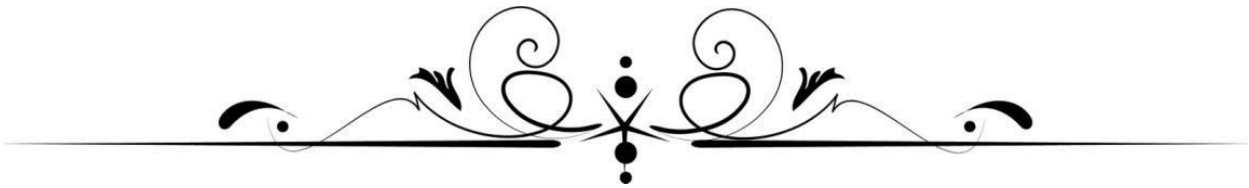
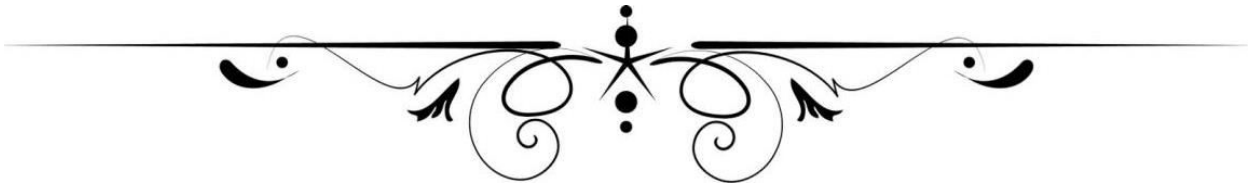
http://cuhimachal.ac.in/cuhp_academics_schools.aspx



APPENDICES



QUESTIONNAIRE FOR LIBRARIAN

1. **GENERAL INFORMATION:**
   (a) Name of the University: ……
   (b)Year of Establishment: ……..
   (c) Address: …….
   (d) Phone. ……
   (e) Mobile Number……
   (e) E-mail ……..……...
   (f) Website……..…
   (g) Name of the Librarian/In-charge: ……..
   (h) Library Hours: ……

Section 1: Basic Infrastructure of University Library

Kindly fill the following sections of basic Infrastructure facilities available in your library

1.1: Hardware: please tick mark (√) if these hardware are available in library?

Sr. No.	**Hardware**	Yes	No
1	Printer		
2	CCTV Camera		
3	Bar code printer		
4	Scanners for digitization		
5	LCD Projector		
6	Fax		
7	Web camera		
8	Power backup		
9	Multifunction printers		
10	Web server		
11	Database server (main)		
12	Mirror server		

If any other, please specify_____

1.2: Software: Please tick mark (√) if these Software are available in library?

Sr. No.	**Software**	**Yes**	**No**
1	Operating software		
2	Library management software		
3	Library automation software		
4	Web designing software		
5	Digital library software		

If any other, please write the name of software_____

1.3 Total numbers of staff working in your University Library?

Sr. No.	Staff	No. of staff
1	Librarian	
2	Deputy Librarian	
3	Assistant Librarian	
4	Doc. Officer	
5	Sr. Prof. Assistant	
6	Cataloger	
7	Professional Assistant	
8	Library Assistant	
9	LDC/Clerk	
10	Library Attendance	
11	Book Lifter	
12	Peon	
13	Mender/Binder	
14	Others	

1.4.**Annual Budget allocation to the library?**

Sr. No.	Items	2015-16	2016-17	2017-18
1	Books			
2	Journals			
3	Non books materials			
4	Accessories			
5	Other (please specify)			

1.5: Is there any provision for any separate budget for e-resources?

(a) Yes [ ] (b) No [ ]

If yes, please give the % of total budget:…….

1.5: Are you using any library automation package?

(a) Yes [ ] (b) No [ ]

If yes, please mention the name of automation software……

Section 2: Internet Connectivity in University Library

2.1: Does library resource and services available on network accessed in university?

(a) Yes [ ] No [ ]

If yes, please specified which types of connection has been used?

(a) LAN [ ] (b)WAN [ ]

(c) MAN [ ] (d) WI FI [ ]

2.2: What types of mode of connectivity?

(a) Dial-up [ ] (b) Leased line [ ]

(c) BVSAT [ ] (d) V-SAT [ ]

2.3: Is your library a member of library consortia for e-resources?

(a) INDEST [ ] (b) DELNET [ ]

(c) NISCAIR [ ] (d) UGC-INFONET [ ]

Section 3: Web-Based Library Resource and Services

3.1: Does your Library provide Web-Based Library Resources and Services?

(a) Yes [ ] (b) No [ ]

If yes, please answer the following question?

3.2: please mention how many computers are available to searching the Web-Based Library Resources for users?

PCs	Pentium IV	Pentium III	Pentium II	Any other

3.3: How many printers are available in Web-Based Library Resources sections?

Printers	Laser Jet	Ink Jet	Desk Jet	DMP

3.4: Are you using any software for Web-Based Library Resources?

(a) Yes [ ] (b) No [ ]

If yes, please tick marks the following software available in your library?

(a) D-Space [ ] (b) Greenstone [ ]
(c) E-prints [ ] (d) Fedora [ ]
(e) Kelper [ ] (f) Ebrary [ ]
(g) Digital Library Project [ ] (h) CDSWARE [ ]
(i) Other (Please specify)……

3.5: Library website URL……

3.6: What is Frequency to provide Web-Based Library Resource and Services?

(a) 24×7 hours [ ]
(b) Only on working hours [ ]
(c) If any other please specify……..

3.7: What is medium of accessibility of Web-Based library Resources and Services?

(a) Remote excess [ ]
(b) User ID/Password [ ]
(c) Campus wide through IP authentication [ ]
(d) If any other please specify……..

3.8: Does your library provide full text online databases?

(a) Yes [ ] (b) No [ ]

If yes, please tick marks the following full text online databases? (Multiple answers permitted)

(a) American comical society [ ] (b) Cambridge university press [ ]
(c) Economic& Political weekly [ ] (d) Emerald [ ]
(e) Institute of Physics [ ] (f) JSTOR [ ]
(g) Project Mouse [ ] (h) Science Direct [ ]
(i) Springer Link [ ] (j) Taylor & Francis [ ]
(k) Wiley-Blackwell [ ] (l) Manupatra [ ]
(m) Nature [ ]
(k) Any other, please specify……..

3.9: Does your library provide Open Access Resources?

(a) Yes [ ] (b) No [ ]

If yes, please tick marks the following Open Access Resources? (Multiple answers permitted)

(a) DOAJ [ ] (b) Open DOAR [ ]
(c) OAJSE [ ] (d) DOAB [ ]
(e) LII of India [ ] (f) Pum Med [ ]
(g) Bio Med Central [ ] (h) Indian Council of Medical Research [ ]
(i) AgEcon [ ] (j) Public Library of Science [ ]
(k) Sankhya [ ] (l) National Agricultural library [ ]
(m) E-PG Pathsahala [ ] (n) Vidya Mitra [ ]
(k) Any other, please specify……..

3.10: What is medium of provide the e-resource services through?

(a) Internet via their University website [ ] (b) Though his own library website [ ]
(c) Commercial online service vender [ ]
(d) If, other (please specify)……

3.11: Which type of Web-Based Resources is subscribed? (Multiple answers permitted)

(a) Full text [ ] (b) Abstract [ ]
(c) Bibliographic [ ] (d) Numeric [ ]
(e) Graphic [ ]
(f) If other (please specify)……

3.12: What is the frequency of updating of information on websites?

(a) Daily [ ]
(b) Next day [ ]
(c) Weekly [ ]
(d) Monthly [ ]

Any other, please specify…….

3.13: Why your library to offer Web-Based Library Resource and Services through websites? (Multiple answers permitted)

(a) Easy access and faster service [ ]
(b) Enhance and effective use of library resource and services [ ]
(c) To increase the visibility of library [ ]
(d) To make service available 24×7 [ ]
(e) Due to technological changes [ ]
(f) Marketing of library web based library resource and services [ ]
(g) Save users time by providing personalized services [ ]
(h) Staff efficiency improved technologically [ ]

Any other reasons please specify……

3.14: Different Web-Based Resources are offered by the library? (Multiple answers permitted)

(a) E-books [ ] (b) E- journals [ ]
(c) E- theses/dissertation [ ] (d) Open access journals databases [ ]
(e) Institutional repository gateway [ ] (f) Online subject [ ]
(g) E-databases [ ] (h) E- newspaper clipping [ ]
(i) CD-ROM [ ] (j) E-patents/standards [ ]
(k) Any other, please specify……..

Section 4: Web-Based Library Services

4.1: Different Web-Based Services are offered by the library in deferent section? (Multiple answers permitted)

4.2: Web-Based Services in reference section? (Multiple answers permitted)

(a) Virtual reference desk/ Ask-a librarian [ ]
(b) Inter-library loan based services [ ]
(c) Current awareness service [ ]
(d) Selective dissemination of information [ ]
(e) Document delivery service [ ]
(f) Online current awareness bulletin [ ]
(g) Virtual reference service [ ]
(h) Any other services please specify……

4.3: Web-Based acquisition services? (Multiple answers permitted)

(a) List of new arrival materials [ ]
(b) Alert service for new arrivals [ ]
(c) Request for document [ ]
(e) Any other services, please specify……

4.4: Web-Based circulation services? (Multiple answers permitted)

(a) Users accounts [ ] (b) Issue/return services [ ]
(c) Reservation of document [ ] (d) Renewal of loaned document [ ]
(e) Interaction with user for query [ ] (f) Circulation policy [ ]
(g) Posting of overdue details of the user [ ]
(e) Any other services, please specify……

4.5: Web- Based cataloguing services? (Multiple answers permitted)

(a) Access to web-OPAC [ ] (b) Access to union catalogue [ ]
(c) Access to e-journals through consortium [ ] (d) Access to subscribed e-journal [ ]
(e) Access to electronic indexes [ ] (f) download multimedia files [ ]
(g) Any other services, please specify……

4.6: Which techniques are facilities your library to access Resources? (Multiple answers permitted)

(a) Boolean operator [ ] (b) Truncation [ ]
(c) Proximity location [ ] (d) Field specific [ ]
(e) Relevance [ ] (f) Controlled vocabulary or subject [ ]
(g) Keyword [ ]
(h) Any other please specify……

4.7: Web-Based periodical services? (Multiple answers permitted)

(a) Status of recommendation journal [ ] (b) Article alert service [ ]
(c) Recommendation for subscribe new journal [ ] (d) E-article delivery [ ]
(e) Identify the most cited paper in various fields online [ ]
(f) Any other please specify……

4.8: General Web-Based Library Services offered by your Library? (Multiple answers permitted)

(a) E-mail based service [ ] (b) Feedback form [ ]
(c) FAQ [ ] (d) Library holidays list [ ]
(e) Library news [ ] (f) Map of library [ ]
(g) Information about special Exhibition /seminar/conference [ ] (h) Helpdesk services [ ]

(i) Photo gallery [ ] (j) Library forums [ ]
(k) Virtual library [ ]
(m) Any other services, please specify……..

Section 5: Web-Based Application Tools

5.1: Does your library using web Application tools?

(a) Yes [ ] (b) No [ ]

5.2: If yes, which web application tools are being by library for effective use of Web-Based Services? (Multiple answers permitted)

(a) Facebook [ ] (b) RSS feeds [ ]
(c) Blog [ ] (d) Wiki [ ]
(e) Tagging [ ] (f) Twitter [ ]
(g) Any other, please specify: . ……

5.3: Purpose of using mentioned above web application tools?

(a) Virtual reference service [ ] (b) Improve the users oriented services [ ]
(c) Designing new web-based services [ ] (d) Sharing library events/news [ ]
(e) Marketing library resource and services [ ]
(f) User's feedback [ ]
(g) Information literacy tutorials [ ] (h) To create research guide [ ]
(i) Any other, please specify: ……

5.4: What are the problems being faced by your library for implementing web application tools? (Multiple answers permitted)

(a) Lack of awareness [ ] (b) Lack of staff time [ ]
(c) Problem in achieving [ ] (d) Threats to data security [ ]
(e) Provide unauthentic contents [ ] (f) Over depending on IT centre [ ]
(g) High cast of hardware/software [ ] (h) Information overload [ ]
(i) Any other, please specify: ……

Section 6: Miscellaneous

6.1: How is managing Web-Based Library Resource and Services?

(a) By IT Expert [ ] (b) By information expert [ ]
(c) By system administrator [ ] (d) By librarian [ ]
(e) By library staff [ ]
(f) Any other, please specify: ……

6.2: What is process for implementation new Web-Based Library Resource and Services?

(a) Library advisory committee [ ] (b) General discussion with staff [ ]
(c) With external expert feedback [ ]
(d) Any other, please specify: ……

6.3: What is frequency to take feedback from users regarding the Web-Based Resource and Services?

(a) Daily [ ] (b) Weekly [ ]
(c) Monthly [ ] (d) Quarterly [ ]
(e) Yearly [ ]
(f) Any other, please specify: ……

6.4: What is level of satisfaction on Web-Based library Resource and Services of your library as par user's feedback?

(a) Highly satisfy [ ] (b) Satisfy [ ]
(c) Neutral [ ] (d) Dissatisfy [ ]
(e) Highly Dissatisfy [ ]

6.5: What takes action by library creating awareness among users regarding utilization of Web-Based Library Resource and Services? (Multiple answers permitted)

(a) Library orientation program [ ] (b) Training/workshop/demonstration [ ]

(c) Special classes [ ] (d) Online virtual tours [ ]

(i) Any other, please specify: ……

6.6: Identify the problem faced by you in providing the web-based library resource and services in your library? (Multiple answers permitted)

(a) Slow internet connection [ ] (b) Lack of appropriate technology [ ]

(c) Lack of system expert [ ] (d) Collaboration with users [ ]

(e) Lack of awareness among users [ ] (f) Lack of management support [ ]

(i) Any other, please specify: ……

6.7: Please gave same valuable suggestion for further growth of Web-Based Library Resource and Services in your Library in the future?

……
……
……
……
……
……

Thanks for your cooperation **Signature**

RESEARCH SCHOLARS QUESTIONNAIRE

Dear Research Scholar

I am requesting you to kindly fill up this questionnaire Entitled : **"SATISFACTION LEVEL ON WEB BASED LIBRARY RESOURCES & SERVICES AMONG LIBRARY & INFROMATION SCIENCE RESEARCH SCHOLARS OF CENTRAL UNIVERSITIES IN NORTH INDIA: A STUDY"** under the guidance of Prof. K.L. Mahawar, DLIS, Babasaheb Bhimrao Ambedkar University, Lucknow.

The data provided by you will be kept confidential and used for research purpose only.

Thank you very much for your cooperation in advance.

With regards,

Omprkash Kumar Jigyshu

Ph. D Research Scholar

DLISc. BBAU, Lucknow

1. **GENERAL INFORMATION:**
   (a) Name of the University: ……
   (b)Name of Research Scholar:……..
   (c)Address: ……
   (d) Phone. ……
   (e) Mobile Number……
   (e) E-mail ……..……...

Section: 1 Web-Based Library Resources:

1. Does your Library provide Web-Based Library Resource and Services?

(a) Yes [ ] No [ ]

2. Do you aware from Library Resources and Services of your Library offer via website?

(a) Yes [ ] No [ ]

If yes, what is the frequency of your visit to library/library websites? Please tick the Following?

(a) Daily [ ] (b) Weekly [ ]
(c) Fortnightly [ ] (d) Monthly [ ]
(e) Occasionally [ ]
(f) Any other please specify…….…….…….…….…….

3. Please tick marks each of the following media regarding to your preference. (Multiple answers permitted)

Sr. No.	Prefer media	Print media (5)	Digital media (4)	Internet (3)	TV (2)	Social media (1)
1	Which media do you use most					
2	Which media best describes your required information					
3	Which media do you think is the most powerful tools for media messages					
4	Which media impacts on academic work most					

4. From which place do you most frequently access Web-Based Library Resources? (Multiple answers permitted)

(a) At university library [ ] (b) At campus [ ]
(c) At home [ ] (d) In cyber library [ ]
(e) In cyber café [ ] (f) In hostel [ ]
(g) Any other please specify……

5. Please rate each of the following use Web-Based Library Resources are providing your University Library via website? (Multiple answers permitted)

Sr. No.	Resources	Use		Highly satisfy (5)	Satisfy (4)	Neutral (3)	Dissatisfy (2)	Highly Dissatisfy (1)
		Yes	No					
1	Emerald Insight							
2	Elsevier science direct							
3	JSTOR							
4	Springer							
5	Any other ……..							

6. How do you search required information from the Web-Based Library Resources? (Multiple answers permitted)

(a) Type the web address directly [ ] (b) Use search engines [ ]
(c) Use subscribed e-Resources [ ] (d) By keyword [ ]
(e) By author name [ ] (f) By article name [ ]
(g) Web OPAC [ ]
(g) Any other please specify……

7. Do you think the Web-Based Library Resources and Services are useful because it allows (Multiple answers permitted)

(a) Save time and money [ ] (b) Easy access and faster service [ ]
(c) Interaction with Library Staff [ ] (d) 24X7 availability of services [ ]
(e) It allows self Service [ ] (f) Easy downloading [ ]
(g) Quick in searching [ ] (h) Accessibility from anywhere [ ]
(i) Simultaneous access by many at a time [ ]
(j) Any other please specify……

8. What are the various Web-Based Library Resources being used by you? (Multiple answers permitted)

Sr. No.	Resources	Use		Highly satisfy (5)	Satisfy (4)	Neutral (3)	Dissatisfy (2)	Highly Dissatisfy (1)
		Yes	No					
	E-books							
	E- journals							
	E- theses/dissertation							
	Open access journals databases							
	Institutional repository gateway							
	Online subject							
	E-databases							
	E- newspaper clipping							
	CD-ROM							
	E-patents/standards							

If any other, please specify _____

9. Do you access full text online databases offered by your library?

(a) Yes [ ] (b) No [ ]

If yes, please rate each of the following full text online databases access by you? (Multiple answers permitted)

Sr. No.	Full text online databases	Use		Highly satisfy (5)	Satisfy (4)	Neutral (3)	Dissatisfy (2)	Highly Dissatisfy (1)
		Yes	No					
2	Cambridge university press							
3	Economic & Political weekly							
4	Emerald							
6	JSTOR							
7	Science Direct							
8	Project Mouse							
9	Springer Link							
10	Taylor & Francis							
11	Any other……..							

If any other, please specify _____

If no, why you are not access full text online databases access? (Multiple answers permitted)

(a) Not aware about online database [ ] (b) Don't know actual sours [ ]

(c) Not interest [ ] (d) Preference of print media [ ]

(e) Inadequate ICT infrastructure [ ] (f) Slow access speed [ ]

(g) Lack of knowledge & training [ ] (h) Trouble in finding relevant information [ ]

(i) Insufficient Resources in their subject area [ ]

(j) Any other please specify……..……..……..……..……..……..

10. Do you access Open Access Resources offered by your library?

(a) Yes [ ] (b) No [ ]

If yes, please rate which of the following Open Access Resources access frequently by you? (Multiple answers permitted)

Sr. No.	Open Access Resources	Use		Highly satisfy (5)	Satisfy (4)	Neutral (3)	Dissatisfy (2)	Highly Dissatisfy (1)
		Yes	No					
1	DOAJ							
2	Open DOAR							
3	OAJSE							
4	LII of India							
5	DOAB							
6	Public Library of Science							
7	Shodhganga							
8	Shodhgangotri							
9	VidyaMitra							
10	E-PG Pathsahala							
11	Any other							

If any other, please specify _____

If no, what is reason that you are not access Open Access Resources? (Multiple answers permitted)

(a) Access only subscribed resources [ ] (b) Giving not authentic information [ ]

(c) Giving not sufficient information [ ] (d) Access only print resources [ ]

(e) Any other reason please specify……

11. For what purpose do you use Web-Based Library Resources? (Multiple answers permitted)

Sr. No	Purpose	Use		Highly satisfy (5)	Satisfy (4)	Neutral (3)	Dissatisfy (2)	Highly Dissatisfy (1)
		Yes	No					
1	For research work							
2	For writing articles/books/project							
3	For Up-to-date knowledge							
4	For assignment							
5	For Lecture							
6	Any other							

12. Are you satisfy with Web-Based Library Resources provides your Library via Internet?

(a) Highly satisfy [ ] (b) Satisfy [ ]

(c) Neutral [ ] (d) Dissatisfy [ ]

(e) Highly Dissatisfy [ ]

If no, please tick marks the following reason? (Multiple answers permitted)

(a) Less opening Time [ ] (b) Charges to access e-resources [ ]

(c) Lack of paper guidance [ ] (d) Lack of printing facilities [ ]

(e) In-sufficient e-resources [ ] (f) Technical problems [ ]

(g) Lack of probability in contrast with original print materials [ ]

(h) Failure of hardware and software affect the functioning of e-resources section [ ]

Section: 2 Web-Based Library Services:

Please give the rate of the following the Different Web-Based Services being used by you offered by the library through various sections? (Multiple answers permitted)

13. Web-Based Services in Reference Section.

Sr. No.	Reference Section	Use		Highly satisfy (5)	Satisfy (4)	Neutral (3)	Dissatisfy (2)	Highly Dissatisfy (1)
		Yes	No					
1	Virtual reference desk/ Ask-a librarian							
2	Inter-library loan based services							
3	Current awareness service							
4	Selective dissemination of information							
5	Document delivery service							
6	Online current awareness bulletin							
7	Virtual reference service							

14. Web-Based Acquisition Services.

Sr. No.	Acquisition Section	Use		Highly satisfy (5)	Satisfy (4)	Neutral (3)	Dissatisfy (2)	Highly Dissatisfy (1)
		Yes	No					
1	List of new arrival materials							

2	Alert service for new arrivals							
3	Request for document							

If any other, please specify _____

15. Web-Based Circulation Services.

Sr. No.	**Circulation Section**	**Use**		**Highly satisfy (5)**	**Satisfy (4)**	**Neutral (3)**	**Dissatisfy (2)**	**Highly Dissatisfy (1)**
		Yes	**No**					
1	Users accounts							
2	Issue/return services							
3	Reservation of document							
4	Renewal of loaned document							
5	Interaction with user for query							
6	Circulation policy							
7	Posting of overdue details of the user							

16. Web- Based Cataloguing Services.

Sr. No.	**Cataloguing Section**	**Use**		**Highly satisfy (5)**	**Satisfy (4)**	**Neutral (3)**	**Dissatisfy (2)**	**Highly Dissatisfy (1)**
		Yes	**No**					
1	Access to web-OPAC							
2	Access to union catalogue							
3	Access to e-journals through consortium							
4	Access to subscribed e-journal							
5	Access to electronic indexes							
6	download multimedia files							

If any other, please specify _____

17. What Search Techniques do you use for accessing Web-Based Resources? (Multiple answers permitted)

Sr. No.	**Search Techniques**	**Use**		**Highly satisfy (5)**	**Satisfy (4)**	**Neutral (3)**	**Dissatisfy (2)**	**Highly Dissatisfy (1)**
		Yes	**No**					
1	Boolean operator							
2	Truncation							
3	Proximity location							
4	Field specific							
5	Relevance							
6	Controlled vocabulary or subject							
7	Keyword							
8	Any other							

18. Web-Based Periodical Services.

Sr. No.	**Periodical**	**Use**		**Highly satisfy (5)**	**Satisfy (4)**	**Neutral (3)**	**Dissatisfy (2)**	**Highly Dissatisfy (1)**
		Yes	**No**					
1	Status of recommendation journal							
2	article alert service							

3	Recommendation for subscribe new journal							
4	E-article delivery							
5	Identify the most cited paper in various fields online							

If any other, please specify _____

19. Are you satisfy with Web-Based Library Services provides your Library via Internet?

(a) Highly satisfy [ ] (b) Satisfy [ ]
(c) Neutral [ ] (d) Dissatisfy [ ]
(e) Highly Dissatisfy [ ]

If no, please tick marks the following reason? (Multiple answers permitted)

(a) Less opening Time [ ] (b) Charges to access e-Resources [ ]
(c) Lack of paper guidance [ ] (d) Lack of Printing facilities [ ]
(e) In-sufficient e-Resources [ ] (f) Technical problems [ ]
(g) Lack of probability in contrast with original print materials [ ]
(h) Failure of hardware and software affect the functioning of e-resources section [ ]

Section: 3 General Web-Based Library Resources and Services.

20. Please give the rate of the following general Web-Based Library Services offered by your Library?

Sr. No.	**General web-based library services**	**Use**		**Highly satisfy (5)**	**Satisfy (4)**	**Neutral (3)**	**Dissatisfy (2)**	**Highly Dissatisfy (1)**
		Yes	**No**					
1	E-mail based service							
2	Feedback form							
3	FAQ							
4	Library holidays list							
5	Library news							
6	Map of library							
7	Information about special							
8	Helpdesk services							
9	Exhibition /seminar/conference							
10	Photo gallery							
11	Library forums							
12	Virtual library							

If any other, please specify _____

21. Are you face any problems while using Web-Based Library Resource and Services?

(a) Yes **[ ]** **(b)** No **[ ]**

If yes, what kind of problems face while uses web-based library resource and services? (Multiple answers permitted)

(a) Slow access speed [ ] (b) Difficulty in finding relevant information [ ]
(c) Overload of information on the Internet [ ] (d) Privacy problem [ ]
(e) It takes too long to view/download pages [ ] (f) Language problem [ ]
(g) Lack of knowledge [ ] (h) Bulk information [ ]
(i) Any other please specify……..

22. How did you learn to handle the Web-Based Resources and Services?(Multiple answers permitted)

Sr. No.	Learning Sources	Use		Highly satisfy (5)	Satisfy (4)	Neutral (3)	Dissatisfy (2)	Highly Dissatisfy (1)
		Yes	No					
1	Training from university library							
2	Self instruction							
3	External courses							
4	Guidance from colleagues and friends							
5	Guidance from library staff							
6	External resources							
7	Any other							

22. Do you think your library provide adequate infrastructure?

(a) Yes [ ] **(b)** No [ ]

If yes, please rate each of the following? (Multiple answers permitted)

Sr. No.	Library infrastructure	Highly satisfy (1)	Satisfy (2)	Neutral (3)	Dissatisfy (4)	Highly Dissatisfy (5)
1	Services					
2	Resources					
3	Other facilities					

If no. please give the suggestion to improved Web-Based Library Resources and Services infrastructure?

_____
_____
_____
_____
_____

Thanks for your cooperation **Signature**