

**WEB PRESENCE OF CENTRAL UNIVERSITY LIBRARIES IN
INDIA: CONTENT AND DESIGN TREND ANALYSIS**

**ATHESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY**

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AND INFORMATION SCIENCE**

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IN PARTIAL FULFILMENT OF THE REQUIREMENT OF THE DEGREE
OF DOCTOR OF PHILOSOPHY IN LIBRARY AND INFORMATION
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I, **Tribeni Pathak**, hereby declare that the subject matter of this thesis is the record of work done by me, that the contents of this thesis did not form basis of the award of any previous degree to me or to do the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/Institute.

This is being submitted to Mizoram University for the degree of **Doctor of Philosophy in Library and Information Science**.

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Aizawl, Mizoram

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PREFACE

The WWW (World Wide Web) refers to the entire system of interconnected documents, resources, and services accessible through the Internet. It encompasses websites, web pages, multimedia content, applications, and the vast network of links that connect them. The WWW was created as a means of organizing and navigating information in a user-friendly manner.

HTTP is the protocol that governs the communication between web browsers (clients) and web servers. When a user requests a web page by entering a URL or clicking on a link, the web browser sends an HTTP request to the appropriate web server. The server then processes the request and sends back an HTTP response, which contains the requested data (such as HTML documents, images, or other resources). HTTP defines the rules and conventions for how these requests and responses should be structured and transmitted.

HTML, on the other hand, is the markup language used to create and structure the content of web pages. It defines the elements and tags that allow web designers and developers to mark up the structure and presentation of the content. HTML tags are used to define headings, paragraphs, links, images, tables, and other elements that make up a web page. Web browsers interpret HTML code and render it visually to display the content to users.

Together, these components form the foundation of the World Wide Web, allowing users to navigate, access, and interact with information and services on the Internet. The World Wide Web (WWW) is a network of online web content, structured in HTML and accessed via HTTP. The term refers to all the interlinked HTML pages accessed over the internet. Many users consider the web a virtual library, and therefore, when information needs arise, they use the web. The exceptional growth of the web, information overload, and dynamism of the environment raised the question of the quality of web resources. The website's objective is accessibility and usability, which determine the good interaction and communication between the institute and the users. The internet and content of the websites have now become an integral part of any library to know about the services it provides to its users.

A website is a collection of related web pages that are hosted on a web server and can be accessed through the internet. It is typically identified by a unique domain name and can contain various types of content such as text, images, videos, and interactive elements. Websites are created using web development technologies like HTML, CSS, and Javascript, and they can provide information, entertainment, e-commerce functionality, communication platforms, and much more. A web page, on the other hand, is a single document within a website. It is a specific file written in HTML (Hypertext Markup Language) that is rendered by a web browser when accessed by a user. A webpage can contain text, images, links, multimedia, and other elements that are displayed and interacted with by the user.

When you access a website, you are typically taken to its home page, which is the main or starting webpage of the site. From there, you can navigate to other webpages within the same website by clicking on links or using the site's navigation menu.

The format of the contents of the website is vital because it is a key factor for the visitor to decide whether to stay or leave the website. The website of any university library must be up-to-date, complete with correct information. Therefore, this study, **“Web Presence of Central University Libraries in India: Content and Design Trend Analysis”** has brought out to overcome the gaping of web content, its design and development by analyzing different aspects of the websites/web pages of central universities libraries.

The thesis is arranged under the following six chapters:

Chapter 1 : Introduction

The objectives of this chapter are to give a brief introduction about the research work, the conceptual idea about content, web content, content analysis, an overview of the department of higher education (India), highlight the significance and scope of the study, research design, objectives, methodology and chapterization of the study.

Chapter 2: Literature Review

This chapter's objective is to provide a framework for research done on various web content analysis, web accessibility, web usability and webometric studies that have been conducted in India and abroad. The chapter describes about literature that has been published in the given field during a specific time frame.

Chapter 3: Central Universities & Libraries: An Overview

The objectives of this chapter is to give an overview of ministry of education, government of India, department of higher education, role of libraries in higher education, central universities and the libraries of central universities, India.

Chapter 4: Web Content Analysis: Conceptual Approach

This chapter's goal is to provide a quick overview of librametry, bibliometrics, scientometrics, informetrics, cybermetrics, webometrics, and their relationships. Additional information is provided on web link structure analysis, content analysis, various aspects of web content, and types of content analysis.

Chapter 5 : Data Analysis and Interpretation

This chapter analyzes the collected data of 44 central university libraries' websites in India to examine the library website performance based on objectives formulated for the present study and presented the data in tables and graphs for interpretation.

Chapter 6 : Findings, Conclusion, and Suggestions

This chapter represents the outcomes of the study and concludes by providing suggestions to improve the web content and more useful information and making it more user-friendly for central university libraries' websites/web pages.

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LIST OF ABBREVIATIONS

Terms	Description
AACR	Anglo-American Cataloguing Rules
APA	American Psychological Association
CAS	Current Awareness Service
CCTV	Closed-Circuit Television
CD-ROM	Compact Disc Read-Only Memory
CMS	Content Management System
DDC	Dewey Decimal Classification
DDS	Document Delivery Service
DELNET	Developing Library Network
EDS	EBSCO Discovery Service
FAQs	Frequently Asked Questions
GOI	Government of India
HEI	Higher Education Institution
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transfer Protocol
ICT	Information and Communication Technology
IIM	Indian Institute of Management
IIS	Indian Institute of Science
IIT	Indian Institute of Technology
ILL	Inter Library Loan
ILMS	Integrated Library Management System
INFLIBNET	Information and Library Network
LAN	Local Area Network
LMS	Library Management System
MHRD	Ministry of Human Resource Development
MoE	Ministry of Education
NAAC	National Assessment and Accreditation Council
OCLC	Online Computer Library Center
ODL	Open and Distance Learning

OPAC	Online Public Access Catalogue
PDF	Portable Document Format
Ph.D.	Doctor of Philosophy
QR Code	Quick Response Code
RFID	Radio Frequency Identification
SDI	Selective Dissemination of Information
SNS	Social Networking Site
SOUL	Software for University Libraries
UGC	University Grant Commission
UNESCO	United Nations Educational Scientific and Cultural Organization
URI	Uniform Resource Identifier
Wi-Fi	Wireless Fidelity
WWW	World Wide Web

CHAPTER 1

Introduction

The objective of the Chapter

The objectives of this chapter are to give a brief introduction about the research work, the conceptual idea about content, web content, content analysis, an overview of the department of higher education (India), highlight the significance and scope of the study, research design, objectives, methodology and chapterization of the study.

1.1. Introduction

In the present context, the internet and web technologies are one of the most widely used forms of communication that aid in the creation and publication of information about various library activities and services. With the help of ICT, a variety of opportunities are opened up that might help find solutions to some of the biggest problems in fields including acquisition, circulation, periodical, cataloging, and serial control. Rapid development in new technologies, such as QR Code, RFID, Web 3.0, ontology, and semantic web, has greatly improved the ability of library services to store, process, and retrieve information, repackage it for communication and sharing, and handle the exponential growth of information efficiently and cost-effectively. In an era of information explosion and the creation of a wide range of new technologies to meet the shifting complex information requirements of users, the use of ICT tools in libraries has become standard practice. Websites have turned into effective communication tools. No library can dispute the university library website's capacity for information distribution. In the digital world, library visitors often browse the institution's website before going in person. It elevates the significance of the data accessible through portals or websites for libraries. All e-resources and library services can be viewed on the library website, a single platform that is focused on providing services. Most libraries have created a library website because they recognise the fundamental benefit of having a consistent interface to inform visitors about library services and activities. The library's website serves as an online resource guide for its services and collections. They provide details on the many services offered by the library as well as its unique collection characteristics. The website for the library should be maintained properly and made appealing so that information seekers can easily and quickly find the information they need. A website must frequently be updated to make dynamic and current information accessible to

information seekers. As a result, maintaining the real information on websites has become the creators' and developers' responsibility to make it accessible to everyone worldwide.

1.2. Website

A collection of interlinked web pages that is publicly accessible and share a single domain name is called a website. It can be created and maintained by a company, government, educational institution, group, organization, or individual to serve different kinds of purposes. It is also known as a web presence and all publicly accessible websites constitute the WWW (World Wide Web). Content analysis defines a set of procedures for collecting and organizing information in a standard format that permits analysis to make inferences about the characteristics and meaning of written and other recorded material. It is a phase of information processing in which communications content is transformed, through the objective and systematic application of categorization of rules into data that can be compared and summarized.

1.2.1. What is the Web?

The World Wide Web, commonly known as the Web, was invented by Sir Timothy John Berners- Lee in 1989. A website is a set of related web pages of information that are linked together, electronically on the internet. The web page consists of graphics, multimedia, and text. Hypertext Markup Language (HTML) is used for writing a web page and the pages or files can be accessed via HTTP- Hyper Text Transfer Protocol. This protocol transforms information from the website's server to display in the user's web browser. For example, when someone enters a URL (Universal Resource Locator), it sends an HTTP command to the server directing it to fetch and pass on the requested web page. URL is the generic term for all types of addresses and names that point to objects on the World Wide Web. For example, to visit the LIS links website, you need to go to the URL www.lislinks.com. All publicly accessible websites are collectively called the WWW.

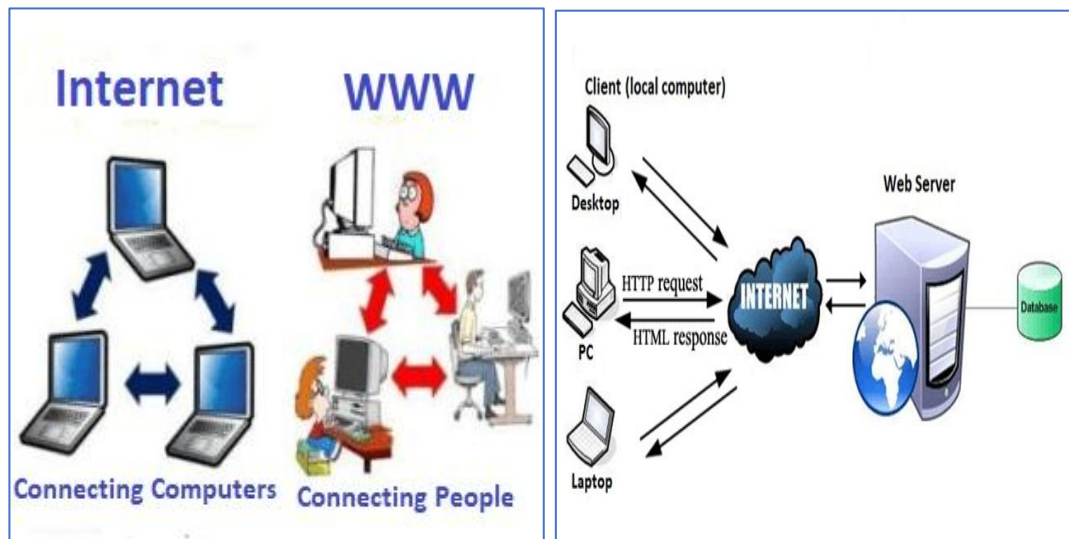


Figure-1.1: Internet vs. WWW and HTTP vs. HTML
 (Source: <https://www.javatpoint.com/what-is-world-wide-web>)

The World Wide Web has made a huge impact on the running of academic libraries. The functioning of libraries has shifted from traditional to the use of modern ICT (Information Communication Technology) and artificial intelligence. Researchers are relying on web-based resources for their academic and research activities.

1.3. Difference between Website and Web page

A web page is a single document on the web using a unique URL (Universal Resource Locator), while a website is a collection of multiple web pages in which information on a related topic or another subject is linked together under the same domain address.

A website is a combination or collection of web pages grouped, which can be accessed anytime and anywhere by anyone via the internet. Using the hyperlinks, all these pages are linked together. Websites can also be either static or interactive.

Web page, in the meanwhile, is a single page or document that is displayed in web browsers like Google Chrome, Firefox, Opera, and so on. A unique URL address is attached to the web pages and is used to access that particular page. Web pages can also be either static or dynamic.

1.4. Content

The definition of the term content differs from time to time in the context of the circumstances. However, in terms of Library and Information Science, the term “content” can be conceptualized from the following definitions:

The Britannica Dictionary defines the term "content" as the facts, ideas, or images that are in an article, book speech, movie, etc.

Example:

- a) In terms of content, the article is good, but it is written poorly.
- b) An abstract of the book's content
- c) The kids aren't allowed to watch films with violent content. [=films in which violent things happen]

The *Encyclopedia Dictionary of Library and Information Science* defines—content as the essential substance or matter of a written work or discourse, as opposed to its form or style. In a more general sense, all the facts, ideas, or statements are contained in a written work or book.

The *Harrod's Librarians' Glossary and Reference Book* (2005) further explains the meaning of content as "the intrinsic information and data stored in and communicated by any document – printed or electronic – that make it useful and usable to end users." It is distinguished from the printed format, distribution channel, or network that carries it. Content can include all forms of textual material and manuscripts, sound, moving and still images, bibliographic datasets, and statistical and other forms of data. (Devi, 2017).

According to Free Dictionary, content refers to,

- a) To individual topics or items that are dealt with in a publication or document: a table of contents.
- b) The material which includes text and images, constitutes a document or publication.
- c) Information, such as text, sound, and video, usually contrasted with its format of presentation: a television.

1.5. Web Content

In the book *Information Architecture for the WWW*, Peter Morville and Lou Rosenfeld wrote, "We define content broadly as 'the stuff in your website.' Web content may include web page document pages, software data and applications, e-services, audio, images, and video files, personal web pages, archived e-mail messages stored on email servers, and so on. And we include future web content as well as present web content roadmap."

Web content can be described, the content as the animation, audio, and video textual, images, on any web page or website. Web contents are available and distributed in digital format namely; PDF, texts, images, data, audio and video, archived e-mail messages, data, e-services animation, and more.

1.5.1. Content analysis

In simple terms, content analysis is a scientific study of the content of the communication. According to **Berelson (1952)**-content analysis is a research technique for the objective, systematic, and quantitative description of the manifest content of the communication.

Kerlinger (1986) defined-content analysis as a method of studying and analyzing communication in a systematic, objective, and quantitative manner to measure variables.

Krippendorff (2004) defined- content analysis as a research method for making replicable and valid inferences from data to their context.

Content analysis is a research tool used to determine the presence of certain words or concepts within texts or sets of texts. Researchers quantify and analyze the presence, meanings, and relationships of such words and concepts, then make inferences about the messages within the texts, the writer(s), the audience, and even the culture and time of which these are a part. Texts can be defined broadly as books, book chapters, essays, interviews, discussions, newspaper headlines and articles, historical documents, speeches, conversations, advertising, theater, informal conversation, or any occurrence of communicative language. Texts in a single study may also represent a variety of different types of occurrences, such as Palmquist's 1990 study

of two composition classes, in which he analyzed student and teacher interviews, writing journals, classroom discussions and lectures, and out-of-class interaction sheets. To conduct a content analysis on any such text, the text is coded, or broken down, into manageable categories on a variety of levels-word, word sense, phrase, sentence, or theme and then examined using one of content analysis' basic methods: conceptual analysis or relational analysis.

1.5.2. Types of Content Analysis

There are two types of content analysis- relational analysis and conceptual analysis. The relational analysis examines and explores the relationships among concepts in a text. It is also known as semantic analysis. The conceptual analysis represents the frequency and existence of concepts in a text. For examination, a concept is chosen and the analysis involves quantifying and counting its presence. The main aim of this type of study is to analyze the occurrence of terms in the data. Terms may be implicit or explicit.

1.5.3. Steps of content analysis

The steps, that are followed in the process of content analysis study are-

- a) Select the content for analysis- Based on the research question, the researcher chooses the materials or text (speeches, newspapers, and websites) to analyze.
- b) Select the units and categories of analysis- The researcher determines the units that will be coded and the categories that will be used for coding.
- c) Develop coding rules- It is necessary to define coding rules to make the content analysis methods more reliable and transparent.
- d) Code the material- The researcher arranges each text or material in the appropriate categories that can be done manually as well as automatically.
- e) Analyze and present results- After completing the coding, collected data are analyzed to interpret the results to respond to research questions.

1.5.4. Advantages of Content Analysis

Some of the advantages of content analysis are given below:

- i. Unobtrusive collection of data- Researchers can analyze social interaction and communication without the involvement of participants.

- ii. Replicable and transparent- It follows a systematic and transparent procedure that, other researchers can replicate to yield highly reliable or authentic results.
- iii. Flexibility- Content analysis research can be conducted at any location, at any time, and at a low cost. Researchers must focus only on access to the appropriate sources.

1.5.5. Disadvantages of Content Analysis

Some of the disadvantages of content analysis are given below:

- i. Time-consuming- coding a large volume of text is time-consuming as well as it is difficult to computerize effectively.
- ii. Subjectivity- Content analysis is a descriptive method that draws subjective interpretation. It may affect the validity and reliability of the results.
- iii. Increased error- Content analysis subjects to increased error when the relational analysis obtains a higher level of explanation.

1.5. Library Website Design Trends

In recent years, central universities as well as central university libraries' websites/web pages in India have embraced various design trends to enhance user experience, accessibility, and visual appeal. The design trends focus on responsive design, minimalist layouts, accessibility, multimedia integration, user-centered design etc. These trends contribute to create engaging, accessible, and visually appealing websites/web pages that effectively communicate the institution's information and reflect their commitment to innovation and user satisfaction.

Some general design trends for library websites/web pages that are popular in recent years are mentioned below-

1. Minimalistic Design: Clean and minimalist designs are popular for library websites, focusing on simplicity and ease of navigation. clear typography, and a limited color palette to create a visually appealing and uncluttered interface. This minimalist design helps in organizing information effectively, creating a visually pleasing experience and allowing users to focus on the essential content.

2. Responsive and Mobile-Friendly: With the increasing use of mobile devices, it's essential to ensure that the library websites/web pages are responsive and optimized for mobile viewing. This means the website should adapt seamlessly to different screen sizes and resolutions.

3. Intuitive Navigation: Libraries typically have vast amounts of information and resources. They can implement a user-friendly navigation system that allows visitors to easily find what they are looking for.

4. Search Functionality: A robust search feature is crucial for library websites. Incorporating a prominent search bar helps users to quickly find books, articles, databases, or any other resources available in the libraries' collection.

5. Accessibility: Library should ensure that the websites/web pages follow accessibility standards, making it usable for individuals with disabilities.

The design trends of websites/web pages can evolve over time, and it's essential to conduct user research and gather feedback from the central university community to reshape the library websites/web pages to their specific needs and preferences.

1.7. Ministry of Education, Government of India

Education plays a significant and remedial role in balancing the socio-economic fabric of the Country. Since the citizens of India are its most valuable resource, our billion-strong nation needs nurture and care in the form of basic education to achieve a better quality of life. This warrants an all-around development of our citizens, which can be achieved by building strong foundations in education. In pursuance of this mission, the Ministry of Education (MoE) was created on September 26, 1985, through the 174th amendment to the Government of India (Allocation of Business) Rules, 1961. Currently, the MoE works through two departments:

- Department of School Education & Literacy
- Department of Higher Education

While the Department of School Education & Literacy is responsible for the development of school education and literacy in the country, the Department of

Higher Education takes care of what is one of the largest Higher Education systems in the world, just after the United States and China.

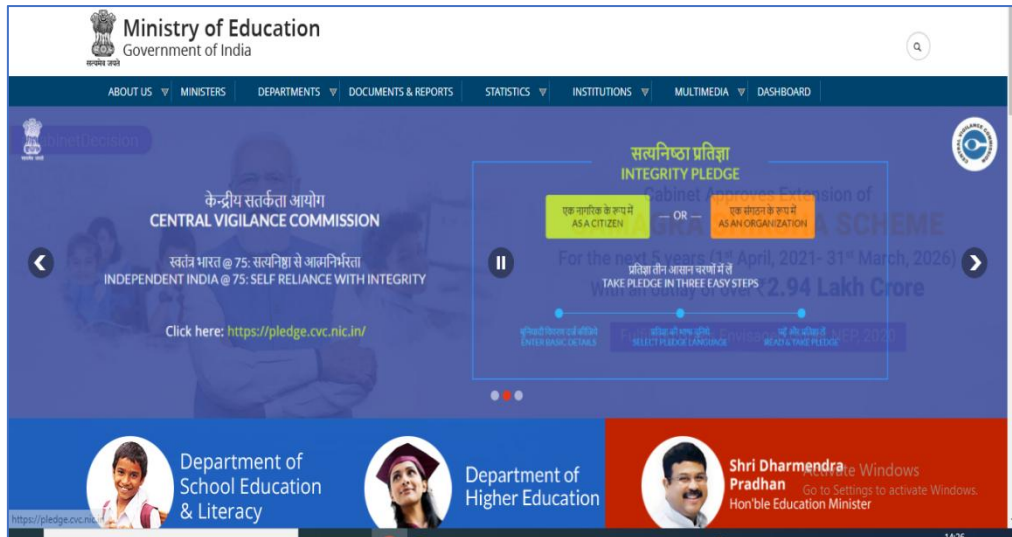


Figure-1.2: Website of Ministry of Education, Government of India
(Source: <https://www.education.gov.in/en>)

1.8. Department of Higher Education (MoE, Government of India)- Overview

The Department of Higher Education, MoE, is responsible for the overall development of the basic infrastructure of the Higher Education sector, both in terms of policy and planning. Under a planned development process, the department looks after the expansion of access and qualitative improvement in higher education, through world-class universities, colleges, and other institutions. Department of higher education consists of Apex Level Bodies, Boards of Apprenticeship Training, Book Promotion, Central Universities, IIMs, IISc, Bangalore & IISERs, IITs, Institutions of National Importance, Institutions related to Hindi and other Indian Language, Languages, NITs, NITTRs, Planning, PSU, Sanskrit & Vedic Institutions, UNESCO, Institute of Eminence, Others.

1.9. Central Universities of India

Central universities in India are a significant component of the country's higher education system. These institutions, established by the Government of India, play a crucial role in providing quality education and promoting research in various disciplines. Central universities are prestigious institutions of higher education

directly funded and administered by the Government of India through the Ministry of Education (MOE) formally known as the Ministry of Higher Education under the umbrella of the University Grant Commission (UGC). These universities were established by the act of parliament with specific objectives and missions as stated in that particular act.

Presently, there are 44 central universities under the Ministry of Education in India (source: <https://www.education.gov.in/central-universities>), excluding Agriculture Universities and Sports Universities, which offer a wide range of courses and programs and are situated across the country. These universities are known for their academic excellence, research facilities, and commitment to fostering an environment conducive to learning and innovation.

Central universities often have well-established research facilities, centers of excellence, and collaborations with national and international academic institutions. They contribute significantly to scientific research, academic foreign exchange, social sciences, humanities, technology, and other areas of study.

Furthermore, central universities often provide scholarships and financial aid to deserving students, making quality education affordable for more people. Additionally, they encourage students to participate in extracurricular activities, sports, cultural events, and community engagements. The institutions serve as pillars of higher education, nurturing the intellectual development of students and advancing knowledge across a wide range of fields.

1.10. Significance and Scope of the Study

Content analysis is a very significant part of the field of library and information science in which we analyze the content of documents. This is a part of a qualitative study and one established branch of bibliometrics. In the digital era, the web became the main source of information and plays an important role in information dissemination because users became more web savvy to find their information. It means the information must be available in the web domain so that users can access it in 24X7 modes. Therefore, most of the good institutions designed and developed

their website to provide related information through the web. It initiates the research in the area of website content analysis, which was originally developed from bibliometrics. There are many studies on content analysis and design trends of the website have been conducted in the field of library and information science in India as well as over the globe to measure and evaluate website content and design trends but no depth study has been conducted to evaluate the contents, structures, and services of the library websites/web pages of Central Universities in India. Therefore, the present study is an attempt to fulfill the gap by examining the contents available on all central university library websites/web pages. The present study is an effort to reveal, how many support their patron to give information of fruitful their information needs through their website content. Apart from this, the findings of the present study may help professionals and webmasters in reshaping the institute's website in a dynamic and informative way. The ranking of the central university based on their web content may help to list the best institute website among all Central Universities and it will be used as a road model to design & develop the library website in other institutions. The finest library website amongst the central universities in India is ranked by rating their libraries depending on the quality and content of their websites, and it is considered a model for how other institutions' libraries should plan and build their websites.

The scope of the present study is limited to examining the library websites of Central Universities in India which are the apex educational institutions of the higher education system in India. Presently there are a total of 44 Central Universities in India as listed on the MoE, Government of India website (<https://www.education.gov.in/central-universities>) as of 10th March 2020, situated in a different part of the country as listed in table-1.1. Thus the scope of the present study is limited to these 44 central university libraries websites.

Table-1.1: List of Central Universities in India(Source: <https://www.education.gov.in/central-universities>)

SL. No.	Name of the University	Short Form	State	Library Website/ Web page Link
1	Aligarh Muslim University	AMU	Uttar Pradesh	https://www.amu.ac.in/libraries/maulana-azad-library
2	Assam University	ASU	Assam	http://www.aus.ac.in/library/
3	Babasaheb Bhimrao Ambedkar University	BBAU	Uttar Pradesh	https://www.gbl.bbau.ac.in/
4	Banaras Hindu University	BHU	Uttar Pradesh	https://www.bhu.ac.in/lib/
5	Central University of Bihar	CUB	Bihar	https://www.cusb.ac.in/index.php/2016-07-01-04-53-58/2016-03-09-15-31-33/central-library
6	Central University of Gujrat	CUG	Gujrat	http://library.cug.ac.in/ or http://14.139.122.35/drupal/node/1
7	Central University of Haryana	CUH	Haryana	http://www.cuh.ac.in/library.aspx
8	Central University of Himachal Pradesh	CUHP	Himachal Pradesh	http://www.cuhimachal.ac.in/library.aspx
9	Central University of Jammu	CUJ	Jammu & Kashmir	https://cujammu.ac.in/Default.aspx?option=article&type=single&id=35&mnuid=738&prvtyp=site
10	Central University of Jharkhand	CUJH	Jharkhand	http://cuj.ac.in/library.php
11	Central University of Karnataka	CUKR	Karnataka	http://cuklibrary.ac.in/index.html

12	Central University of Kashmir	CUKS	Jammu & Kashmir	https://www.cukashmir.ac.in/displaydepartment.aspx?id=74&did=36&pag=494
13	Central University of Kerala	CUK	Kerala	http://www.kulib.in/
14	Central University of Orissa	CUO	Orissa	http://library.cuo.ac.in
15	Central University of Punjab	CUP	Punjab	http://www.cup.edu.in/library.php
16	Central University of Rajasthan	CUR	Rajasthan	http://www.curaj.ac.in/library
17	Central University of Tamil Nadu	CUTN	Tamilnadu	https://cutn.ac.in/central-library/
18	Dr. Harisingh Gaur Vishwavidyalaya	HGV	Madhya Pradesh	http://dhsgsu.ac.in/departmentsdetails/110
19	Guru Ghasidas Viswavidyalaya	GGV	Chhattisgarh	http://www.ggu.ac.in/central_library.html
20	Hemvati Nandan Bahuguna Garhwal University	HNGV	Uttarakhand	http://www.hnbggu.ac.in/library-srinagar-campus https://ggu.ac.in/gguold/central_library.html
21	Indira Gandhi National Open University	IGNOU	Delhi	http://www.ignou.ac.in/ignou/aboutignou/division/1dd/introduction
22	Indira Gandhi National Tribal University	IGNTU	Madhya Pradesh	http://www.igntu.ac.in/clib.aspx
23	Jamia Millia Islamia	JMI	Delhi	https://www.jmi.ac.in/zhlibrary
24	Jawaharlal Nehru University	JNU	Delhi	http://lib.jnu.ac.in/
25	Mahatma Gandhi	MGHV	Maharashtra	http://hindivishwa.org/cont

	Antarrashtriya Hindi Vishwavidyalaya			entdtl.aspx?category=13&cgid=34
26	Manipur University	MNU	Manipur	https://www.manipuruniv.ac.in/p/library
27	Maulana Azad National Urdu University	MANU	Telangana	http://manuu.ac.in/Eng-Php/central_library.php
28	Mizoram University	MZU	Mizoram	https://lib.mzu.edu.in/
29	Nagaland University	NAU	Nagaland	https://library.nagalanduniversity.ac.in/
30	North-Eastern Hill University	NEHU	Meghalaya	http://library.nehu.ac.in/
31	Pondicherry University	PCU	Pondicherry	http://lib.pondiuni.edu.in/
32	Rajiv Gandhi University	RGU	Arunachal Pradesh	https://rgu.ac.in/library/
33	Sikkim University	SKU	Sikkim	https://library.cus.ac.in/
34	Tezpur University	TZU	Assam	http://www.tezu.ernet.in/Library/
35	The English and Foreign Languages University	TFLU	Telangana	https://www.efluniversity.ac.in/ramesh_library.php
36	Tripura University	TPU	Tripura	https://www.tripurauniv.ac.in/Home/CentralLibraryIndex
37	University of Allahabad	UOA	Uttar Pradesh	https://www.allduniv.ac.in/facilities/about1
38	University of Delhi	UOD	Delhi	http://crl.du.ac.in/
39	University of Hyderabad	UOH	Telangana	http://igmlnet.uohyd.ac.in:8000/
40	Visva Bharati	VBH	West Bengal	http://visva-bharati-library.in/
41	Mahatma Gandhi	MGCU	Bihar	http://www.mgcub.ac.in/lib

	Central University			rary.php
42	Central Sanskrit University	CSU	Delhi	http://www.sanskrit.nic.in/section_library.php
43	Shri Lal Bahadur Shastri National Sanskrit University	LNSU	Delhi	https://www.slbsrsv.ac.in/library/about-library-0
44	National Sanskrit University	NSU	Andhra Pradesh	https://nsktu.ac.in/index.php/about-library/

1.11. Statement of the Problem

The changing information-seeking behavior of users has led the libraries to use advanced information technology i.e., a library website. A website is a collection of web pages, and its home page is known as the website's homepage. So, the websites are the most crucial component of any institution. The library's websites or web pages serve as the organization's main information hub, disseminating and making information available to users. To keep users informed of new information about the institute or organisation, library websites must be updated with the most recent information and relevant hyperlinks. The central university library is an essential component of all learning, teaching, and research processes. As a result, the quality of library services provided by each institution has an impact on the output and quality of research at central universities. To provide library-related information online, central university libraries develop their library websites. Hence, the websites of libraries should be attractive and educational to quickly get the attention of web surfers and library users. In the subject of library and information science in India, several research on website content analysis and design trends have been carried out, but no comprehensive study has been carried out to analyse the websites of all central university libraries in India under one umbrella.

This study aims to identify the central university library websites in India and rank them according to a set of evaluation standards. The study's conclusions will be useful to librarians and webmasters as they remodel their library websites to make them more informative and interactive way.

1.12. Objectives of the Study

The present study focused on systematically evaluating the web content analysis of the websites/web pages of central universities' libraries in India. Specific objectives of the present study are mentioned below:

1. To develop the evaluation criteria for web content analysis of selected central universities libraries' websites based on existing criteria.
2. To examine the content, structure, collections, and services in the library website of central universities.
3. To determine the currency, accessibility, size, download speed, and user friendliness of the website.
4. To find out the domain extension, and interlinking pattern of library websites under the study.
5. To rank the central university library websites based on parameter scale points.
6. To give suggestions for content improvement of library websites of central universities based on observation and findings.

1.13. Research Methodology

Research methodology is the way of explaining how a researcher intends to conduct their research. It's a logical, systematic plan to resolve a research problem. A research methodology details a researcher's approach to the research to ensure reliable, valid results that address their aims and purposes. It includes what data they're going to collect and where from, along with how it's being collected and analysed.

To draw the findings for the research objectives, the researcher has adopted an established website content analysis process to examine the library websites/web pages of central universities of India in this study. Thus, a survey method of research has been undertaken for the present study. There are a total of 44 Central Universities in India as listed on the MoE, Government of India website (<https://www.education.gov.in/central-universities>) as of 10th March 2020, situated in a different part of the country. The primary data were collected from the respective central university libraries' websites by checklist and observation method. For the collection of primary data, a checklist was designed and developed with a total of 65

criteria/parameters and 200 evaluation points based on the prior study that was conducted by Madhusudhan (2012), Jayasundari & Jeyshankar (2014), Verma & Devi (2016), and Verma & Singha (2022). And the data were collected 3 times at different time intervals of 3 years.

The primary data collection process for the libraries' websites of the selected central universities happened in a three-phase period i.e., (i) between 01st July – 31st July 2020; (ii) between 15th July-30th July 2021; and lastly (iii) between 01st July- 15th July 2022.

1.14. Data Collection Method

For the present study on the content analysis of the central universities library websites/web pages of Indian, observation and survey method was used to collect the primary data from the respective library websites/web pages.

i) Survey Method

A survey method is a tool or technique that researchers can use to gather information in research by making or asking questions to predefined websites/web pages or groups of people. It is the exchange of information between the research participants and the person/ organization doing the research. For the present study, the researcher has surveyed 44 library websites/web pages of central universities, in India to collect the primary data.

ii) Observation Method

The observation method of research is a way of gathering data by watching behavior, and events, or noting physical characteristics in their natural setting. The researcher used this method to determine the present state of the information provided on the libraries' websites/web pages of central universities.

iii) Data Collection Tools

For the collection of primary data for analysis, the following tools have been used.

(a) Checklist: For the collection of primary data a checklist was designed and developed with 65 parameters and 200 score points based on the previous studies by Madhusudhan (2012), Jeyshankar (2014), Devi (2017), and Singha (2020). Based on

these 65 parameters mentioned in the checklist, the library websites/webpages were checked and evaluated to collect primary data for the study.

(b) Web Page Analyzer Tool: The researcher used a web page analyzer tool i.e.; Site24x7, which is an all-in-one monitoring solution for cloud-scale applications that keeps track of websites, servers, applications, networks, cloud, and more. (<https://www.site24x7.com/help/getting-started.html>).

(c) Mobile-Friendly Tool: Google Mobile-Friendly Test, (i.e.; <https://search.google.com/test/mobile-friendly>) was used to check web page mobile friendly of selected central universities libraries' Websites/Web Pages.

(d) Alexa Analytics: (<https://www.alexa.com/siteinfo/>) was used to check the current position of central universities libraries websites/web pages on the Alexa ranking system of global and Indian. Now, this site is not accessible on the web which discontinued Alexa ranking services from May 1, 2022.

(e) Search Engine: Google (i.e.; <https://www.google.co.in/>) was used for the evaluation of selected central universities' libraries' websites/web pages and for collecting the data of the universities. Further, for calculating and assigning the ranks of the central universities libraries' websites/web pages based on their web content, a five-point rating scale was used. Under the present study, primary data were collected from the observation method by using a checklist method, and collected data were scrutinized, tabulated, and analysed for interference with the help of MS Excel Office 2019.

1.15. Designing the Evaluation Criteria and Score Points of Web Content Analysis

To evaluate the web contents of selected central universities, a checklist of 65 criteria was designed before data collection as mentioned in the methodology section. The criteria have developed with two variables "Yes" and "No" while conditional and additional scenarios were added as per the requirement. Table-1.2 shows that the score points have been developed to assess the content analysis of the library websites' of central universities in India. The parameter point was formulated based on the scoring points. The content analysis evaluation criteria of the 44 libraries websites of central university, India are provided in APPENDIX –III.

Table-1.2: Score Point according to the Variables

Variables	Scores
Yes (Normal)	+2
Yes (Conditional)	+1
No (Normal)	0
No (Conditional)	0
Yes (Additional)	+½

(Source: Devi, 2017& Singh, 2022)

The five-point rating scale was prepared based on the maximum score of 200 evaluation points and the scale of ratings to rank institutions is based on the point below:

- 161-200: Excellent
- 121 –160: Very Good
- 81 –120: Good
- 41 –80: Average
- 1 –40: Needs Improvement

1.16. Chapterization

The present study is divided into six chapters. 6th edition of American Psychological Association(APA) style is used for both citation and bibliographic references. The chapters' descriptions are given below:

Chapter-1: Introduction

Chapter-2: Literature Review

Chapter-3: Central Universities & Libraries: An Overview

Chapter-4: Web Content Analysis: Conceptual Approach

Chapter-5: Data Analysis and Interpretation

Chapter-6: Findings, Conclusion, and Suggestions

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CHAPTER 2

Literature Review

The objective of the Chapter

This chapter's objective is to provide a framework for research done on various web content analysis, web accessibility, web usability, and webometrics studies that have been conducted in India and abroad. The chapter describes literature that has been published in the given field during a specific time frame.

2.1. Introduction

A literature review includes a summary and synthesis of the sources into one document with an organisational structure. With the help of the literature review, it is possible to reach a new interpretation of previously published material or to produce a synthesis of previously and newly published material. In addition to this, it traces the progression of the field's intellectual thought. A literature review must be an insightful, objective summary of the data, offering a balanced view that takes into account both findings and current thinking. The information gathering, we might perform to gain a personal understanding of the history of a topic is also extended by a formal literature study.

Conducting a literature review is essential for developing a research idea, merging what is already known about a subject, and enabling us to identify the knowledge gaps and how our research could contribute to further understanding.



Figure-2.1: The Goal of the Literature Review
(Source:<http://www.tutorsglobe.com>)

The literature is scattered across multiple disciplines and large collections, making it extremely difficult to review the whole research done so far because many contributions have been made by different website developers, researchers, computer scientists, administrators, and others in addition to LIS professionals in the field of Website designing and maintaining, particularly in the library. Hence, a review of only the major research that is relevant to the current topic has been conducted.

This chapter presents a total of 65 reviews on a variety of research-related topics of which 13 are analyzed under webometrics analysis, 38 are studied based on web content analysis, 3 reviews are related to web accessibility, 4 are closely linked with web usability, and 7 are on website design.

2.1.1. Webometrics Analysis

Patel et al. (2021) analyzed the top 15 Indian universities' websites ranked in NIRF (National Institutes Ranking Framework). The study focused on webometrics analysis which examines the domain, domain age, and external and internal links. The study used Alexa for the collection of the data. According to findings, Anna University's website has the highest page authority score which is 59 out of 100. It was also found from the study that "Anna University" has the highest web traffic, referring domains.

Pal et al. (2020) carried out an analytical study on the websites of ICSSR- sponsored Research Institutes in India. The authors concentrated on calculating the three different web impact factors (IWIF, EWIF, and SWIF), analyzing the text analysis, and finding out the websites' overall popularity rankings. The study provided an overview of the websites of ICSSR- sponsored research institutes. Gujrat Institute of Development Studies (GIDS) website was linked with the highest 5 other research institutes' websites.

Stephen (2020) conducted a website analysis for the domain of the Anna Centenary Library in Tamil Nadu. Web analytics is the process of analysing the behavior of website visitors. Web analytics software is utilised to collect information about website users. The domain of the Anna Centenary library was evaluated using the

free tool uber suggests. The primary objectives of the study were to identify the monthly organic traffic and find out the country-wise top keywords for the ACL domain. The biggest number of visitors (organic monthly traffic) to the website was recorded in April 2019, followed by May, November, and December 2018. The lowest number of visitors was in August of this year.

Rekha and Kumar (2019) analysed the websites of the SAARC National Library Websites. The national library websites of SAARC nations were ranked using the WISER ranking algorithm. National Library ranked first in terms of its Web presence. The research determined that the websites of all national libraries contained inadequate intellectual content. The paper suggested publishing more content in the form of rich files and making more scholarly content available to increase visibility and web presence.

Verma and Brahma (2018) surveyed NIRF-listed (2017) university library websites. This study analysed the library websites of the top 25 universities. It evaluates domain authority, total web pages, linkages, and WIF for the library websites of 23 universities. Out of 25 universities, 1 university library website showed an error while opening the website and another university had no library website. The study revealed that the SWIF and IWIF of Birla Institute of Technology and Science, Rajasthan were ranked first with a score of 3309.52. Jamia Millia Islamia occupied the 2nd place with 1250 IWIF and 1250.05 SWIF. The Jawaharlal Nehru Centre for Advanced Scientific Research was ranked third with IWIF and SWIF scores of 230.26 and 230.31, respectively. With the highest External Web Impact Factor of 11.67, IISC, Bangalore occupied the top position.

Panchal, Roy, and Schofield (2017) conducted a study on the websites of social science research institutes in India. Based on 29 ICSSR research institutions, the study was conducted. The primary focus of the study was on metrics and ranking of the websites, and ICSSR research institutes. The major objectives of the study were to identify the website domains, total external and internal links, domain authority, and page authority. In the case of external links, OKD Institute of Social Change and

Development, Guwahati had the maximum number. According to the analysis, CPR (Centre for Policy Research), GIDR (Gujarat Institute of Development Research), and IDS (Institute for Developing Studies) were the most visited websites of the 29 ICSSR research institutes.

Varadharajalu and Dhanavandan (2017) undertook a study on State University websites' Web Impact Factors (WIFs) of Kerala. The research examined whether EWIF was more significant than SWIF. The findings result revealed that Shree Sankaracharya University has the highest SWIF score (0.0035), followed by the National University of Advanced Law Studies (0.0032). With a score of 0.00083 on the External Link Web Impact Factor, Kerala University ranked first. 8 (61.54%) of the 13 state universities in Kerala used the.ac.in domain extension for their websites. Even though Kerala is the most literate state in the country, 6 (46.15%) State Universities were established after 2001.

Chakravarty and Shalini (2015) analysed the top 10 library websites of India's Higher Educational Institutes. The webometric research was conducted using the google search engine. The primary objective of the study was to calculate the association between the Web Impact Factor and R-WIF of the library websites of Indian HEIs. Spearman's Rank assessed the significant and positive correlation between the Web Impact Factor and R-Web Impact Factor. It was noted that half of the library websites of HEIs secured different ranks while reviewing using WIF and R-WIF, whereas the other half of the libraries received the same rank while ranking through both formulas.

Sujithai and Jeyshankar (2013) analysed the web page of IIT websites. The web pages of websites chosen for the study were tested for reliability using a scatter plot, histogram, and line of best fit, and then regression analysis was performed using the SPSS 17.0 tool. The study's main goals were to find out the total number of web pages, the number of link web pages, self-link web pages, internal link web pages, external link web pages, etc.

Shukla and Poluru (2012) researched the websites of 173 Indian state universities. The data were gathered from Google Scholar and Site Explorer, and Web Indicators for Science, Technology, and Innovation Research (WISER) was used to assess the linkages and visibility of university websites. It was revealed that, out of 173 university websites, JNTU, and AP ranked top in regards to WISER rank. The authors stated that the impact of open access promotion, collaboration with other universities, online communities, and IR was beneficial for gaining more visibility of the websites of the university.

Babu et al. (2010) did a study on the websites of India's 40 central universities. The AltaVista (www.altavista.com) search engine was used to collect data. The primary objective of the study was to identify web pages, link pages, self-link pages, and external link pages; to construct the link network of the department of educational websites in India; to identify the domain and the simple Web Impact Factor, self-link Web Impact Factor, external Web Impact Factor, and revised WIF of central universities' websites in India; and to rank them according to the WIF. One-third of university websites have the '.ac.in' extension (47.5%); based on SWIF, Mizoram University was ranked first with 262 link pages and 41 web pages with 6.39 SWIF; based on Self Link Web Impact Factor, Central University of Odisha was ranked first with 14 self-link pages.

Jalal, Biswas, and Mukhopadhyay (2009) discussed on central university websites. Yahoo! was used to collect webometrics data, whereas Google was used for specific query syntax. The study attempted that the University of Delhi occupied the top position with a score of 4.28, while Sikkim University inhabited the bottom position with a score of 1.64 among Central Universities in India. India's Central universities showed a total of 66894 web pages and 59086 outlines. The search engine reported that each university has a total of 2568 links and 2908 web pages. The study revealed that Indian Central Universities made amazing progress in developing their websites. The study also attempted to show the visibility of Indian universities.

Noruzi (2006) discussed on web impact factor. The paper examined the benefits of WIF and its applicability as a research methodology indicator. According to the study, Web Impact was calculated to compare the attractiveness of web domains on the websites. The purpose of this paper was to make a literature review of the WIF and other related indicators. The instability of WIF was caused by some webmasters deleting old outlines from several websites and others linking to new ones.

2.1.2. Web Content Analysis

Johnson and Ramasamy (2021) discussed how the internet and social media have helped library groups grow in library locations. The most prominent online library organisations were highlighted in the study. The authors stated about the web and social media's remarkable advancements in the information-spreading space, library services that were previously only available by physically visiting the library work area and now it is accessible from the comfort of one's own home. The needs of libraries and their services are expanding and changing.

Dadhe and Dubey (2020) discussed how the new corona virus disease (COVID-19) makes things hard for everyone involved in the education system. The sudden and unexpected virus outbreak forced library staff to quickly come up with new ways to do their jobs, such as switching to digital platforms whenever possible and making sure that customers could get enough services from a distance. The goal of this article was to find out how technology saved India's top technological institutions during the COVID-19 pandemic, given how hard it is to provide services during a public health emergency. Based on information avail on their websites, the study looked into the services that Indian Institutes of Technology libraries offered (IITs) during the COVID-19 pandemic. The study also discussed the important steps made by the libraries to meet people's needs after the lockdown.

Mandrekar, Bala, and Rodrigues (2020) described how library websites play a crucial role in distributing and marketing information to all users. The study examined the extended library services provided by college libraries in Goa, India, to their user community during the covid-19 Pandemic. The web pages of all the college libraries

were analyzed and described to see if the library's contents meet the standards. Academic and research activities are web-based services that play an important role. For the study, 40 college libraries were used, however, only 29 of the libraries' websites contained links to their respective colleges' websites. The analysis discovered that the contents were poorly structured and organised to satisfy the needs of the users.

Rahman and Batcha (2020) evaluated the accuracy, accessibility, currency, and user-friendliness of the ten selected library websites of the colleges affiliated with the University of Delhi. The analysis covered the facilities and services offered by the websites. A checklist was used to organise the process of gathering data. According to the study, The majority of college libraries' websites included membership information 6(60%), library personnel 8(80%), an introduction 9(90%), and hours 6(60%). The study also revealed that none of the library websites or web pages provided social networking features, feedback forms, or single-window searches. In addition, they lacked news items, test questions, and user manuals. The Deshbandhu College library obtained a score of 38 out of 43, ranking it first, whereas the library of Ramjas College got a score of five (5), ranking it last. Future recommendations of the study provided conducting regular evaluation studies to maintain the currency of library websites, to meet user expectations, and to create a digital environment for the quick dissemination of library services. It has been noted that this study will serve as a model for future investigations into the creation of measuring frameworks for the assessment of library websites.

Arandhara and Borah (2019) evaluated the content of the two central university library websites in Assam. It was observed that both websites for the central university library included a variety of information, including about us, date of update, membership, copyright, home, collections, visitors counters, a floor plan, and library rules. The information on library hours, mission/vision, services, sections, and staff has only been made available by Tezpur University. Additionally, information about Web OPAC, digital library services, and database access is available on both of the central university library's websites. The information about

CAS, DDS, ILL, circulation, reprographics, reference service, and user education services has only been made available by Tezpur University. Information about indexing/abstracting and translation services is not available on either of the central university library's websites.

Bharati and Madhusudhan (2019) evaluated the content of the websites for the libraries at Jawaharlal Nehru University and Banaras Hindu University. The authors investigated both the qualitative and quantitative characteristics of the website's general information features, multimedia features, library service features, library features, library resources features, Web 2.0/library 2.0 features, link and maintenance features, informative feedback user interface features, search features, etc. The results revealed that JNU added features such as scrolling notice and the first leaf news tool, which focus users' attention on the content on the website, whereas BHU did not.

Kumar (2019) examined the information environment on the online portals of Indian universities awarded an "A" grade by NAAC as of April 13, 2016. This included all "A", "A+", and "A++" grade central, state, private, and deemed universities in India accredited by NAAC. The Research helped in evaluating library websites in terms of structure, design, collection, library services, and general information. One-third of NAAC-accredited "A"-grade universities are located in the South Zone of India, according to the study. Only two universities with an "A" grade are located in the North-East Zone of India. The majority of library web pages were connected to the university's homepage with library/central library and facilities/central facilities. About half of the selected library websites in India provided information on their location, staff directory, reading room facility, inter library loan, online Catalogue, and circulation section information.

Qallaf and Ridha (2019) examined the navigation, services, content, and web 2.0 characteristics of 110 academic library websites. The primary objective of the article was to investigate the current state of academic institution library websites, GCC (Gulf Cooperative Countries). A content analysis of all websites was conducted

with a library evaluation checklist was established. The research helped educators and information professionals in improving and expanding the quality of their websites. It is essential to create user-friendly websites for easy and rapid access to web-based and content-rich material for the vast majority of academic users who are members of the internet/google generation.

Blummer (2018) conducted a comprehensive review of academic library websites. Early in the 21st century, practically all academic libraries adopted the Internet as a means of user communication. Considering that websites initially provided information about the collections and services available in university physical libraries, early studies frequently focused on website design aspects. Beginning in the late 1990s, technological advances and new digitization programs created new opportunities for websites containing regional and commercial databases, e-books, electronic journals, and online encyclopedias. Around this period, literature review seen on the websites of university libraries describes their efforts to utilise internet technology to assist user groups.

Das and Das (2018) conducted a comparative examination of IISER library websites in India. The basic objective of the study was to identify the informational content of library web pages and IISER library websites in India to enhance their usability and accessibility. The study discovered that only one website (14.28%) had links to external search engines, whereas four websites (57.14%) featured A-Z title Lists, web OPACs, subject-by-subject lists, and publisher-by-publisher lists. On their respective websites, all libraries provided details about links to electronic resources, books, bibliographic databases, copyright issues, and licensing. Four (57.14%) libraries provided access to open-access journal e-books, full-text e-journals, and print journals. There was no information on journal back issues available in any library. Three websites provided simply a text-only version and site map (42.86%). One website (12.5%) featured a site designer, while two libraries (28.57%) offered photo galleries and hit counters. Six websites (85.71%) featured search capabilities, however, all websites had external links.

Devi and Verma (2018) conducted a case study on content analysis on IITs and NITs websites. 19 IITs and 29 NITs were used in the study, and a checklist with 172 parameters and the binary variables "Yes" and "No" was created to analyse the content of the websites for the libraries of IITs and NITs. The primary data were gathered between the first and twentieth of November 2016 and were examined and validated once more between the first and fifteenth of March 2017. The analysis revealed that 14 (74%) of the 19 IITs included in the study had their own unique, specialised library websites. The analysis found that none of the IIT and NIT library websites received a very good '106-140' or excellent more than 141' grade.

Kuri (2018) studied the websites of South Indian Central University Libraries. The purpose of this study was to assess the state of central universities in South India's library websites. It has been discovered that the Central Universities of South India had a vast website of online resource collections (e-books, e-journals, list of E-Journal, and e-database in all six central Universities). Only the UoH library had a web page that was linked to the main homepage, and this library website only checked off the majority of the evaluation criteria. DDS and plagiarism check services were offered by CUKL, CUKG, and UoH. Similar information was provided by CUTN and UoH on social networking services and exhibitions. On their websites, none of the libraries offered video viewing facilities.

Punwatkar and Salunke (2018) did an analytical investigation on the website of the Indian Institute of Management Libraries. Any institution's library and information center is essential for meeting user information needs. The Indian Institute of Management is renowned for its contributions to management education. The paper analysed the website's contents and describes how to use the Indian Institute of Management Library's website. Each IIM library featured a technologically-based library gateway. After reviewing relevant literature, the authors created a checklist that was coded in Excel. According to the study, a variety of web items, including information about the digital collection, print collection statistics, a list of services offered, different types of resources and their pertinent links, and links to the library's

social media accounts, were discovered. In the case of electronic resources, practically all IIM satisfied user needs by becoming accessible online.

Rozalynd and Wilson (2018) examined the homepages of 135 health sciences libraries for both content and design elements. The study's goal was to examine frequently utilised design and content elements on the homepages of academic health sciences libraries. Following the collection of data, it was discovered that the homepages of the websites contained several essential elements, including a contact email address, a contact phone number, a suggestion box or feedback link, a "Ask a Librarian" feature, a search options box, the website update date, the copyright year, subject guides, etc.

Ahmed (2017) conducted a study on the quality and content of a sample of five North Indian department websites. To analyse the content of the DLIS's chosen websites, a checklist was created that was divided into nine groups. Among the five DLIS, it has been noted that the DLIS of the University of Delhi was ranked first. Rohtak was at the bottom of the DLIS rankings for north India. To represent the new highest degree of capability for web-based services, The author has proposed modifying the dynamic and interactive library website, which must provide dynamic contents, RSS feeds, virtual tours, online bulletin boards, online calendars, FAQs, discussion forums, etc. For quality assurance and self-improvement, the study's conclusions were helpful to website developers.

Biswas (2017) evaluated the websites of general degree institutions and libraries in West Bengal, Nadiya, and Kalyani. 22 general degree colleges websites were taken for study. The entire analysis focused on the information provided by college websites. The primary objectives of the study were to identify all sorts of information provided on the websites of general degree institutions and to identify all types of information regarding library collections, services, etc. The library website is an essential service for facilitating communication between library staff and patrons. The study revealed that the majority of degree-granting institutions' websites lacked information on library services.

Devi and Verma (2017) studied the web content of North Eastern State NIT (National Institute of Technology) libraries in India. There are eight NITs in Northeast India out of a total of 31 NITs in India. The primary objectives of the study were to evaluate the web content and structure of North-East India's NITs' libraries' websites, as well as the accessibility, currency, and precision of NITs' libraries. The websites of the selected libraries were evaluated at various phases, and the data were presented in Microsoft excel. The authors advised that all libraries in North East India's NITs should have websites to engage with their users, and websites must be updated frequently so that information seekers can access accurate and up-to-date information on library websites.

Bhatt and Walia (2016) analysed the MLISc in Library and Information Science Department's website information on ICT programs in northern India. Since a majority of Indian students did not have a foundation in computer science, it was recognised that the context of the current technology infrastructure needs to be given. Because departments did not expose their students to the level of practical knowledge, they must study and understand practical information in the workplace. The researchers also observed a significant gap between the theoretical and practical teaching methods used in ICT components, i.e., a preference for theory over practice. Devi and Verma (2016) conducted a study to compare the web contents of North-Eastern Hill University and Mizoram University. The authors created a structured checklist based on the prior evaluations of websites undertaken by the other authors. Both MZU and NEHU were found to have copyright information and updated data on their respective websites. The study also revealed that NEHU offered a variety of information including Sitemap, feedback, FAQs, and a search option, among others. The websites of both universities satisfied the customers' need in knowing about the facilities of universities. The study revealed that out of 69 points, NEHU got the highest point- 59 and MZU got 47 points.

Jain (2016) evaluated a content analysis of university library websites. The scope of the study was limited to higher education institutions in the Mumbai region. Depending on the population served by a public, special, or academic library, the

website's content will differ. The various components of the homepage and site were reviewed. A list of sixty criteria was developed to evaluate the internet content of the library. The majority of libraries were seen to lack their websites. Under the section named Academics/ Infrastructure/ Facilities/Campus area, information on the library was available on the institute's website. Nonetheless, several libraries created their independent websites and linked them to the institution's main website. It has been revealed that each library website contains unique content and information.

Manjunatha (2016) did content analysis research on websites and special libraries. A library's website is comparable to a mirror, as it reflects the library's holdings, services, personnel, and all other aspects. For this study, eight Bengaluru, Karnataka-based special library websites were selected. It was demonstrated that all library websites contain information about the library and its services. Half of the library websites lacked a date of the last update. Important components of a library website, such as library rules and membership information, were absent from a significant number of websites, according to the survey.

Niazi and Kamran (2016) did a study on the websites of the 100 Iranian State Universities using the online quality evaluation method. A Delphi technique and descriptive survey were applied to conduct the research. The checklist was made with WebQEM's checklists. The paper analysed that state university websites of Iran met the four basic criteria; functionality, efficiency, and reliability were in a "good" condition, and usability was occupied in a "middle" condition. The study revealed that 37% of websites were in the middle 60% were in good condition.

Savitha (2016) analysed deemed university library websites in Karnataka. The purpose of this research was to identify the content and characteristics of the websites of Karnataka's deemed institutions and to evaluate how they function. Also, the study assessed library collections, library services, and access to additional resources. For the study, nine deemed institutions were selected, and it was discovered that the majority of their library websites fulfilled the needs of

information seekers. In addition, the author explains that 44% of institutions offered Web 2.0 services such as Twitter and Facebook.

Tella and Oladapa (2016) did a comparative analysis of existing library 2.0 technologies on the university library websites of selected Nigerian and South African universities. As a sample for data collecting, the top 10 universities in Nigeria and South Africa were selected, and five research questions were developed for the libraries. Library website content analysis was used for the collection of data on e-databases, electronic resources, and Web 2.0. After evaluating the data, it was found that South African university library websites offered more Library 2.0 facilities in terms of e-databases and e-resources than Nigerian university library websites.

Kaushik (2015) evaluated the library websites of 28 National Institutes of Technology by creating a list of 120 criteria organised into three primary categories. According to the study, both the NIT Silchar and NIT Rourkela library websites scored above average, receiving 79 and 95 points, respectively. The library websites of nine NITs were rated below average, and the websites of six more NITs needed to be improved. Eleven other NITs have been rated as average.

Verma and Devi (2015) performed research on the information found on the websites of seven Central Universities in India's North Eastern states. Due to the absence of web pages/websites during the study period, three central universities were not included in the data collection. Based on earlier studies, the authors created 66 criteria under 6 key topics to assess the websites' content. The North Eastern Hill University library homepage scored the highest on the evaluation criteria used by Tezpur University, according to the study's analysis. The authors recommended providing Web 2.0 tools and continuously updating the library's websites and web pages. They also recommended that the dead links on the library's website be removed.

Joicy and Rekha (2014) did a study on the websites of India's central universities. 44 out of 45 university websites functioned properly during the time of the study. According to the study, link analysis of university central websites is an untouched area of webometrics study. The majority of central university websites provided all the fundamental information and details, including links to contact, history, news and events, copyright, etc. Whereas, through the feedback form, few websites provided an opportunity for user interaction.

Vergheese and Syamili C. (2014) did content analysis research on Indian museum websites. The authors discovered that the majority of museum websites did not provide RTI information on their home pages. It is a necessary feature of the museum. It is necessary to include RTI information or links on the homepage of all websites. Apart from this, it was found that only a small number of websites included the date of the last update. Revealing the date of updating is very important for a website that displays the currency of information.

Yazdi and Deshpande (2013) evaluated the websites of 71 library associations using 15 specific Webometrics criteria, including authority (authors of the website), the association, accessibility, contact us, customer service, search, site map, HTML quality, navigation, and links, copyright, presentations (graphic design), user-friendliness, frequently asked questions, currency, and coverage of the web document. The analysis discovered that the majority of library association websites contained "contact us" links for more information, but very few also had links for frequently asked questions (FAQs).

Carlos and Rodrigues (2012) studied the quality evaluation of higher educational institutions' websites. In the current age of information and communications technology, higher education institutions use websites as a marketing tool. The test developed by Aladwani and Palvia was used to evaluate website quality. 118 websites of HEI, 48 of which belonged to private HEI and 70 to the public, were taken for the research study, and a group of students was asked to evaluate the quality of the 118 websites based on users' perceptions. According to the study, just

two HEI in Portugal utilised distance education and e-learning, and the websites of private HEI were of greater quality and more user-friendly in comparison to public HEI.

Madhusudhan (2012) evaluated the website of the Indian Institutes of Technology libraries in India. The research found that websites were not utilizing the potential of web/library 2.0 features. According to the study's findings, several IIT library websites in India were graded above average, mostly for giving general information about the library and its services and resources. It was discovered that the IIT Madras library website had the highest score with 78.88%, while the IIT Gandhinagar website had the lowest score with 33.33 %.

Ratha et al. (2012) presented a paper on the websites of IIT libraries. The authors examined the organisation and layout of IIT library web pages. The study was mainly conducted to determine the web structure, length, retrieval services, number of images, and location of the libraries' websites of IIT. 15 IIT libraries' websites were selected for the study and the observation method was used for the study. After collecting the primary data in an Excel spreadsheet, the information was shown in graphs and tables. The secondary data was gathered from periodicals, books, conference proceedings, the Internet, and other sources. It was found that the IIT Bombay library website led with 468(35.64%) total web pages followed by IIT Delhi website with 296 (22.54%).

Wilson (2011) conducted a theoretical study on content analysis research approaches. quantitatively or qualitatively, content analysis is used to systematically analyse verbal, textual, or visual documentation. The content may originate from a variety of sources, including manuscripts, books, e-mails, images, recorded audio, video, blog posts, and online forum, etc. This research method is extensively used in social science research and a wide range of publications of library and information science research studies that have used the content analysis methodology.

Zarei and Abazari (2011) studied web-based services that were offered by 23 accessible websites of national Libraries, in Asia. For data collection and evaluation, the authors developed a checklist that included six general services. For identifying the services provided by the library websites, five websites of the greatest and most historical national libraries in the world were included. The study analyzed that the seven countries' national offered web-based services in the 25-50 range. The authors suggested that the national libraries of Asia should make high use of web-based tools like chat, web forms, and video conferences as well as traditional ones like bibliographies. The authors have also suggested that feedback from users towards the quality of services of libraries is needed and important.

Kim and Kuljis (2010) conducted a study on content analysis for web-based content, focusing specifically on Web 2.0 site content. The authors gave recommendations regarding the advantages of web content analysis based on their expertise. The author stated that applying content analysis to web-based information is a relatively easy process, making it convenient for researchers to collect and analyse data. According to the authors, the method provided an excellent opportunity to examine the preferences, styles, and patterns of users.

Saiki (2010) did a study analysing the content of museum education websites. By learning levels, the characteristics of content analysis were categorised as follows: communicative, interactive, communicative, and narrative. The main objective of the study was, to evaluate the degree of users' capability of the interaction of features found on the education part of museum websites. To investigate the websites for education, student and teacher surveys, case studies, and content analysis methods were included. 34 (22.2%) of the 153 websites were productive, 38 (24.8%) were adaptive, 55 (35.9%) were communicative, 51 (33%) were interactive, and 69 (45.1%) were narrative.

Shukla and Tripathi (2010) conducted a case study on the evaluation criteria for content awareness on the websites of India's academic institution libraries. They took 20 central universities and 19 institutions of national importance, including IIMs and

IITs. Establishing specified criteria for content analysis to evaluate the library websites of academic institutions and developing a website performance calculation system were the primary objectives of the study. The study revealed that the content awareness of library websites for institutes of national importance was better in comparison to the websites of central universities. Librarians or webmasters should increase the content awareness of websites for academic libraries.

Petch (2004) conducted a study on the content analysis of selected health information websites. Seven websites were selected for the study: one non-profit website from the United Kingdom, one commercial website from Australia, and five government-sponsored websites with health information. The purpose of the study was to know the field of health and identify the information offered by the websites. Also, the study investigated the establishment, development, and maintenance of health information websites. The majority of health websites, according to the survey, focused on health news, health promotion, health protection, health prevention, disease management, and pharmaceuticals.

2.1.3. Web Accessibility

Kuppusamy (2019) carried out a case study on web accessibility to identify the main problems with websites for higher education. Making websites and web pages easy to read and navigate is the main goal of online accessibility. The findings showed that the 44 college websites had significant problems with link visibility, color contrast, form labels, captions, and list components. To create and develop successful and accessible websites, the authors advised web designers' and developers' awareness of web accessibility.

Abuaddous et al. (2016) presented an outline of the key challenges of accessibility barriers on websites. Web accessibility is one of the most important issues in the online community. The author described some challenges which were related to web accessibility in developing countries-Lack of awareness of accessibility during the time of website designing, Lack of skilled professionals who were familiar with evaluation tools of website accessibility. The authors suggested the need for

enforcement of accessibility legislation by countries than following voluntary guidelines. The authors also recommended that it was necessary to train IT professionals to provide a comprehensive knowledge of website accessibility.

Bakhsh and Mehmood (2015) conducted a case study on web accessibility for persons with disability. In the era of information technology, government official websites are used for information dissemination to society. Today, the governments of all countries are providing e-government services to their citizen. The authors evaluated 45 central government websites of Pakistan. Two online freely available tools were used to measure web accessibility analysis. The result of the study showed that it was difficult for visually disabled persons to access the information from the Pakistan government websites because the websites were not designed according to W3C accessibility standards.

2.1.4. Web Usability

Cetin and Ozdemir (2013) did a usability study on a website for education. The purpose of the research study was to assess the usability of the educational Morpa Campus's website in Turkey. The primary objective of the study was to know whether a student could navigate the website easily and effectively to accomplish the activities when working on 4th-grade course material. The study included a total of 10 participants, the experiment was finished in 80 minutes. Researchers explained before the trial began that the study was not about the participants' computer skills, but the websites they would utilize. This project featured a lot of instructional information and was well-designed for the students.

Vasishta (2013) evaluated the content of electronic journals found on the websites of technical university libraries in Northern India. It was highlighted that technical university libraries' websites were working to make them more helpful for the user community, although the majority of the library websites appear to be in their beginnings. The researchers suggested that the library website must lead in improving the websites in the system by enhancing several areas, including artistic composition, high-quality information, and user-friendliness.

Mustafa and Zouabi's (2008) studied the usability of academic websites, in Jordanian universities. The study's primary goal was to evaluate the university websites in Jordan. Two online automated tools—an HTML toolbox and a web page analyzer—were used to create the study questionnaire for the consumers of those colleges. The online tools were used to measure the download time and size of the web page, and HTML code error. The questionnaire included 23 usability criteria which were classified into 5 main headings. The study showed that the average HTML check errors were 22 and the average download for all websites was 23.93 seconds. The results of the study's evaluation methods indicated that the usability of Jordan's university websites was moderately satisfactory.

Parajuli (2007) examined the ministerial websites of the Nepali government. The study focused on four criteria: i) Transparency, which measures the website's authenticity, trustworthiness, and accountability. ii) Interactivity, or the two-way exchange of information between governments. iii) Accessibility, which refers to everyone's free and simple access regardless of personality, expertise, ethnicity, disability literacy, and so on. iv) Usability, which describes the efficiency and organisation of the search engine's navigation. The author suggested expanding the study to assess e-Government efforts from the perspective of the government.

2.1.5. Website Design

Sundit and Eastman (2019) carried out a study on the design of website navigation with card sorting. USU undergraduates, graduate students, and staff participated in team-based card sorting studies in 2016 to create a thorough understanding of the mental model of library users engaged in service and research-related activities. To categorise, rate, and label cards related to the online content component of the library, participants worked in teams. Then, participants analyzed and performed usability tasks on each other's categories. Through staff discussions, usability tests, and reverse category/category tests, the final website design was developed.

Almeida and Monteiro (2017) carried out an analytical study on the use of responsive design in web development. Understanding the responsive design's primary

constraints and opportunities was the study's main goal. A questionnaire for the study was created using google drive and sent through two professional LinkedIn groups in the web design and web development practice fields. The authors received 181 responses, and the highest 35 (91%) respondents were software developers with 3-5 years of experience. According to the study, individual businesses and freelancers had different perceptions of the advantages and drawbacks of responsive design.

Comeaux (2017) carried out a long-term study of design trends on websites in academic libraries. 37 academic library websites were included in the study, which also covered numerous important website design components and how they changed between 2012 and 2015. The two major aims of the study were to evaluate how content management systems and web-scale discovery tools were used in libraries and to conduct an unbiased review of search interface designs and website navigation at academic libraries. High usage of web-scale delivery systems was found from the result and the author ended the study by providing a review of the topic and trends of design patterns of library websites.

Bleda and Aguilar (2013) conducted a case study of highly cited European researchers. The Internet is not only a tool for scholarly communication, but also the primary source of additional information about individual researchers and their academic and scientific activities. This study's primary objective was to identify the specific information provided by individual researchers on their websites. Based on ISI Highly Cited.com, created by IST/Thomson, the authors compiled a list of the 250 most-cited European researchers. According to the results, 64% of this population had their websites. Germany and the United Kingdom had the highest percentage of researchers with a personal website with 54%. The group of economist scientists had the highest percentage of personal websites with 94%, while agriculture science researchers had the lowest percentage with 30%.

Goyal et al. (2012) examined cultural disparities in the design of government websites. The main reason for choosing government websites was that governments have the authority and financial independence to develop and maintain websites. The

authors described how design might be influenced by cultural differences and examined how these differences manifest in the design of government websites in India, China, Brazil, Russia, the United States, etc. For data collection, 10 government websites per country were selected. According to the results of the survey, China had the most photos on its websites. In addition, it was evident that American websites were shorter in length and provided more specific textual content. Flavian et al. (2009) described the essential components of a successful website. The study focused on how a website must be designed from the user demands' perspective. The authors explained that web design is the most important component in a website's success. The authors conducted a comprehensive literature analysis that allowed them to conclude that a successful web design of a website is the main reason for getting positive outcomes as it influences information seekers' or users' behaviors and perceptions. The authors gave guidelines that might be used to improve the design of websites in regarding site navigation, appearance, etc.

Degan et al. (2002) did research on the preparation and management of web design content. The authors described the techniques used to structure and organise information. The methods used to design a website include hyperlinks, extensible markup language, format, and languages, interactive navigation displays, standards on certain platforms, etc. The authors specified procedures for testing and evaluating the content and structure. Enhancing web search is an important strategy for quick and easy access to information. The authors also stated that effective search helps users in obtaining relevant information.

2.2. Identification of Research Gap

According to the literature review mentioned above, it was observed that numerous studies have been conducted both in India and overseas on various institute's websites focusing on the evaluation of content and design trends of library websites however no detailed study was conducted to evaluate the libraries' websites of central universities with a comprehensive manner. This study is attended to fulfill the research gap in the area.

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CHAPTER 3

Central Universities & Libraries: An Overview

Objective of the Chapter

The objectives of this chapter is to give an overview of ministry of education, government of India, department of higher education, role of libraries in higher education, central universities and the libraries of central universities, India.

3.1. Introduction

Education plays a significant and remedial role in balancing the socio-economic fabric of the country. Since citizens of India are its most valuable resource, our billion-strong nation needs the nurture and care in the form of basic education to achieve a better quality of life. This warrants an all-round development of our citizens, which can be achieved by building strong foundations in education. In pursuance of this mission, the Ministry of Education (MoE) was created on September 26, 1985, through the 174th amendment to the Government of India (Allocation of Business) Rules, 1961. Currently, the MoE works through two departments:

- Department of School Education & Literacy
- Department of Higher Education

While the Department of School Education & Literacy is responsible for development of school education and literacy in the country, the department of higher education takes care of what is one of the largest higher education systems of the world, just after the United States and China.

The Dept of School Education & Literacy has its eyes set on the “universalisation of education” and making better citizens out of our young brigade. For this, various new schemes and initiatives are taken up regularly and recently, those schemes and initiatives have also started paying dividends in the form of growing enrolment in schools.

The Dept of Higher Education, on the other hand, is engaged in bringing world class opportunities of higher education and research to the country so that Indian students are not finding lacking when facing an international platform. For this, the

Government has launched joint ventures and signed MoUs to help the Indian student benefit from the world opinion.

3.2. Objectives

The main objectives of the Ministry would be-

- i. Formulating the national policy on education and to ensure that it is implemented in letter and spirit.
- ii. Planned development, including expanding access and improving quality of the educational institutions throughout the country, including in the regions where people do not have easy access to education.
- iii. Paying special attention to disadvantaged groups like the poor, females, and the minorities.
- iv. Provide financial help in the form of scholarships, loan subsidy, etc. to deserving students from deprived sections of the society.
- v. Encouraging international cooperation in the field of education, including working closely with the UNESCO and foreign governments as well as universities, to enhance the educational opportunities in the country.

3.3. About Department of Higher Education (MoE, Government of India)

3.3.1. Overview

The Department of Higher Education, MoE, is responsible for the overall development of the basic infrastructure of higher education sector, both in terms of policy and planning. Under a planned development process, the department looks after expansion of access and qualitative improvement in the higher education, through world class universities, colleges and other institutions. The vision, mission, objectives and functions of the department are as under-

3.3.2. Vision

To realize India's human resource potential to its fullest in the higher education sector, with equity and inclusion.

3.3.3. Mission

- i. Provide greater opportunities of access to higher education with equity to all the eligible persons and in particular to the vulnerable sections.
- ii. Expand access by supporting existing institutions, establishing new institutions, supporting state governments and non-government organizations/civil society to supplement public efforts aimed at removing regional or other imbalances that exist at present.
- iii. Initiate policies and programmes for strengthening research and innovations and encourage institutions - public or private to engage in stretching the frontiers of knowledge.
- iv. Promote the quality of higher education by investing in infrastructure and faculty, promoting academic reforms, improving governance and institutional restructuring toward the inclusion of the hitherto deprived communities.

3.3.4. Objective

- i. To expand institutional base of higher education (including technical, professional and vocational education) by creating additional capacity in existing institutions, establishing new institutions and incentivizing state governments and non-governmental organizations/civil society.
- ii. To expand institutional base of higher education (including technical, professional and vocational education) by creating additional capacity in existing institutions, establishing new institutions and incentivizing State Governments and non-governmental organizations/civil society.
- iii. To provide opportunities of higher education to socially-deprived communities and remove disparities by promoting the inclusion of women, minorities, and differently-abled persons.
- iv. To remove regional imbalances in access to higher education by setting up of institutions in unnerved and undeserved areas.
- v. To enhance plan support for infrastructure and faculty development in the institutions of higher learning and to attract talent towards careers in teaching and research.

- vi. To create conditions for knowledge generation through improved research facilities in universities and colleges.
- vii. To promote collaboration with international community, foreign governments, universities/institutions and regional and international institutions, for the advancement of universal knowledge and intellectual property rights.

3.3.5. Functions

- i. Enhancement of gross enrolment ratio by expanding access through all modes.
- ii. To improve quality and to promote academic reforms.
- iii. Setting up of new educational institutions and also capacity expansion and improvement of the existing institutions.
- iv. Use of technology in higher education.
- v. Development of vocational education and skill development.
- vi. Development of Indian languages.
- vii. International collaboration in the field of education.

Department of higher education consists of Apex Level Bodies, Boards of Apprenticeship Training, Book Promotion, Central Universities, IIMs, IISc, Bangalore & IISERs, IITs, Institutions of National Importance, Institutions related to Hindi and other Indian Language, Languages, NITs, NITTRs, Planning, PSU, Sanskrit & Vedic Institutions, UNESCO, Institute of Eminence, Others.

3.4. Role of Libraries in Higher Education

The role of the library can be defined within the framework of the university's mission and a library development programme can be undertaken accordingly. In the words of Dr. S. R. Ranganathan, "libraries are not more store houses, they are rich springs from which knowledge flows out to irrigate field of education and culture." The fundamental role of the university library is educational. It should not be operated as a mere storehouse of books attached to a reading room, but as a dynamic instrument of education. It is emphasized in different reports brought out by various library and educational commissions in India and abroad. A university library is established with the intention of aiding in successful accomplishment of the objectives such as teaching, research, publication programmes, etc. In modern

education system, the university library has important responsibilities. The report by University Grant Committee (United Kingdom) in 1921 is stressed on the role of a library in university system. Thus, the character and efficiency of a university may be extended by its treatment of its central organ library. In India the University Education Commission (1948-49) headed by Dr. S. Radhakrishnan describes that teachers must have the necessary tools for teaching purpose in the shape of libraries and laboratories as also the right type of students. According to him, “The library is the heart of the university’s work; directly so as regards its research work and indirectly as regards its educational work, which derives its life from research work. Scientific research needs a library as well as its laboratories. For humanistic research, the library is both library and laboratory in one.”

3.5. Importance of Library Websites/Webpages in Academic Institution

The library website/web page in an academic institution plays a crucial role in supporting and enhancing the learning and research experience of students, faculty, and staff. Here are some of the key importances of a library website in an academic institution:

- i. **Access to Resources:** The library website serves as a gateway to a vast array of resources such as books, journals, research databases, e-books, multimedia materials, and more. It enables users to search and access these resources remotely, providing convenience and flexibility.
- ii. **Research Support:** The library website provides various research tools and services to assist students and faculty in their academic pursuits. It offers access to databases and search engines that help in finding relevant scholarly articles, research papers, and other sources of information. Additionally, it may provide research guides, citation assistance, and access to specialized collections to support specific disciplines.
- iii. **24/7 Availability:** Unlike physical library spaces with limited operating hours, a library website is accessible round the clock. Users can access digital resources, check out e-books, or seek research assistance anytime, from anywhere, as long as they have an internet connection. This accessibility

greatly benefits distance learners, part-time students, and researchers who may need resources outside regular library hours.

- iv. **Account Management:** Library websites often offer account management functionalities, allowing users to view their borrowed items, renew materials, place holds or requests, and manage their library accounts remotely. This streamlines administrative processes and reduces the need for in-person visits to the library.
- v. **Information Literacy and Instruction:** Library websites may feature online tutorials, guides, and interactive modules on information literacy skills, research methodologies, and academic writing. These resources help students develop critical thinking, research, and evaluation skills necessary for academic success.
- vi. **Communication and Updates:** Library websites serve as a communication hub where library staff can share announcements, news, and updates regarding library services, events, workshops, or new acquisitions. Users can stay informed about library happenings and important deadlines through the website.
- vii. **Virtual Exhibits and Archives:** Many academic libraries have digitized collections, virtual exhibits, and archives accessible through their websites. These resources provide opportunities for users to explore historical materials, rare books, manuscripts, and other valuable artifacts remotely, preserving and promoting cultural heritage.
- viii. **Collaborative Tools and Spaces:** Library websites may offer collaborative tools, such as group study room reservations, document sharing, or project management platforms, facilitating teamwork and group projects among students. These features foster collaboration and encourage knowledge sharing within the academic community.

Overall, the library website is an essential component of an academic institution, serving as a centralized platform for accessing resources, conducting research, receiving support, and fostering a culture of lifelong learning. It enhances the

academic experience, promotes information literacy, and adapts to the changing needs of users in the digital age.

3.6. Central Universities and Libraries

A total of 44 central universities in India as listed in MoE website (<https://www.education.gov.in/central-universities>) as on 10 March 2020, situated in different part of the country.

3.6.1. Aligarh Muslim University

Aligarh Muslim University (AMU), which originated as M.A.O. College, was incorporated as a central university by an act of parliament in 1920. It was one of the first fully residential educational institutions of the country. Students come to AMU from all corners of the country as well as foreign countries, especially Africa, Southeast Asia and West Asia. In some courses, seats are reserved for students from a commonwealth and SAARC Countries. The university comprises 12 faculties.

Library

The Central Library of Aligarh Muslim University is popularly known as Maulana Azad library is one of the largest university libraries of the world. The foundations of the library was laid in 1877 at the time of establishment of the Mohammadan Anglo Oriental College by Lord Lytton, the then Viceroy of India and it was named after him as Lytton Library. The present building was inaugurated by the first prime minister of independent India, Late Jawaharlal Nehru in 1960 and the library was renamed as Maulana Azad Library, after educationist, freedom fighter, great scholar, statesman, and the first education minister of the independent India. It is a world famous repository of rare manuscripts and books in arabic, persian and urdu languages. Manuscript division of the library which possess about 16,000 rare and invaluable manuscripts on Hinduism, Islam etc. M.A.is fully automated with Libsys 7.0 (Release 2.0) software which connects almost all computers of the university as well as the AMU centers in distant state.

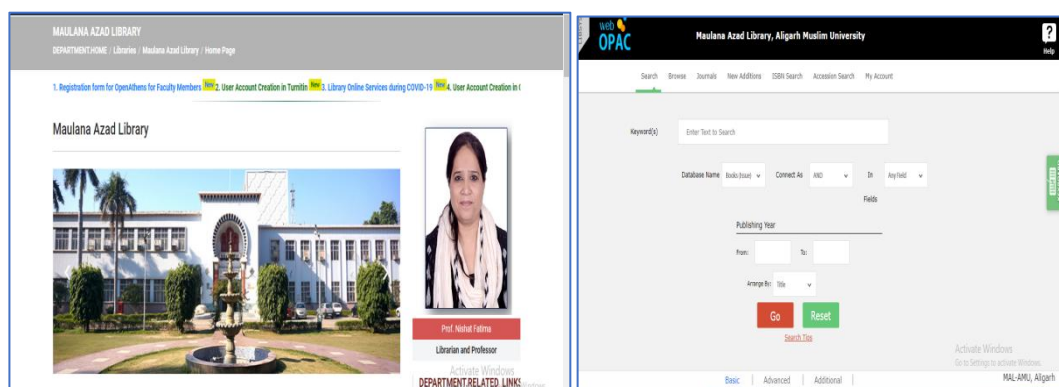


Figure-3.1: Library Website/Webpage (Source: <https://www.amu.ac.in/libraries/maulana-azad-library>)

3.6.2. Assam University

Assam University was established in 1994 at Silchar. It is a teaching-cum-affiliating university having jurisdiction over the districts of Cachar, North Cachar Hills, Hailakandi, Karimganj, Karbi Anglong in the State of Assam. It conducts Postgraduate, Ph.D. and M.Phil. courses. In addition a few five year integrated courses like computer sciences, Fine arts, law, social work and a couple of self financing courses are also conducted by this university.

Library

In the year 1994, Assam University library was started with the establishment of the University as a central facility for meeting the information needs of the academic community of the University. In January 2006, the central library of Assam University was shifted to its new permanent central Library-cum-computer centre building which was renamed as Rabindra Library. The main function of library consists of collection and development of knowledge resources, organization, technical processing, retrieval and dissemination of information to the users including the academic community of Barak Valley in particular and the entire NE region in general.

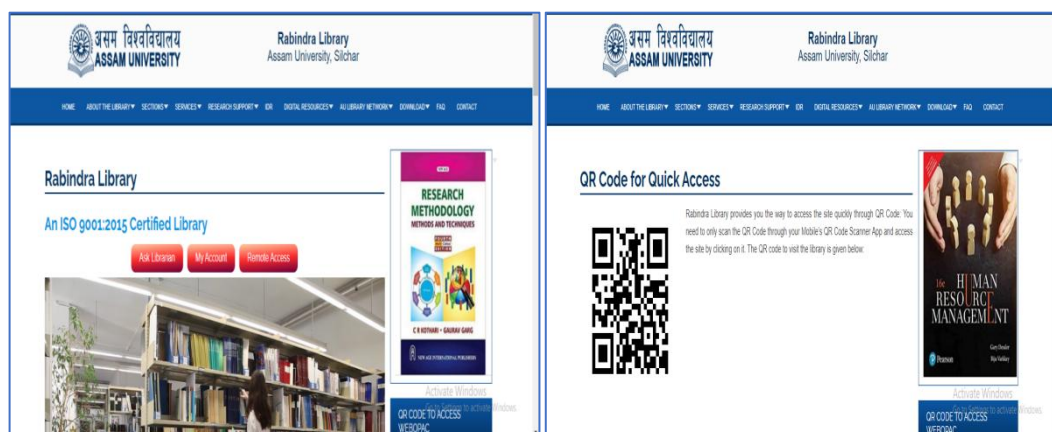


Figure-3.2: Library Website/Webpage (Source:<http://www.aus.ac.in/library/>)

3.6.3. Babasaheb Bhimrao Ambedkar University

The Babasaheb Bhimrao Ambedkar University was set up by an act passed by the parliament (No. 58 of 1994). The University came into existence on 10.01.1996 as central university with the objectives of promoting advance knowledge by research and instructional facilities in science, frontier areas of technology and other allied disciplines such as rural crafts and agricultural technology relevant for the development of the economically and socially depressed sections of the people.

Library

The central library of Babasaheb Bhimrao Ambedkar University (BBAU), Lucknow was established in January 1998 to promote knowledge and application through its effective dissemination of knowledge and information. The central library of BBAU was named as Gautam Buddha central library after the name of Lord Gautam Buddha. It provides information facilities and services to meet the requirement of the teaching, training and research programmes. The seating capacity of the library is more than 300 users at a time. The library services are also open to the university staff and visitors. The central library has been adapting new technologies for providing web based information services to the library users. The library is the member of E-ShodhSindhu, INFLIBNET. The classification of documents is carried out by using DDC 23rd edition.

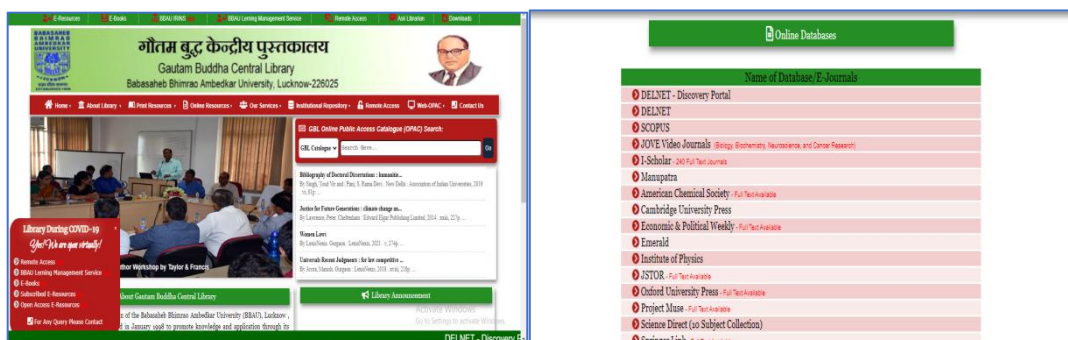


Figure-3.3: Library Website/ Webpage (Source:<https://www.gbl.bbau.ac.in/>)

3.6.4. Banaras Hindu University

The Banaras Hindu University, established as a teaching and residential university in 1916, is one of the oldest and largest central universities of the country. The university has 3 institutes, 14 faculties, 140 departments, 4 inter disciplinary centers, a constituent college for women's and 3 constituents schools with a large variety of subjects related to all the branches of humanities, social science, technology, medicine, science, fine arts and performing arts.

Library

The Banaras Hindu University library system, the largest University library system in the country, germinated from a small but precious collection donated by Prof. P.K. Telang in the memory of his father Justice K.T. Telang in 1917 and housed in the Telang Hall of the Central Hindu College, in 1941. With the sound background and footings the library took long strides during sixties and seventies in its development and metamorphosed in a system of libraries with the establishment of institute, faculty and departmental libraries during the period. Presently the BHU library system consists of central library at apex and, 25 departmental libraries, 8 faculty libraries and 3 institute libraries with a total collection of over 13 lakh volumes to serve the students, faculty members, researchers, technical staff of all departments of the university.

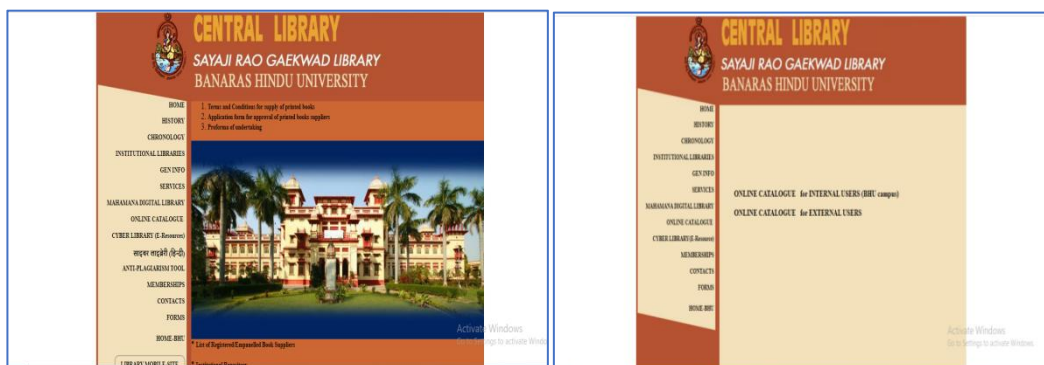


Figure-3.4: Library Website/Webpage (Source:<https://www.bhu.ac.in/lib/>)

3.6.5. Central University of South Bihar

The Central University of Bihar was established under the central universities act, 2009 as Central University of Bihar (CUB) and the name since changed by the Central Universities (Amendment) Act, 2014 to Central University of South Bihar (CUSB) is an institution of higher learning in the state of Bihar. One of the main objectives of the university is to disseminate and advance knowledge by providing research and instructional in such branches of learning as it may deem fit.

Library

Central University of South Bihar has developed a well-equipped which has built a collection of more than 30,000 books to support academic curricula, teaching and research in various science and social science subjects including dissertations, bound volume journals, newspapers handbooks, encyclopedias, miscellaneous reports, and its archives etc. All the books are barcoded and are organized on shelves using DDC. The library subscribes to various e-journals packages i.e. Hein online academic core collection, SCC online (platinum plus edition), Westlaw India, air online institutional version, IEEE (ASPP) from IEEE and digital library package from ACM, royal society of chemistry journals (RSC) etc.

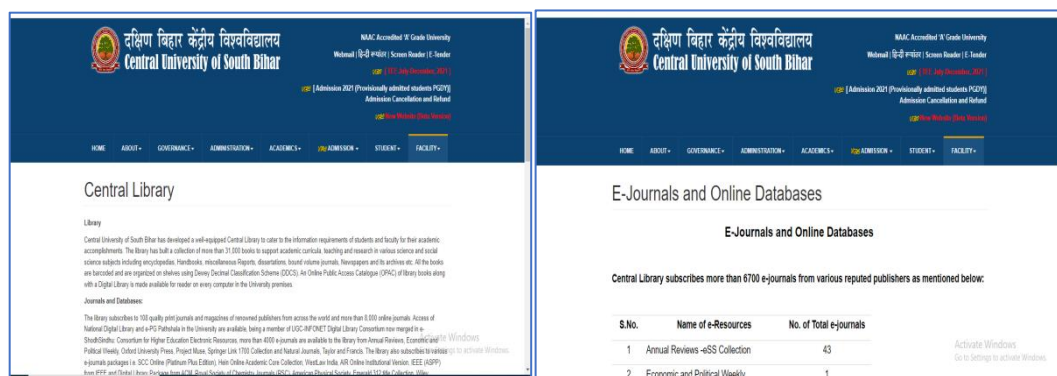


Figure-3.5: Library Website/Webpage (Source: <https://www.cusb.ac.in/index.php/2016-07-01-04-53-58/2016-03-09-15-31-33/central-library>)

3.6.6. Central University of Gujarat

The Central University of Gujarat was established by parliament of India through the central universities Act (2009), with the main objective to be dissemination and advancement of knowledge creation and sharing. Paying special attention to the improvement of economic and social conditions and welfare of the people, especially pertaining to their academic, cultural and intellectual development.

Library

The central library, Central University of Gujarat was started in 2009 as a resource centre that provides access to necessary and specialized information resources and services to meet the growing information needs. The library's learning resource collections are developed aiming at providing the highest research level and teaching support. The library operations are automated using KOHA, which has an inbuilt user-friendly Online Public Access Catalogue (OPAC) that allows the members of library to check the availability of book in the library. The library serves members who include students, research scholars, faculty and staff.

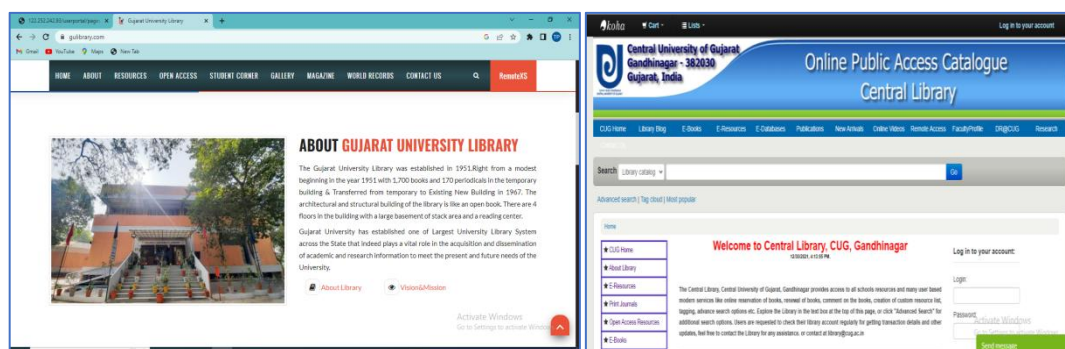


Figure-3.6: Library Website/Webpage (Source: <http://library.cug.ac.in/drupal/>)

3.6.7. Central University of Haryana

The Central University of Haryana was established by an act of parliament in 2009. The university is fully funded by the UGC. Some of the objectives of the university are to take appropriate measures for promoting innovations in teaching-learning system and inter-disciplinary studies and research and to develop enlightened citizenship of a knowledge society for peace and prosperity of individuals, nation and the world.

Library

The library system of Haryana library system is having more than 20866 volumes in various subjects to serve the academic community. They have advanced their web activity with the INFLIBNET subscription of 8500 high quality e-journals being made available through campus network to students, teachers and research scholars. CUHL also promotes open access e-resources. The library collection consists of books (with dust free compactor), newspapers, print-journals, e-journals, reference books, text books, databases, and CD ROM/DVDs. The library is an air-conditioned building equipped with CCTV cameras. The library efforts to facilitate right information to the right users at the right time. It is one of the liveliest place on the campus providing a comfortable, safe and friendly environment that enables learning and advancement of knowledge.

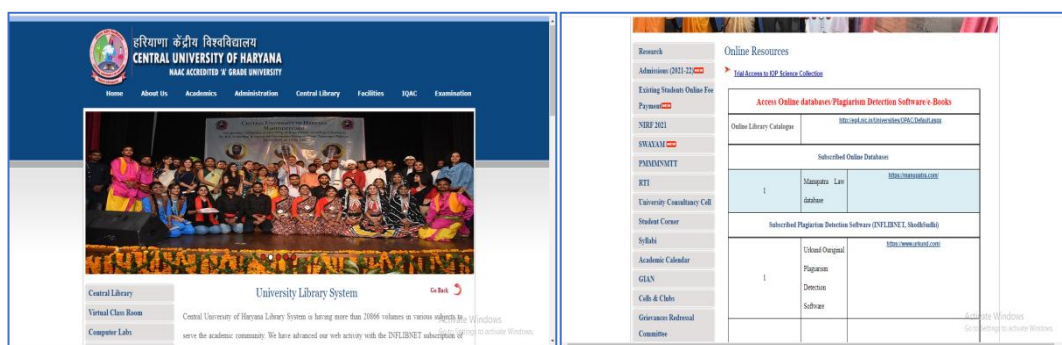


Figure-3.7: Library Website/Webpage (Source:<https://library.cuh.ac.in/>)

3.6.8. Central University of Himachal Pradesh

This University was set up under the central universities Act 2009 of Indian parliament is located at Dharamsala, Himachal Pradesh, India. The main objectives of the university are to make special provisions for integrated courses in sciences and

technology, humanities, social sciences, in its educational programmes, to establish linkages with industries for the promotion of science and technology, to pay special attention to the improvement of economic and social conditions and welfare of the people, their academic, cultural and intellectual development.

Library

Central University of Himachal Pradesh library comprises of a rich collection of printed documents such as books, reports, theses, atlases and back volumes of journals. The non-print collections include books and magazine's CDs. This library is the member of INFLIBNET, DELNET. It has been subscribing e-journals of various digital Libraries. The library is housed in an air-conditioned building for users' community to continue their academic and research activities by way of reading books, accessing electronic journals and internet etc. It is fully automated by using SOUL library management software. OPAC is available for the resources available in the CUHP library.

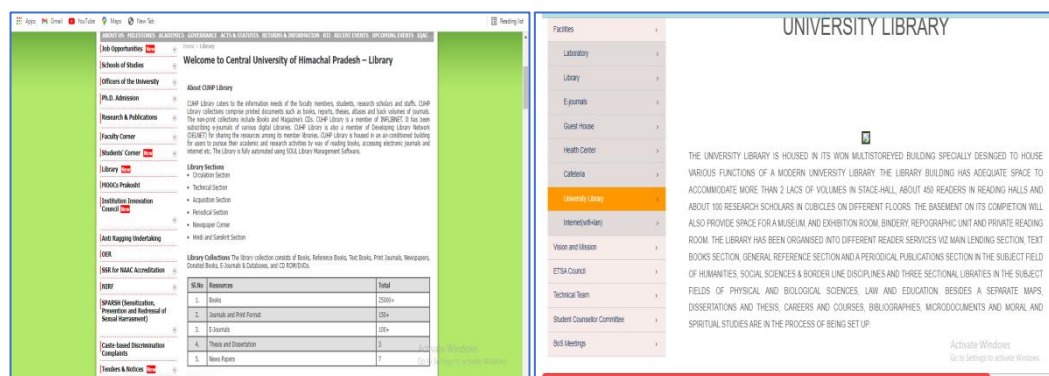


Figure-3.8: Library Website/Webpage (Source:<http://www.cuhimachal.ac.in/library.aspx>)

3.6.9. Central University of Jammu

The Central University of Jammu came into existence on August 08, 2011. It was established by the central universities Act, 2009. The first academic session (2011-2012) commenced with 3 post graduate courses in applied mathematics, economics and english.

Library

The library of the Central University of Jammu is the hub of academic activities. By the university council, The central library was renamed as dhanvantri library, University of Jammu. The name was changed to give recognition the work of

Dhanvantri (1902-1953), in to the freedom movement and the socialist cause in India in general and Jammu and Kashmir. The library has a collection of nearly 5 lakhs volumes are latest as well as rare, and 276 current periodicals with back numbers. The library also provides the access to the various types of online journals only in the campus. The library has 3 main reading halls and additional reading areas in the textbook section, periodical section, Jammu and Kashmir section, private books reading hall, reference section, besides a reading space for newspapers near the exhibition area. These area is giving reading facilities for 500 readers.

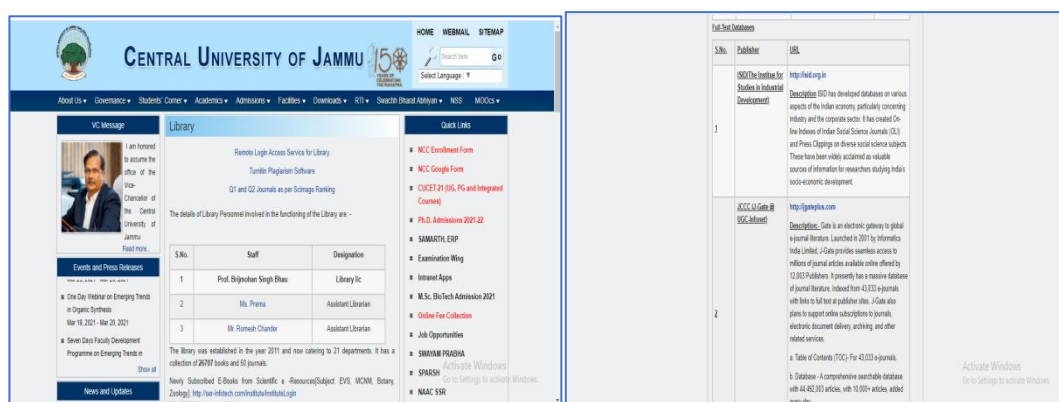


Figure-3.9: Library Website/Webpage
(Source: <https://cujammu.ac.in/Default.aspx?option=article&type=single&id=35&mnuid=738&prvtyp=site>)

3.6.10. Central University of Jharkhand

The Central University of Jharkhand was established in March 2009 under the central universities act, 2009. The University focuses on conducting research in cutting-edge technologies. The main aim of the university is to develop enlightened citizenship of a knowledge society for peace of individuals, nation and the world, through promotion of creative endeavours, innovation and scholarly inquiry and to promote creative and critical thinking for the people of India.

Library

The University library was setup with the establishment of the Central University of Jharkhand in the year 2009 as a central facility for meeting the requirements of the academic community of the university. The university library is a knowledge resource centre which has a good collection of text as well as reference resources to

meet the needs of the faculty and students. Library has a total 2,718 sq. ft. of area spread over 2 floors in a separate building with fully air-conditioned rooms.

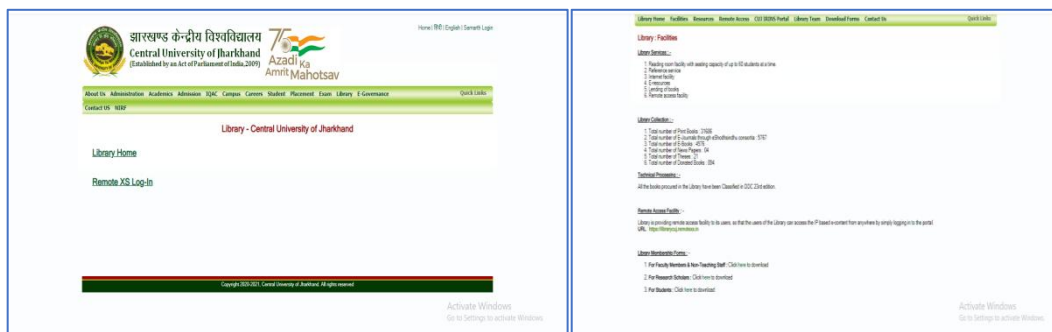


Figure-3.10: Library Website/Webpage (Source: <http://cuj.cuj.ac.in/library-cuj.php>)

3.6.11. Central University of Karnataka

The Central University of Karnataka (CUK) was established by an act of the parliament (No. 3 of 2009) at Gulbarga, Karnataka. It is one of the sixteen new central universities established by the government of India during the UGC XI plan period to address the concerns of 'access and equity' and to increase the access to quality higher education by people in less educationally developed districts.

Library

The Library of the central university of Karnataka is one of the important central facilities of the university providing the information needs of students, research scholars and faculty in arts, humanities, management social sciences, sciences and engineering. The main objective of the library is to make the library the most effective learning resource centre to contribute to the quality of higher education. The collection includes, text books, reference books, CD/DVDs, dissertations, thesis, magazines, and newspapers. The library also created learning environment by establishing Online Public Access Catalog (OPAC) searching area, RFID technology and e-resources. The library acts as a repository for all the knowledge created within the university for future development.

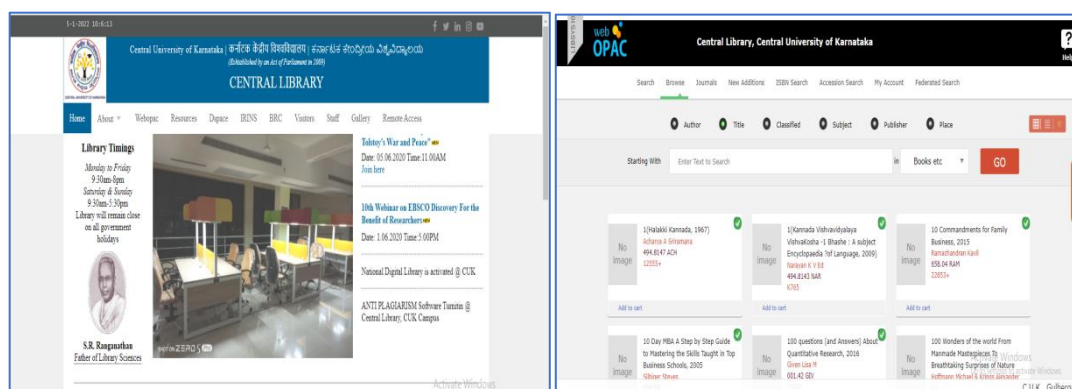


Figure-3.11: Library Website/Webpage (Source:<http://cuklibrary.ac.in/index.html>)

3.6.12. Central University of Kashmir

The central university of Kashmir (formerly known as the Central University of Jammu and Kashmir) was set up in march 2009 under the central universities act 2009. The mission of the university is to contribute to the cultural, educational, economic & social advancement of people providing high quality educational programmes leading to bachelors, masters, professional and doctorate degrees as well as to address the cultural, educational, economic, environmental, health and social needs of the region and nation at large.

Library

Since its inception in 2009, the library system of Central University, Kashmir endeavours to offer the information and learned needs of its users. The library collection includes both print and online resources ranging from text book collection in print as well as online format to the journal collections in online mode. CUK Library offers remote access facility to its online resources and services so that its bonafide users can access these resources from anywhere and at any time. The library has the institutional membership of three national-level organisations e-Shodh Sindhu consoritum, DELNET, New Delhi and Shodhganga. To provide, computer-aided operations and services to its users, the library makes use of SOUL 2.0 software suite.

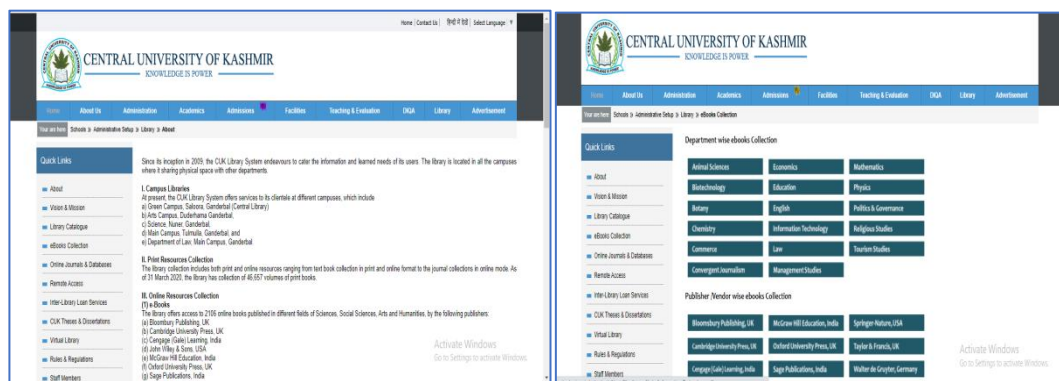


Figure-3.12: Library Website/Webpage

(Source:<https://www.cukashmir.ac.in/displaydepartment.aspx?sid=74&did=36&pag=494>)

3.6.13. Central University of Kerala

The Central University of Kerala was established under the central universities act, 2009. The university opened its academic portals in October 2009 with 17 students enrolling in two PG programmes: MA in Economics and MA in english and comparative literature. The permanent campus of the Central University of Kerala (Tejaswini Hills) is located at Periyar, Kerala.

Library

The central library of Kerala University was established in 1942, situated in the heart of the Thiruvananthapuram city which is very adjacent to university buildings. It has a very rich collection of documents consisting of books, back volumes of periodicals, theses etc. and subscribes to nearly 500 journals/ periodicals/ magazines. The collection of back volumes of social science periodicals is considered to be one of the best in South India. The collection of books has now crossed 3 lakh and continues to grow at the rate of more than 4500 titles annually. Presently, the Kerala University library is the major centre of research and study in the state. On an average 1000 to 1200 students, research scholars, teachers and others visit the library daily.

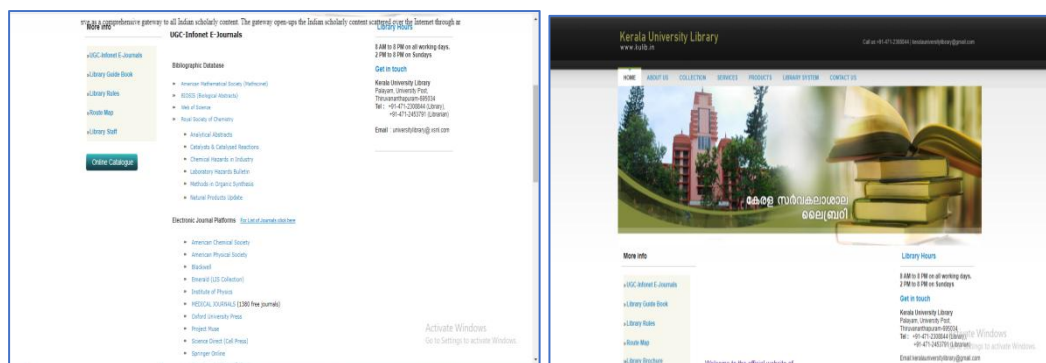


Figure-3.13: Library Website/Webpage (Source: <http://www.kulib.in/>)

3.6.14. Central University of Odisha

The Central University of Odisha was set up by the parliament under the central universities act, 2009. The objectives of the university is to develop the Central University of Odisha as an avant-grade premier university of the new millennium with a world-ethos-driven higher education agenda and to develop a knowledge base that brings a holistic balance between global needs and that of indigenous needs.

Library

The range and quality of services offered by the library of Central University of Odisha is comparable to any modern libraries in India of international standard. Soon after the appearance of the central library in the year 2009, the library made a good collection development on text books and reference books. The library is marching towards its goal by taking some good initiatives like offering fully air-condition facility in the library, e-resource zone as well as computer centre, separate server for library operation, good collection of documents, and providing sufficient computers in the library for accessing OPAC and e-resources etc. The central library currently subscribes to 7 e-resources through e-Shodh Sindhu which is available "24 x 7" at both the campuses of Central University of Odisha which is accessible to users in-house as well as remotely.

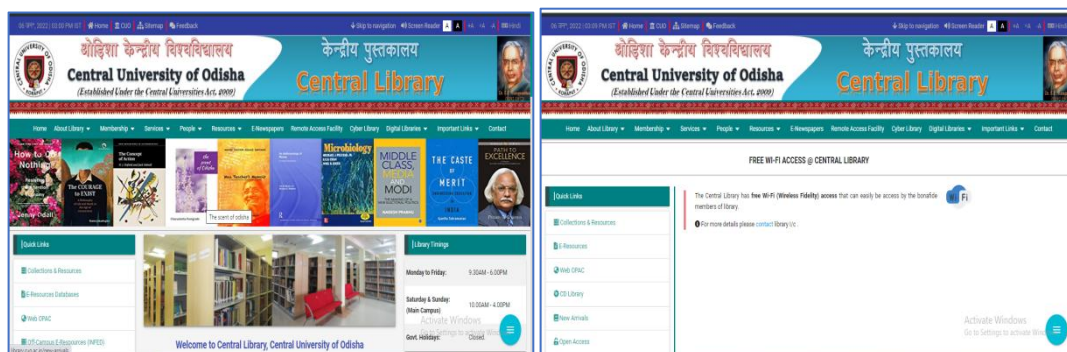


Figure-3.14: Library Website/ Webpage (Source: <http://library.cuo.ac.in>)

3.6.15. Central University of Punjab

The Central University of Punjab was established through the central universities Act 2009. After the seven years of establishment, university has proved itself with NAAC 'A' Grade.

Library

The University Library of Punjab University is on a rapid and consistent path of expansion and development since its inception in 2009, providing to the learning and research requirements of teachers and students of the university. The library presently has over 44,251 titles and subscribes to 45 national and international print journals. The library also subscribes to a large number of electronic journals through the e-ShodhSindhu consortium and independently apart from e-ShodhSindhu consortium. It is fully air-conditioned and is located at the midst of the academic block with state-of-the-art seating facility. This university library is equipped with Radio Frequency Identification (RFID) and Electro Magnetic Security System (EMSS). The library is also in a process of developing a separate braille section for the visually handicapped users.

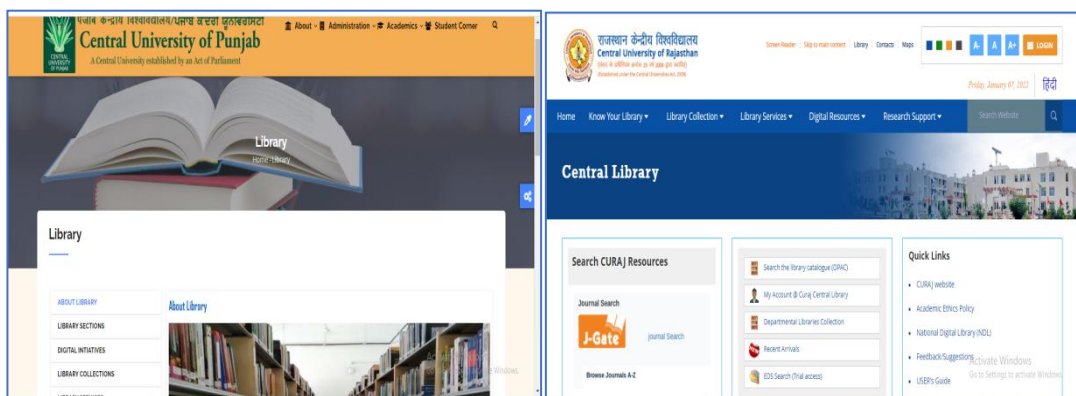


Figure-3.15: Library Website/Webpage (Source:<http://www.cup.edu.in/library.php>)

3.6.16. Central University of Rajasthan

The Central University of Rajasthan set up in february, 2009 by an act of parliament under the central universities act 2009 which is fully funded by the government of India. In order to meet the challenges of the knowledge era and to keep pace with the knowledge explosion in higher education, the university is committed to sustaining quality and inculcating in all the dimensions of higher education viz. learning, teaching, research, extension and governance while catering to the global and needs. The Central University of Rajasthan offers 50+ masters and PhD programme in its twenty-nine departments.

Library

In 2009, the library of Central University of Rajasthan came into existence along with the establishment of the university. The library possesses the collection of print and electronic learning resource materials in the field of engineering, management, science, social science, humanities and language. It has been catering to the needs of academic community of the 24 departments, 13 schools of the university. The central library of the university has automated all its routine activities through library management software “LIBSYS” along with IR(Institutional Repositories) and web based OPAC. It is fully Wi-Fi enabled and has a well-established cyber library with 15 networked PC connected with LAN which help users-community to access thousands of e-resources. With the seating capacity of about 150 members, the library serves as a storehouse of knowledge.

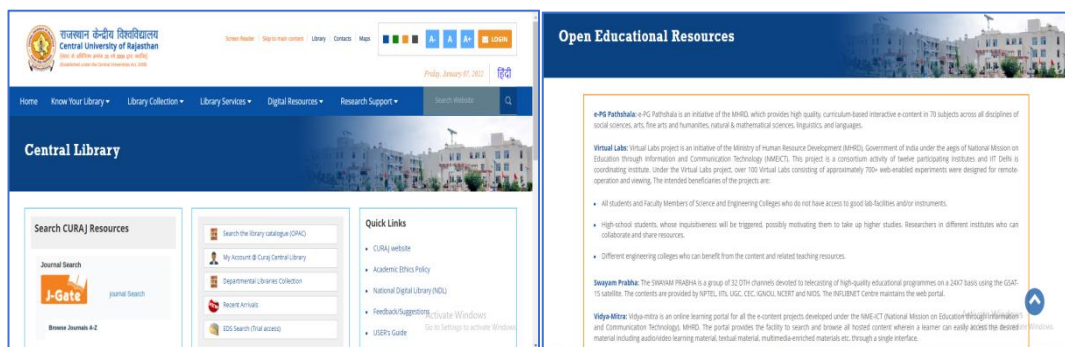


Figure-3.16: Library Website/Webpage (Source: <http://www.curaj.ac.in/library>)

3.6.17. Central University of Tamil Nadu

The Central University of Tamil Nadu was established through the central universities Act 2009. The university aims at the fashioning of an enlightened society founded on a relentless pursuit of excellence through innovation in interdisciplinary studies, research, and teaching-learning process. The research and consultancy promotion cell of the university helps to strengthen research programme of the university, encourages the faculty, in the respective areas of their expertise.

Library

The University Library of Tamil Nadu was established in the year 2009 and it has a collection of about 37000 books. Of these, more than 2000 books are reference books (dictionaries, handbooks, encyclopaedias, and coloured atlases, etc) and the rest are general books and text books. The library has been actively interacting with faculty and teaching departments and a pro-active approach to construct an essential collection of resources for new programmes being introduced by the various departments have been adopted. Central library, CUTN has subscribed to more than 2000 e-books on perpetual access from several leading publishers. These collections are hosted in the library website as digital bookshelves by publisher-wise and user can click on the cover page of the specific e-book title to access the full-text online.

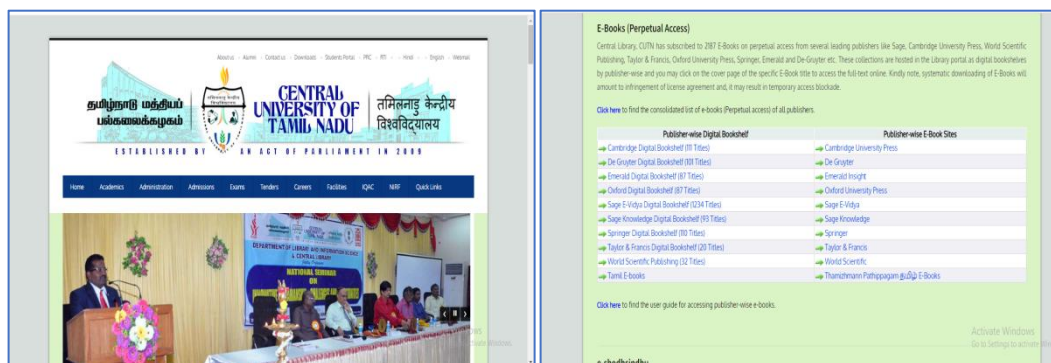


Figure-3.17: Library Website/Webpage (Source: <https://cutn.ac.in/central-library/>)

3.6.18. Dr. Harisingh Gour Vishwavidyalaya

This university was declared a central university on 15th January, 2009. The main objectives of the Dr. Harisingh Gour Vishwavidyalaya is to attain the height of excellence in the dissemination of knowledge and learning with a view to develop global competencies and contribute to national development by generating trained and skilled manpower.

Library

The library, Jawaharlal Nehru library of Dr. HariSingh Gour Vishwavidyalaya Sagar Central University is the largest and oldest university library in situated in Sagar district of Madhya Pradesh. The library is located at the centre of the university teaching departments to help the users for regular use of the library. The library has 3 Storey's Stack area designed to accommodate 500 readers with an extension wing. The library has more than 3 lakh books and bound journals in its collection besides a rich collection of rare manuscripts and reference books. An average visitor per day in the library is over 4 hundred. Library has also e-mail and internet facilities for its users (only for research scholars and teachers).

Jawahar Lal Nehru Library

01-01-2015

Jawahar Lal Nehru Library
DR. HARISINGH GOUR VISHWAVIDYALAYA SAGAR (M.P.) India
(A Central University)
(Phone No. :- 91-7582-262605)
Email: jln@dhsgsu.ac.in

Availa

List of selected and wait listed student under Earn While Learn Scheme (EWLS) for Session 2019-20 "JLN Library" (JLN.Lib.2019print.journals@452.2x.17.05.2019)

Details of Print Journal for Year 2019 "JLN Library" (JLN.Lib.2019print.journals@452.2x.17.05.2019)

List of E-books (Department wise) available on MHOD WFI

Details of E-resource accessible on MHOD WFI "JLN Library" (JLN.Lib.2019print.journals@452.2x.17.05.2019)

List of Selected & Wait listed students under EWLS for Session 2019-20 "JLN Library" (JLN.Lib.2019print.journals@452.2x.17.05.2019)

Activat

Go to Se

E-Resources made available by E Shodh Sindhu

S.NO.	RESOURCE NAME	URL	NO. OF JOURNALS
01	American Chemical Society	http://pubs.acs.org/	50
02	American Institute of Physics	http://journals.aip.org/	18
03	American Physical Society	http://pubs.aip.org/browse.php	13
05	Economic & Political Weekly	http://epw.in/	224
05	Institute of Students in Industrial Development (ISID) database	http://isid.org.in/	1
06	J Gate Plus(JCCC)	http://jgateplus.com/	133
07	JSTOR	http://www.jstor.org/	46
08	Springer Link	http://link.springer.com/	Database
09	Taylor & Francis	http://www.tandfonline.com/	Database

E-Resources made available from University Budget

S.NO.	RESOURCE NAME	URL	NO. OF JOURNALS
01	Scopus	http://www.scopus.com/	

E-Books made available from University Budget

S.NO.	PUBLISHER	URL	NO. OF EBOOKS
01	Oxford University Press	http://www.oxforduniversitypress.com	718
02	World Technologies	http://webos.vtbooks.com	5976


Figure-3.18: Library Website/Webpage (Source: <http://www.dhsgsu.edu.in/index.php/en/admission/central-library>)

3.6.19. Guru Ghasidas Vishwavidyalaya

Guru Ghasidas Vishwavidyalaya was set up as 9th state university of undivided Madhya Pradesh on 16 June 1983 by an Act of the state legislative assembly. GGU upgraded into a central university under central universities act 2009, No. 25 of 2009 with the name of Guru Ghasidas Vishwavidyalaya. The university is a residential-cum-affiliating institution. This is a central university located in Bilaspur, Chhattisgarh (India). It is one of the oldest and largest institution of higher education of Chhattisgarh.

Library

The central library of Guru Ghasidas Vishwavidyalaya was established on 26th Oct. 1984 as a part of the university to meet the academic needs and requirements of the students, teachers and research scholars. The library is housed in a spacious building, having seating capacity of about 500 at a time. The library also uses SOUL 2.0 software for automation and provide RFID (Radio Frequency Identification) based service.



Guru Ghasidas Vishwavidyalaya, Bilaspur

A Central University established by the Central Universities Act 2009 No. 25 of 2009

[About GGU](#)[Academics](#)[Administration](#)[Amenities](#)[Student Corner](#)[Research and Collaboration](#)[Committees/Cells/Councils](#)[Exam/Office/Sections](#)[IQAC](#)[Recruitment](#)[Contact Us](#)

Auditorium

Bus Services


Cafeteria

Guest House

Sports

Book ATM Photo Copy Facility

Facilities for e-Contents



The Central Library was established on 26th Oct. 1984 as a part of the University to meet the academic needs and requirements of the students, teachers and research scholars. It is housed in a spacious building, having seating capacity of more than 500 at a time. Its collection comprises 1,52,000 books, 5258 e-books, 4597 back volumes of Indian foreign scholarly journals and 1433 PhD theses. Library uses SOUL 2.0 software for automation and to provide RFID based service to its users. Free internet and Wi-Fi facilities have been made available to the users inside the library and campus to access e-resource. Reprography, Current awareness service (CAS) and selective dissemination of information (SDI) were also made available on demand.

[Library staff](#)

Health Centre

Hostels

Central Placement Cell

Computer Centre

Campus

Staff Quarters

Auditorium

Central Library

S.No.	Resource Name	Resource URL	No. of Journals
01	American Chemical Society	http://pubs.acs.org/	50
02	American Institute of Physics	http://journals.aip.org/	18
03	American Physical Society	http://pubs.aip.org/browse.php	13
04	Cambridge University Press	http://journals.cambridge.org	224
05	Economic & Political Weekly	http://epw.in/	1
06	ISI/ISI	http://www.isinet.org/	133
07	Institute of Physics	http://pubs.aip.org/browse.php	46
08	JSTOR	http://jstor.org/	Database
09	J Gate Plus(JCCC)	http://jgateplus.com/	Database
10	Springer	http://www.springer.com/	Database
11	Scopus	http://www.scopus.com/	1

Figure-3.19: Library Website/Webpage (Source:https://ggu.ac.in/gguold/central_library.html)

3.6.20. Hemwati Nandan Bahuguna Garwal University

The Hemwati Nandan Bahuguna Garwal University, first established in december 1973, was converted to a central university on 15th January 2009 by the central universities act 2009. Some of the objectives of the university to expand the UG and PG levels of teaching for better outreach to the women in the hill districts of Uttarakhand and to promote & develop of extension as third dimension of higher education.

Library

HNB Garhwal University Library System started its journey 4 decades ago with the establishment of the university in the year 1973 as a central facility for meeting the information needs of the academic community of the university. The central library of this university has been shifted to its new permanent central library building and since 1989, it started functioning. The central library a 3-storey building at Birla campus is having a reading facility for the capacity for 200 users at a time.

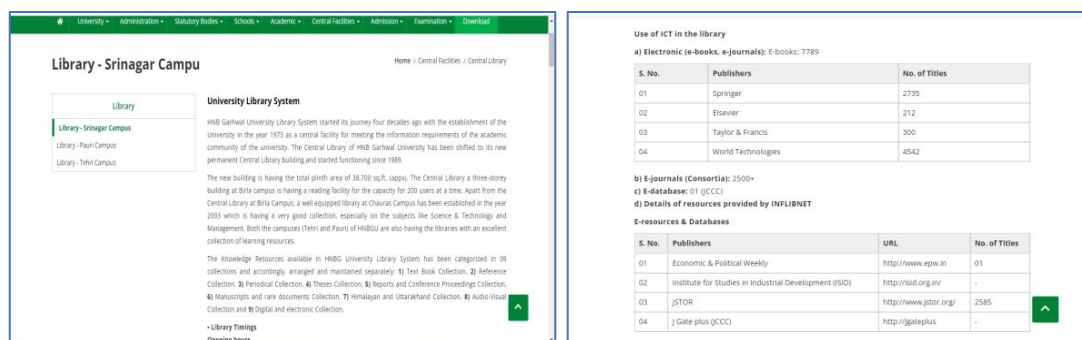


Figure-3.20: Library Website/Webpage (Source:<http://www.hnbgu.ac.in/library-srinagar-campus>)

3.6.21. Indira Gandhi National Open University (IGNOU)

The Indira Gandhi National Open University (IGNOU), was established by an act of parliament in 1985 offers high-quality teaching through the open and distance learning (ODL) mode. The main aim of IGNOU is to enhance access and equity to higher education through distance mode and promote, coordinate and determine standards in ODL system.

Library

In the field of distance education, The IGNOU library is the most resourceful information centre in the country. The library was established in 1986 which has the largest collection of books, journals and other related materials in the field of distance education, across the country. IGNOU operates through a 3-tier system having university headquarters at Maidan Garhi, New Delhi; 59 regional centres and 5 sub-regional centres in various states and 1,621 study centres scattered throughout the country. Library and documentation division is a hierarchical system with the central library at the headquarters followed by libraries located at regional centres and study centres. The central library fulfill to the needs of students academic, administrative and supportive staff at the headquarters. Every regional centres and study centres has a small library attached to it. The central library is the main library which co-ordinates the effective functioning and development of regional centres and study centres. The central library is using integrated library management software package- KOHA with all the modules for the library housekeeping operations.

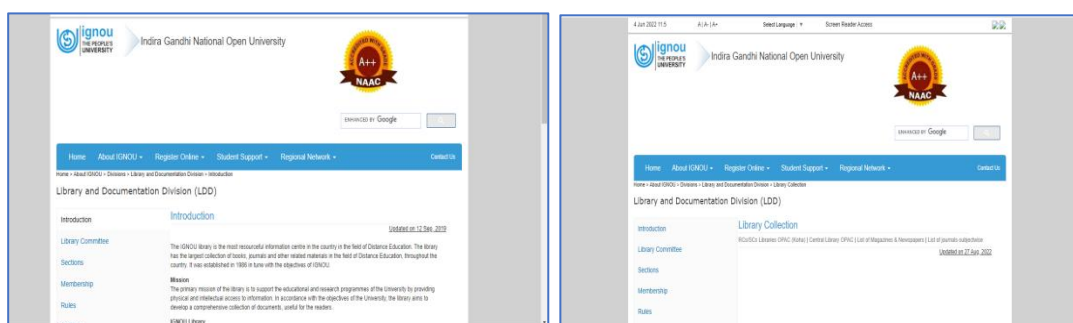


Figure-3.21: Library Website/ Webpage
(Source:<http://www.ignou.ac.in/ignou/aboutignou/division/ldd/introduction>)

3.6.22. Indira Gandhi National Tribal University

The Indira Gandhi National Tribal University, Amarkantak, Madhya Pradesh, was set up by an act of the parliament of India. It came into existence by the Indira Gandhi National Tribal University act, 2007 and came into action on July 8, 2008. It is fully funded by the central government through the University Grants Commission. The main aim of the university is to provide avenues of education, especially higher education and research facilities primarily for the tribal population of India.

Library

The library of IGNTU started functioning in July 2009. Within a short period the library could attain a considerable level of development and was moving fast towards a fully automated library. Library is using KOHA Software for automation. In keeping with the mission and vision of the university, the library was established to promote knowledge generation and application through its effective dissemination. The library operates to support the learning process of the UG/PG/PhD students through provision of knowledge/information, To meet knowledge/information needs of the faculty, research staff and to respond effectively, where possible, to the knowledge/information needs of the universities client systems.

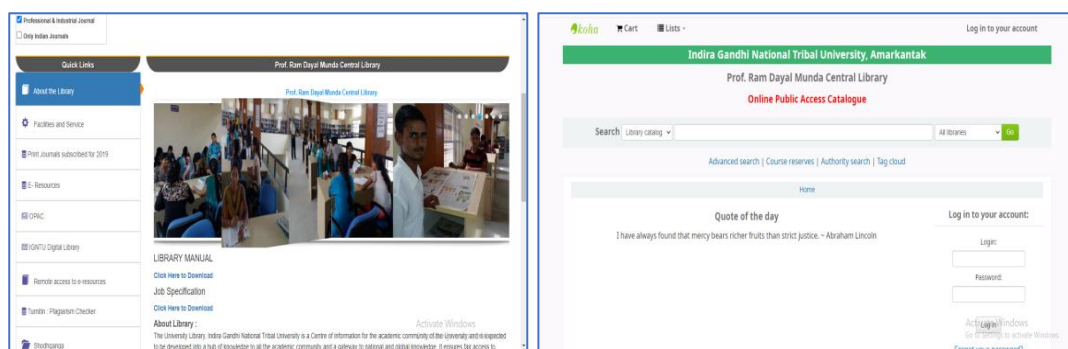


Figure-3.22: Library Website/Webpage (Source:<http://www.igntu.ac.in/clib.aspx>)

3.6.23. Jamia Millia Islamia

In 1920, Jamia Millia Islamia, an institution originally established at Aligarh in United Provinces, which had been functioning as a deemed to be university since 1962, acquired the status of a central university in December 1988. In Urdu language, Jamia means ‘University’, and Millia means ‘National’. The University offers courses at the undergraduate and postgraduate levels, in addition to Ph.D. programmes in various disciplines.

Library

The name of the central library of Jamia Millia Islamia University is Dr Zakir Husain library which was established in 1920. It was named after Dr. Zakir Husain, former President of India and Jamia's former Vice-Chancellor in 1973. The library is air-conditioned and equipped with the new technology for efficient functioning. Online catalogue provides bibliographic access to library's integrated computerized

catalogue of Arabic, English, Hindi, Persian and Urdu and books. The library is using LIBSYS-7, which supports automated in-house library operations. CCTV system with 32 cameras of the library provides electronic surveillance. The library's LAN is linked to university's campus-wide network, is supported by 3 servers and 150 workstations for student use. Also, the library provides remote login facility for e-journals to students, researchers, faculty and other bonafide members. Single-window search facility is available for its e-journals, e-books, in-house digitized documents, and open access resources through EDS (Ebsco Discovery Service).

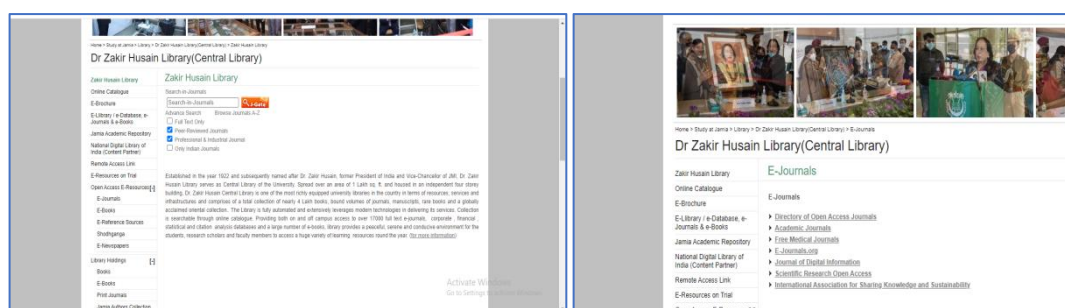


Figure-3.23: Library Website/Webpage (Source: <https://www.jmi.ac.in/zhlibrary>)

3.6.24. Jawaharlal Nehru University

The Jawaharlal Nehru University, New Delhi came into existence in 1969. It is primarily concerned with post-graduate education and research. JNU was the first to offer courses in foreign languages in an integrated five year MA programme.

Library

The Central library of JNU is a knowledge centre which has rich resources mainly in social sciences, humanities and sciences. It was established in 1969, Jawaharlal Nehru University Campus, New Delhi. The library is a nine-storey tower building in the midst of the academic complex of the university and is the hub of all the academic activities of the university and provides comprehensive access to books, e-journal/online databases, e-books, electronic theses, dissertations, journals, reports and surveys covering diverse disciplines. The JNU library is a depository of all govt. publications and publications of some important International organisations like European union, United Nations, WHO etc. The central library is knowledge hub of

JNU, which motto is user satisfaction in terms of information need and service with a smile.

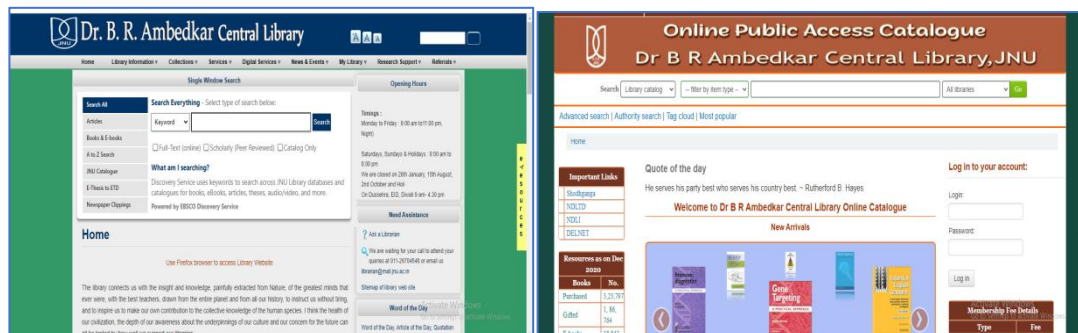


Figure-3.24: Library Webpage (Source:<http://lib.jnu.ac.in/>)

3.6.25. Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya

Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya was established at Wardha in 1997. The main objectives of the University are to promote and develop hindi literature and language in general. There are eight schools in the university. The university also offers programmes of education, research and training in areas like interpretation, translation and linguistic for improving the functional effectiveness of Hindi. It provides intellectual environment in which learning and scholarship may thrive in Hindi in a better way.

Library

The library system of Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya is serving the university community by building and providing access to collections that support education. The library promotes lifelong learning by creating welcoming spaces that offer collections and services to inform, inspire, enrich, and entertain to the users. To fulfill these missions, the library of MGAHV encompasses traditional and digital learning environments, by providing user-centric and value-added services. Through The library conducts orientation program to make users aware of the resources available to them. Central library preserves information across in all formats and ensures effective storage and delivery systems.

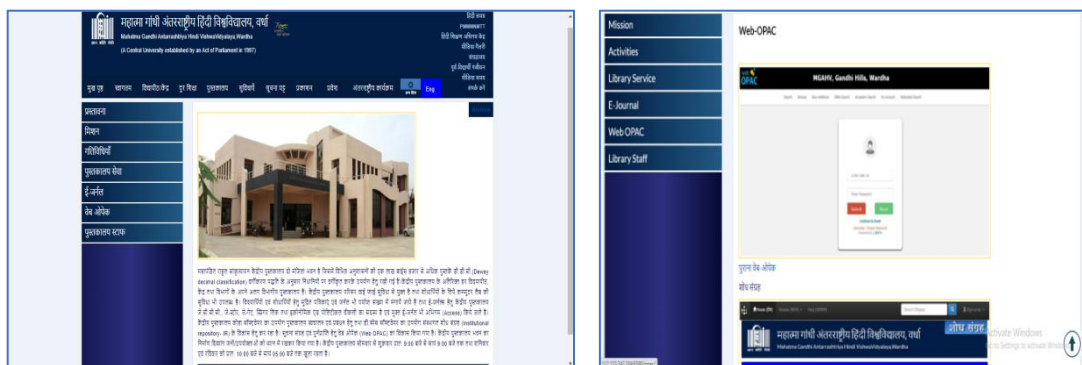


Figure-3.25: Library Website/Webpage
(Source: <http://hindivishwa.org/contentdtl.aspx?category=13&cgid=34>)

3.6.26. Manipur University

Manipur University was set up on 5th June, 1980 under the Manipur University act. 1980 (Manipur act 8 of 1980), as a teaching cum-affiliating university at Imphal with territorial jurisdiction over the whole of the state of Manipur and the university was converted into a central university on 13th October, 2005.

Library

The library has a collection of 1,90,085 documents and subscribed more than 3197 peer reviewed electronic journals. Online Public Access Catalogue (OPAC) is available for checking the availability of a book. All the academic communities can access the e-resources available in the DeLCON, e-ShodhSindhu (ESS) consortium, Shodhganga, NDLI (National Digital Library of India), CEC (Consortium for Educational Commission), E-PG-Pathshala, VIDWAN:National Researcher's Network database ICSSR, Anti-Plagiarism software accessible at Manipur University: URKUND.

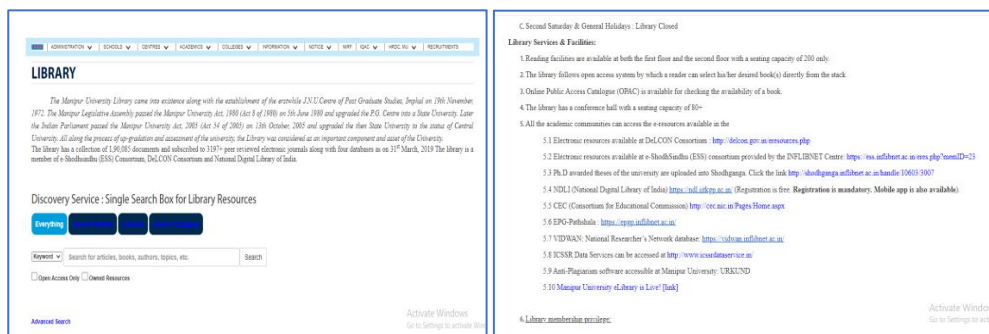


Figure-3.26: Library Website/Webpage (Source: <https://mulibrary.manipuruniv.ac.in/>)

3.6.27. Maulana Azad National Urdu University

The Maulana Azad National Urdu University was set up at Hyderabad in 1998 with the mandate to promote and develop Urdu language and to impart higher, vocational and technical education in the Urdu medium through conventional as well as distance mode. The university's campus education as on today boasts of seven schools of studies.

Library

The library of Maulana Azad National Urdu University (MANUU) is one of the important facilities of the university catering to the information needs of students, research scholars and faculty. The library holds knowledge resources predominantly related to Arabic, Hindi, Persian, Urdu, management, engineering & technology and allied subjects. The library aims to provide innovative and proactive information services to the academic community of Maulana Azad National Urdu University. The library building has an area of 3300 sq. mts., has a beautiful garden and a state-of-the-art auditorium in the centre of the library building. The library is named after late Saiyid Hamid (Prominent Indian educationist and member of Indian Administrative Service).



Figure-3.27: Library Website/Webpage (Source:http://manuu.ac.in/Eng-Php/central_library.php)

3.6.28. Mizoram University

The central university of Mizoram was established on July 2, 2001 under the Mizoram University Act, 2000 as a central university. Under 10 schools of study, the university has 37 functioning academic departments offering UG, PG, M.Phil. and Ph.D. programmes. The university was ranked 76th among all universities in India, assessed by the NIRF rankings in 2023 under MHRD. In the year 2014 and 2019 Mizoram University was accredited with 'A' grade by NAAC. The University has

also secured 1st Rank in the North-East Region of India in Times Higher Education Impact Rankings 2022 and Mizoram University is succeeded to bag 13th position among top 20 central university category in the Indian Institutional Ranking Framework (IIRF) 2023. Presently, the university is offering UG, PG, and Ph.D. in 39 academic departments under 10 schools.

Library

The central library of Mizoram University earned the appreciation of NAAC peer Team as ‘having good maintenance, good facilities and a beautiful library’ as well as ‘one of the best libraries in North-East Indian. Since 2008, The entire library holdings have been made available in machine readable catalogue and using Web-OPAC, computerized bibliographic information of the library holdings have also been available for users’. Since 1st December, 2008 automated circulation system using barcode technology has been used which provides easy and prompt service to the users. Library introduced best library user award (teacher & students categories) from the academic session 2014-2015.

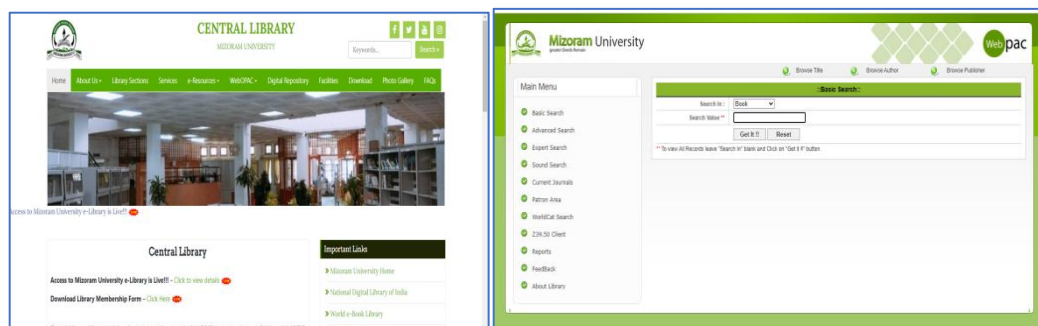


Figure-3.28: Library Website/Webpage (Source:<https://lib.mzu.edu.in/>)

3.6.29. Nagaland University

Nagaland University, the 13th Central University and the only central university in Nagaland was established based on the act of parliament of India and received the assent of the president of India on 20th October 1989 as The Nagaland University Act 1989 (No. 35 of 1989). University came into being on September 6, 1994 having jurisdiction over the entire state of Nagaland. The University offers MA, M.Sc, M.Phil and Ph.D. courses in various subjects.

Library

Nagaland University has three permanent campuses: 1) Lumami campus (Headquarters) 2) Medziphema campus 3) Kohima campus and a temporary campus at Dimapur. Each campus has its own library. The Lumami campus library is considered the central library of the university.

The central library supports the university in its aims, mission and vision to serve the academic community in the best possible way. The library stocks printed books, journals, magazines, newspapers and provides access to electronic journals and databases. The library system is fully automated with RFID technology. The central library, lumami provides computers with high speed internet access for the academic community of the university and the access to the e-journals is made available through the campus area network. The library is automated using SOUL 2.0 developed by INFLIBNET Centre, Gandhinagar. The library maintains an IR (Institutional Repository) using DSPACE which hosts the various intellectual outputs of the University. The library also uses, Radio Frequency Identification (RFID) technology which enhances the security and library efficiency.

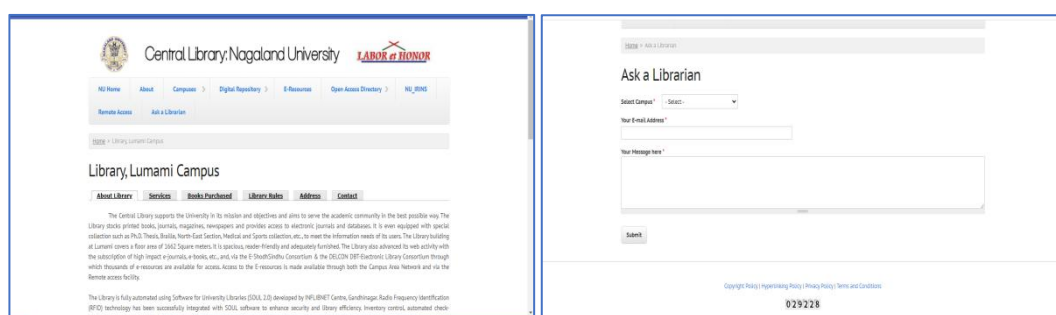


Figure-3.29: Library Website/ Webpage (Source:<https://library.nagalanduniversity.ac.in/>)

3.6.30. North Eastern Hill University

The North Eastern Hill University (NEHU) was established in 1973 by an act of parliament with focus on improvement of the economic and social conditions and welfare of the people of the hill areas of North East region and in particular their academic, cultural and intellectual advancement. The jurisdiction of the university is now limited to the state of Meghalaya, with campuses at Tura and Shillong.

for its disabled friendly modern infrastructure (80,000 sq. ft), fully air-conditioned, WIFI enabled, services for the visually challenged among the proactive services with RFID technology and 24/7 remote access its collection. The central library of Pondicherry University was named after Ananda Rangapillai because of donated 45 acres of land to Pondicherry University.

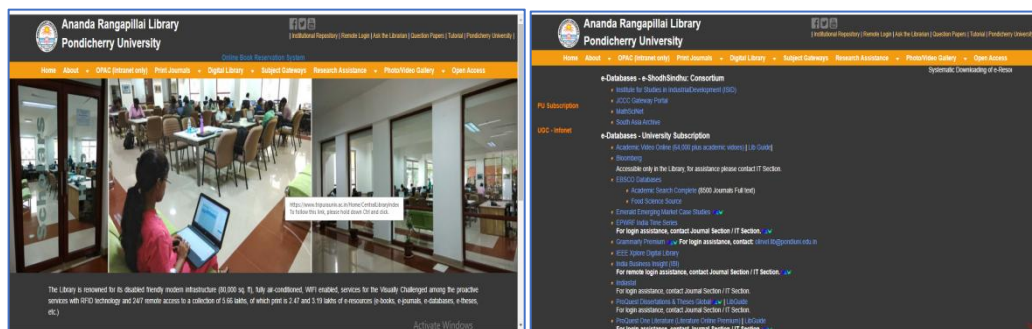


Figure-3.31: Library Website/Webpage (Source:<http://lib.pondiuni.edu.in/>)

3.6.32. Rajiv Gandhi University

Rajiv Gandhi University, Itanagar, established under an act of the Arunachal Pradesh legislative assembly was incorporated as a Central University under the Rajiv Gandhi University Act, 2006 which came into force on April 9th, 2007.

Library

The central library of Rajiv Gandhi University was established with short number of books in the year of foundation of the University. The central library is the centre of all academic activities providing access to knowledge and information to the university academic community. The library also provides access to the various online journals under different consortium from which more than 10,000 e- journals, full text articles may be browsed and downloaded. The library is using KOHA (open source library management software) and implemented RFID technology for its smooth functioning of theft detection and circulation operations.

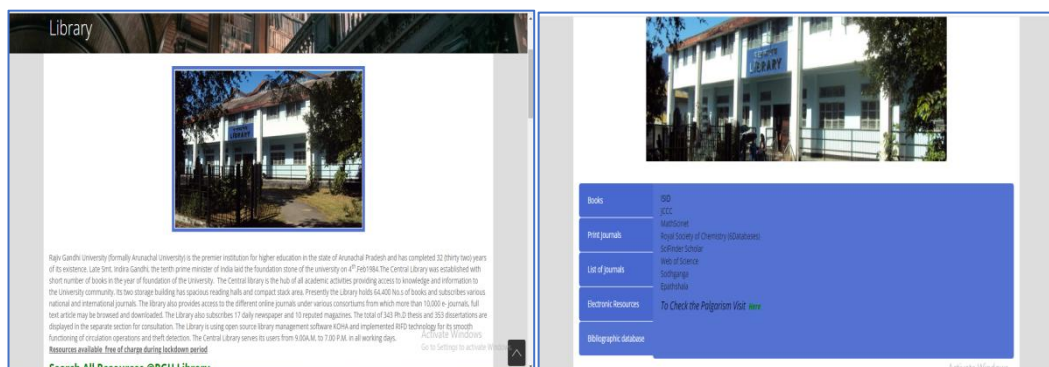


Figure-3.32: Library Website/Webpage (Source:https://rgu.ac.in/library/)

3.6.33. Sikkim University

Sikkim University, with its headquarters at Gangtok, has been established as a teaching and affiliating University under the Sikkim University Act, 2006 which came into force on July 2nd, 2007.

Library

The central library of Sikkim University started growing since February 2008. University right from its inception has a priority to set up a good university library. To strengthen the collection and improve the services is one of the important agendas of the university library. Though, being a newly established library of only about 13 years old, is comparable to any other old university library of the country so far as infrastructure facilities and modernization are concerned. All the departments of Sikkim University have been connected to the server of central library by using optical fibre cabling which may considerably promote the usage of electronic resources.

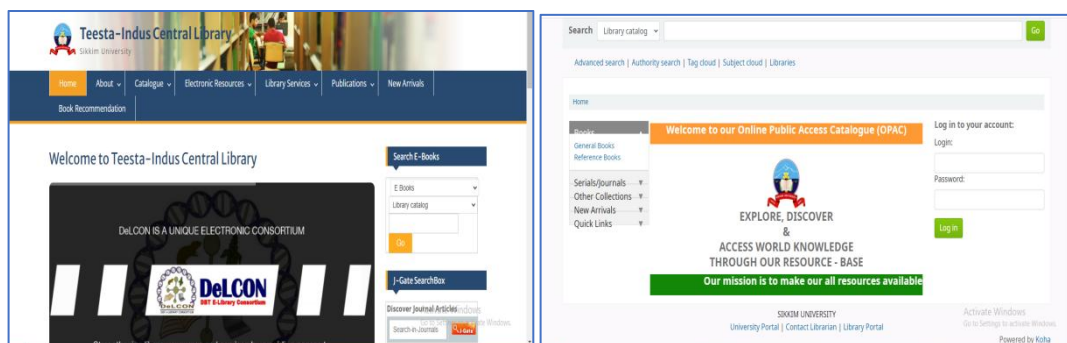


Figure-3.33: Library Website/Webpage (Source:https://library.cus.ac.in/)

3.6.34. Tezpur University

Tezpur University was established in January, 1994. It is a teaching and residential university located at Napaam, Tezpur. The university is offering PG programmes, Ph.D. courses and PG Diploma programmes and part time MBA Programme.

Library

Central library of Tezpur University has been started functioning since 1994. The library aims to empower academic community of Tezpur University with improvising collections, innovative services, and state-of-art technologies strengthened by partnerships with international and national library networks. library users can access book database, journal database, theses database, e-journals and other e-resources from any terminal within the university campus. The central library remains open throughout the year which has been modernized to provide computerized services to academic community of the university at large. The central library is automated with open source integrated library management software KOHA.

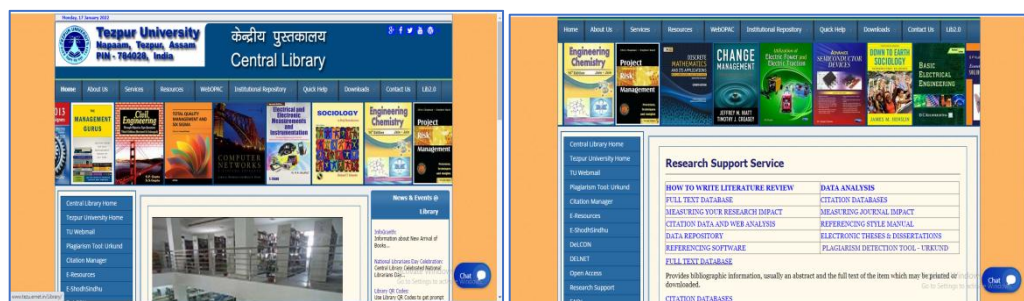


Figure-3.34: Library Website/Webpage (Source:<http://www.tezu.ernet.in/Library/>)

3.6.35. The English and Foreign Languages University

Under the English and Foreign Languages University act, 2006 which came into force on August 3rd, 2007. The university is a multi-campus university with campuses at Shillong and Lucknow, besides its main campus at Hyderabad. It has 7 schools and 26 departments. Apart from research programmes, postgraduates and graduates, The English and Foreign Languages University offers postgraduate degrees and diplomas, through the distance mode.

Library

The library of The English And Foreign Languages University was established in 1958 as an independent unit to provide bibliographical, documentation and information support to the research and teaching programmes of the university. The library was named as Ramesh Mohan library. The Library is a resource centre for academic and research activities in the areas of linguistics language teaching, and literature in English and Foreign Languages. The library also has good collection of materials in the fields of arts, film studies and history, journalism, mass communication, philosophy, psychology, religion, sociology. All library books and other reading materials are adequately secured through installation of 3M electro-magnetic security system at the main entrance of the library.

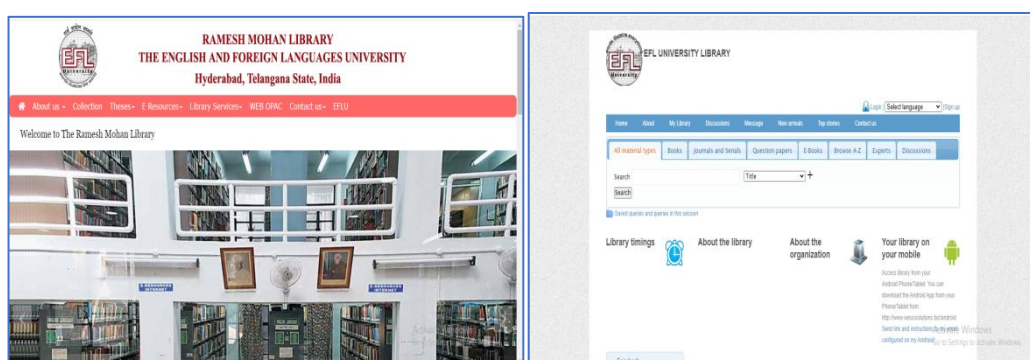


Figure-3.35: Library Website/Webpage
(Source:https://www.efluniversity.ac.in/ramesh_library.php)

3.6.36. Tripura University

Tripura University established under an act of the Tripura legislative assembly was incorporated as a central university under the Tripura University act, 2006 which came into force on July 2nd, 2007.

Library

The central library of Tripura University has various facilities available to all the faculty members, research scholars, students, officers and other staffs of the university. The main aims of the library are to build reference collections to support teaching, learning and research, to provide access to local, national and international information resources, to preserve the rare special and rare collections on Tripura and North-East region. The central library offers users free plagiarism check services

using the plagiarism detection software: URKUND (Subscribed by INFLIBNET centre for Tripura University), iThenticate (Subscribed by Tripura University for the year 2017)

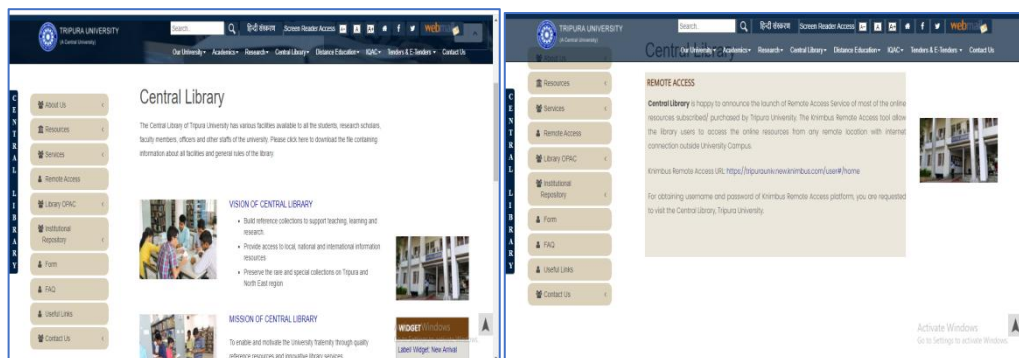


Figure-3.36: Library Website/Webpage
(Source:<https://www.tripurauniv.ac.in/Home/CentralLibraryIndex>)

3.6.37. University of Allahabad

The University of Allahabad established in 1887, is one of the oldest most prestigious universities in the country. The academic activities of the university are undertaken through its teaching departments comprising of an independent centre, on-campus faculties.

Library

The present library building was constructed in 1973. Apart from a significant holdings of books, documentary materials and other journals, the library has collections of rare objects of historical value and considerable archival/research such as a good collection of coins of the medieval and early modern periods of Indian history. The documents/manuscripts include the valuable items i. e. a copy of the Tripitaka written in the Burmese script on gold-plated metal strips; some original farman of mughal rules; considerable collection of first editions of books of great antiquarian value. DDC and Anglo American Cataloguing Rules-2nd edition (AACR-2) are followed for the purpose of cataloguing and classifying the documents.

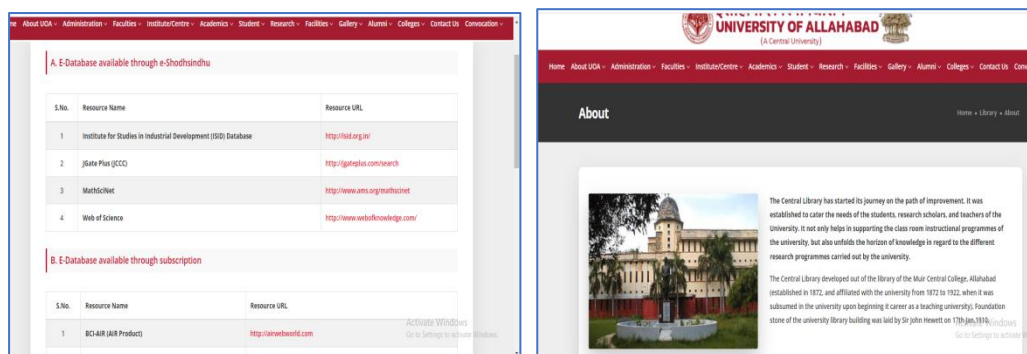


Figure-3.37: Library Website/Webpage (Source: <https://www.allduniv.ac.in/facilities/about1>)

3.6.38. University of Delhi

The University of Delhi was set up in February, 1922. This is one of the premier Institutions of higher education in the country and offers postgraduate and undergraduate programme in a broad range of disciplines in addition to long and short term diploma/certificate courses in various application-oriented subjects.

Library

Delhi University Library System (DULS) have more than 37 libraries in its fold, the Delhi University Library System is performing its task of reaching to broader academic community. They have advanced their web activity with the subscription of as good as 63 high quality electronic databases being made available through campus network to students, research scholars and teachers. Another 21 more databases are also accessible through UGC-INFONET digital library consortium. DULS's success lies on its use by the academic community of Delhi University. DULS is regularly conducting ILP (Innovative Information Literacy Programs) and also making efforts in developing tutorials to make the academic community proficient in the use of WWW. The OPAC of DULS is also being strengthened. Delhi University library also attempts to build up all their efforts to facilitate right information to the right user at the right time.

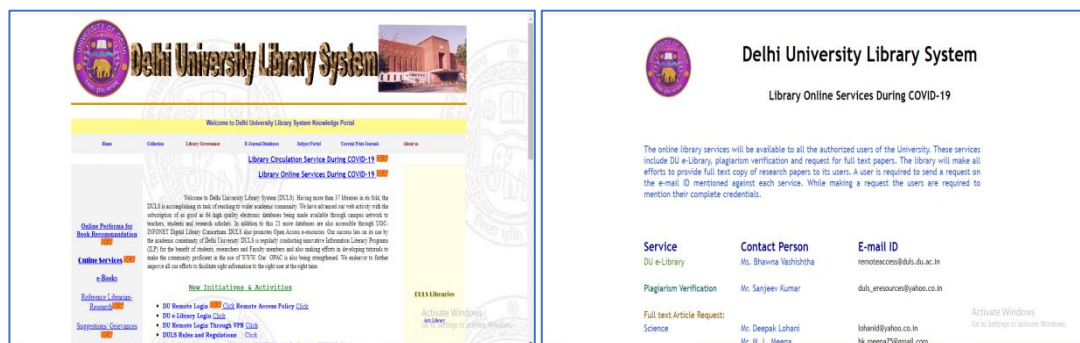


Figure-3.38: Library Website/Webpage (Source:<http://crl.du.ac.in/>)

3.6.39. University of Hyderabad

The University of Hyderabad is considered as one of the premier educational institutions in the country established by an act of parliament in 1974. The school of medicine and school of engineering sciences & technology have been established in 2007. The centre for distance education of the university also offers programmes under distance mode. In January 2015, the University of Hyderabad received the visitor's award for the best central university by the president of the republic of India.

Library

Indira Gandhi Memorial Library is one of the important central facilities of the University of Hyderabad catering to the information needs of students, research scholars and faculty in arts, humanities, social sciences, management, sciences and engineering. This library building was inaugurated by his excellency late Dr. Shankar Dayal Sharma the then VP of India in 1988 and named after late prime minister of India, Indira Gandhi. The main objective of IGM library is to make the library the most effective learning resource centre to contribute to the quality of higher education. This library is the first university library in India to fully automate all its housekeeping operations, to undertake turnkey projects for computerizing other libraries and to provide network facilities in Dr. B.R. Ambedkar Open University, Hyderabad and City Central Library (City Grandhalaya Samstha, Ashok Nagar), Hyderabad, to become one of the governing body member of OCLC (World Cat).

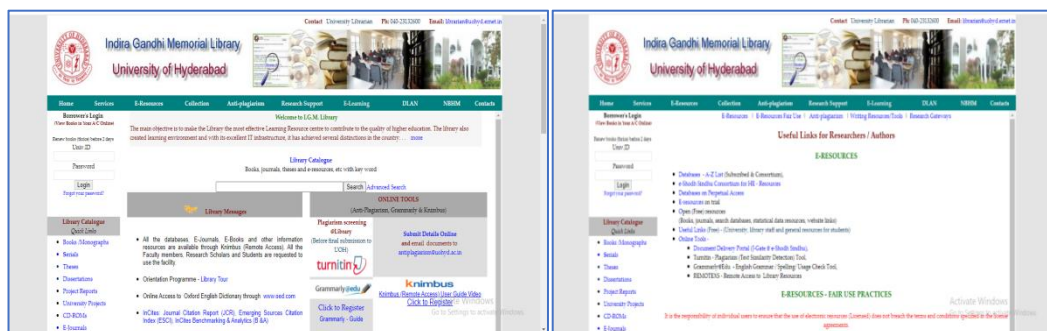


Figure-3.39: Library Website/Webpage (Source:<http://igmlnet.uohyd.ac.in:8000/>)

3.6.40. Visva-Bharati

Visva-Bharati, an educational institution founded by late Gurudev Rabindranath Tagore in 1921, was incorporated as a Central University in 1951 by an Act of Parliament. The university offers education from the primary school level to post-graduate and doctorate levels.

Library

The genesis of the library in Visva-Bharati goes back to 1901, with the founding of the brahmacharya ashrama at Santiniketan. Rabindranath personally supervised the selection of books, remaining alert to the needs of Santiniketan students and teachers and keeping himself aware of what was being published. When he found any gap in the kind of books available, he arranged to have books written and published. The central library has today more than 4 lakh volumes of books, around 10,000 users and a daily transaction of 300 books. The library has a number of important collections of Prabodhchandra Bagchi, Pramatha Choudhuri, Humayun Kabir, Satikumar Chattopadhyay, Lila Ray, Ashok Rudra and Abanindranath Tagore. With the evolving of Visva-Bharati, Rabindranath toured America and Europe with the intention of collecting funds. He was often given large donations of books from individuals, groups of well wishers and universities.

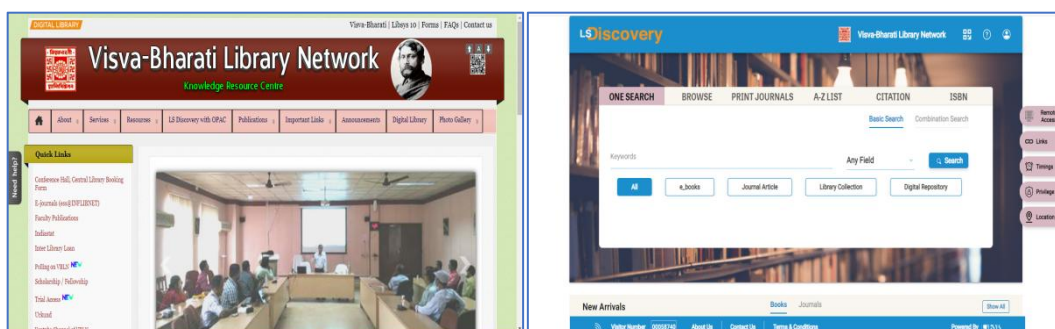


Figure-3.40: Library Website/Webpage (Source:<http://visva-bharati-library.in/>)

3.6.41. Mahatma Gandhi Central University

The Mahatma Gandhi Central University came into existence by an act of parliament, central universities (Amendment) act 2014 (No. 35 of 2014). The university became functional on 3rd February 2016. The university is proving to be an excellent centre of higher studies in both basic, applied educational fields. Needless to say, the well-experienced and competent faculty of the university is the central foundation for the ongoing academic excellence here.

Library

In the year of 2016, Atal Bihari Vajpayee Central Library (a learning resource centre) of Mahatma Gandhi Central University was established. At present, library is serving users from 7 schools and 20 departments. The central library is situated in the middle of all departments is easily accessible everyone in the university campus. DDC (Dewey Decimal Classification)- 23rd edition has been followed to classify documents of the library.

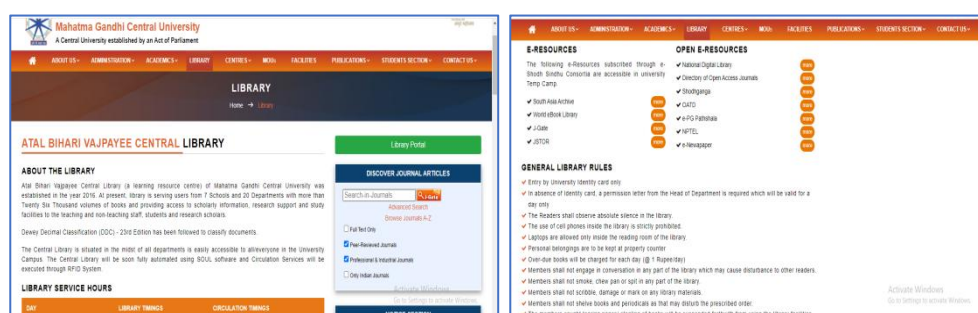


Figure-3.41: Library Website/Webpage (Source:<https://mgcub.ac.in/library.php>)

3.6.42. Central Sanskrit University

The Sansthan was established in 15th October, 1970 as an autonomous organisation registered under the Societies Registration Act, 1860 (Act XXI of 1860) for the development and promotion of Sanskrit all over the country. It is fully funded by government of India. It functions as an apex body for propagation and development of Sanskrit and assists the Ministry of Human Resource Development in formulating and implementing various plans and schemes for the development of Sanskrit studies.

Library

Central Sanskrit University Library is the nerve centre of the organization and play an important role in social & educational growth of the Sansthan. This library has open access system for all sanskrit scholars researcher in India as well as abroad. The library of Central Sanskrit University is a recognized research centre exclusively devoted to research work on various disciplines of Sanskrit literature library and it has become a nodal centre of learning and knowledge enrichment in the field of Sanskrit.

The library has a precious collection of Sanskrit books in vedik sahitya, philosophy, grammer dharmashastra, jyotish etc. with a old and unique collection of around 28000 books apart from journals, periodicals, Sanskrit newspapers, theses & dissertations.

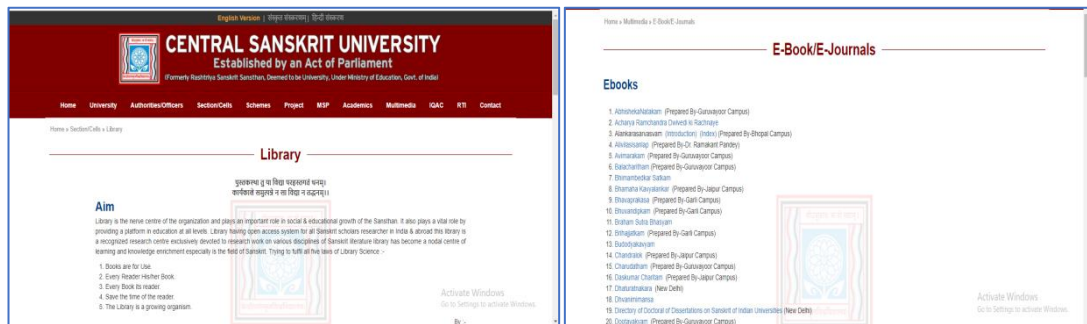


Figure-3.42: Library Website/ Webpage (Source:http://www.sanskrit.nic.in/section_library.php)

3.6.43. Shri Lal Bahadur Shastri National Sanskrit University

Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeetha (Deemed to be University) has been established as central university and start functioning as Shri Lal Bahadur Shastri National Sanskrit University, New Delhi-16 w.e.f from 30th April, 2020 under the Central Sanskrit University act, 2020 as enacted by the parliament and

assented by the president of India and duly published in the Gazette of India by the Ministry of Law & Justice, Govt. of India, Legislative department followed by the Gazette Notification F.No. 4-4/2018-Skt-II dated: 17.04.2020 of the Ministry of Human Resource Development, Department of Higher Education (Language division, New Delhi).

- i. To preserve shastraic tradition
- ii. To undertake interpretation of the shastras
- iii. To establish their relevance to the problems in the modern context

Library

Mahamahopadhyaya Padma Shri Dr. Mandan Mishra Granthalaya has been supporting the academic and research activities of the University. This library has very informative and rich collections of both modern and traditional disciplines. This library is famous for its broad coverage on sanskrit collection namely vedas, puranas, upanishads, yoga, astrology, ayurveda, darshans, dharmashastras, sahitya, paurohitya, vaastu shastra, vyakarna, etc. Besides, collection on other subjects like education, hindi, english, philosophy, psychology, and other contemporary discipline make this library a real treasure-trove of knowledge. The university extends its resources to other sanskrit bibliophile people through its special membership scheme.



Figure-3.43: Library Website/Webpage (Source: <https://www.slbsrsv.ac.in/library/about-library-0>)

3.6.44. National Sanskrit University

Rashtriya Sanskrit Vidyapeetha was established as National Sanskrit University under Central Sanskrit University act, 2020. From 30-04-2020, this act came into force and Vidyapeetha became a National Sanskrit University (Central University).

The main aim of the university to preserve and impart instruction in traditional Sanskrit lore with special attention to highly specialised branches of sastras.

Library

The library of National Sanskrit University is named after the first chancellor, Mahamahopadhyaya Sri Pattabhirama Sastri. It has a precious collection of about books and more than 5500 manuscripts in different languages like Tamil, Telugu, Sanskrit, and different scripts such as Devanagari, Grantha, Kannada, Telugu etc. Every year about 160 journals and periodicals, 4 foreign journals are being subscribed. The library has become the member of INFLIBNET by which it would be providing information and reference data of Sanskrit studies through net-working and also about international and Sanskrit scholars. In future, anyone can access the library and collect required information through INFLIBNET centre.

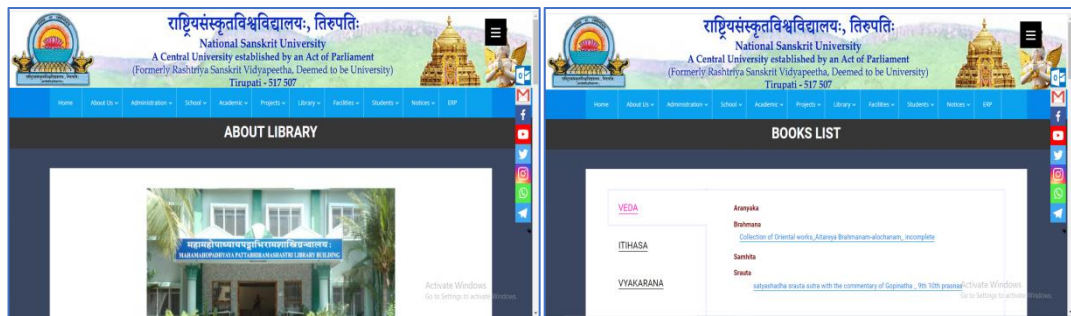


Figure-3.44: Library Website/Webpage (Source: <https://nsktu.ac.in/index.php/about-library/>)

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CHAPTER 4

Web Content Analysis: Conceptual Approach

Objective of the Chapter

This chapter's goal is to provide a quick overview of librametrics, bibliometrics, scientometrics, informetrics, cyber metrics, webometrics, and their relationships. Additional information is provided on web link structure analysis, content analysis, various aspects of web content, and types of content analysis.

4.1. Introduction

The library website evolves into an information resource, much like the websites of other organisations or institutions. Webometrics investigates the quantitative growth of the World Wide Web by applying statistical methods and principles derived from research conducted in librametric, bibliometrics, scientometrics, and informetrics. The study of webometrics, which developed from bibliometrics, scientometrics, and informetrics, includes content analysis as an essential subfield of research. It is described as the study of the substance of communication from a scientific perspective. It investigates the contents of messages in terms of their meanings, contexts, and intended uses. Bernard Berelson, a prominent communication researcher, defined content analysis as a research technique in his book "Content Analysis in Communication Research", which was published in 1952. According to Berelson, content analysis involves the objective, systematic, and quantitative description of the manifest content of communication. Manifest content refers to the visible and obvious components of communication, such as text, images, or audio. In the process of adapting to the digital environment, the web has become the most important aspect of daily life. In terms of websites, web pages, search engines, unified resource locators (URLs), domains/subdomains, web 2.0 tools, social networking sites, website traffic, online usage, etc., the web has a continuing impact on people's daily activities. The Internet has always been a useful tool for measuring the performance and quality of web activities such as search engine performance, recall and precision, database indexing, web behavior, and query analysis. To assess the performance and quality of any web-based service, the web can be classified into four distinct measurement gears.

- i. **Link Analysis:** It is the evaluation of the relationships between connectivity nodes initiated by search engine optimization.

- ii. **URL Analysis:** It is the process of determining if a URL or its working components are benign or malicious.
- iii. **Web Citation Analysis:** It is the examination of the significance and assumed prominence of the web and its services.
- iv. **Web Content Analysis:** It is the examination of the web's content to determine its strengths, weaknesses, and current state.

The purpose of content analysis is to determine the presence of particular words or concepts in texts or collections of texts. Researchers quantify and evaluate the presence, meanings, and relationships of such terms and concepts, and then draw assumptions about the messages within the texts, the author(s), the audience, and even the culture and time in which the writings were written. Texts can be widely characterised as books, book chapters, essays, interviews, talks, newspaper headlines and articles, historical documents, speeches, conversations, advertising, theatre, casual chat, and essentially any instance of communicative language. Texts in a single study may also represent a variety of different types of occurrences, such as Palmquist's 1990 study of two composition classes, in which he analyzed student and teacher interviews, writing journals, classroom discussions and lectures, and out-of-class interaction sheets. To do a content analysis on such a text, the text is coded or broken down into manageable categories on a range of levels—word, word sense, phrase, sentence, or theme—and then investigated using one of content analysis fundamental methods: conceptual analysis or relational analysis.

Web content is the textual, graphical, or audible information that is shown on websites or web pages. The contents of a website may be referred to as text or multimedia, where language encodes a certain meaning on the web and multimedia helps to portray creative components using photographs, videos, audio, graphics, animation, and more. Any web page's content creates an interconnection of text and multimedia for simple navigation and unique interpretation of relevant information.

Web content analysis is derived from webometrics, which in turn is derived from bibliometrics, scientometrics, and informetrics. Each of these branches focuses on a

distinct aspect of web content analysis techniques. Thus, their methodologies or researches are interdependent.

4.2. Librametrics: Dr. S. R. Ranganathan coined the word librametry and presented his concept at the Association for Information Management (ASLIB) conference in Lemington Spa in 1948. He stated, "This subject must be developed along the lines of Biometry, Econometry, Psychometry, etc. He developed the phrase to refer to statistical techniques in the study of libraries and the services they provide. Sengupta (1985) states, "Librametrics is a quantitative investigation of many elements of library activities and library documents utilising statistical and mathematical mathematics to provide solutions to library problems."

4.3. Bibliometrics: In 1969, Alan Pritchard wrote an essay titled "Statistical Bibliography or Bibliometric" for the publication known as the "Journal of Documentation." This is where the term "bibliometric" was first introduced to the world. The word "metric" refers to a measure or scale, and the word "biblio" implies a book. The application of statistical research methods in library and information science is what is meant by bibliometrics.

The term "bibliometrics" was coined by Pritchard, who defined it as "The application of statistical and mathematical approaches to books and other media of communication."

According to Potter's definition of bibliometrics. "The study and measurement of the publication pattern of all forms of written communication/publication and their authors."

Therefore, bibliometrics can be understood as a method of measurement that is used to quantify various interrelated characteristics of written communication. The examination or evaluation of texts and information is what this term refers to. Bibliometrics is the practice of describing patterns of publication within a specific topic or body of literature via the application of quantitative analysis and statistics. Researchers can use bibliometrics methods of evaluation to determine the influence of a particular writer, for instance, or to describe the relationship between two or more writers or works. Bibliometrics approaches are also used to evaluate the link

between two or more works. Utilizing the Science Citation Index, the Social Science Citation Index, or the Arts and Humanities Citation Index to track down citations is a frequent practice while carrying out bibliometric research. Other methods include:

a) Bibliometrics Methodologies: There are numerous bibliometric techniques, including-

- i. ***Productivity Count:*** It deals with articles, books, words in a text, place of publication, subject matter, time and date of publication, publishing institution, author, author's institution, etc. Nicholas and Ritchie referred to it as productivity count or descriptive in their book "Literature and Bibliometrics."
- ii. ***Literature Usage Count:*** Literature Usage Count is concerned with citations in published works, circulation, frequency of browsing or borrowing various library materials, failure and success in search techniques, search options, etc.

b) Laws of Bibliometrics: Lotka's Law of Scientific Productivity, Bradford's Law of Scatter, and Zipf's Law of Word Occurrence are the three most widely applied bibliometric laws.

- i. ***Lotka's Law:*** This law emphasises the productivity of authors in a particular discipline or field.
- ii. ***Bradford's Law:*** This law emphasises the pattern of dispersion of literature in multiple periodicals.
- iii. ***Zipf's Law:*** This law stresses the frequency with which the word distribution occurs.

4.4. Scientometrics: This term was coined and gained importance with the foundation of the journal "Scientometrics" in 1977 by T. Braunin, which was first published in Hungary and is now based in Amsterdam. Garfield and Marton have defined it as the field of study devoted to the quantitative analysis of scientific fields. A Scientometrics technique is divided into two categories: 1) One-dimensional (or scalar) and 2) Two-dimensional (or rational) techniques. The first technique is based on direct counts (or occurrence) and graphical representation of specific bibliometric entities (e.g., patents and publications) or particular data elements in these items,

such as citations, keywords, or addresses. The two-dimensional or rational procedures are based on the co-occurrences of particular data items, such as the number of times the keyword, classification codes, citations, and addresses are mentioned together. These methods are particularly useful for determining the best course of action in strategic situations. (Padhi and Garg, 2002).

4.5. Informetrics: According to Brooker, in 1979, Otto Nacke of West Germany is credited as being the first person to use the term "informetrics,". The efficiency of information processing was the main focus. It provides an interpretation of information technology and takes into account the interaction of several theories, such as information theory, cyber metrics, and decision theory, among others.

The measuring of information is what informatics is all about. The academic study of information, including its structure, qualities, uses, and roles in society, especially the technology used to record, organise, store, retrieve, and transmit information is called informatics (Tandale, 2017). According to Ravichandra Rao (1993), "Informetrics denotes the use and development of many types of measurements to investigate and assess several features of information in general and documents in particular. He also added that the field of informetrics encompasses both bibliometrics and scientometrics in its scope of application. (Tandale, 2017 & Rao, 1993).

Informetrics is the discipline that focuses on examining the numerical characteristics of information. This encompasses the creation, transmission, and utilisation of any form of information, irrespective of the information's form or place of origin. It investigates the progression of publications in subjects, the number of contributions initiated by different individuals, groups, associations, and countries, some literature that exists in multiple languages, and also several contributions enhanced on a subject that is being evenly distributed (i.e., across documentation varieties, languages, and journal articles), as well as the rate at which the literature on a particular topic becomes out of date (i.e., obsolesce analyses). Researching topics that pertain to informetrics, such as which journals receive the most citations and who receives the most citations, is an additional significant component of informetrics.

4.6. Cybermetrics: It is the branch of knowledge that employs statistical and mathematical methods to quantify websites or their concepts and components; growth measurement, stability, propagation, and use, examines the authenticity of the content, establishes laws governing these factors, studies the efficiency of cyber information systems, services, and products and assesses the impact of cyber age on society.

According to Bjorneborn and Ingwersen (2004), cybermetrics is "the study of the quantitative aspects of the construction and use of information resources, structures, and technologies on the entire internet, employing informetrics and bibliometrics approaches."Cybermetrics encompasses statistical studies of discussion groups, mailing lists, and all other computer-mediated communication on the Internet (Bjorneborn & Ingwersen, 2004).

4.7. Webometrics: Utilizing bibliometrics methods to investigate the connections between various websites found on the World Wide Web is an example of what is referred to as webometrics. These methods can also be used to map out (what is referred to as "scientific mapping" in more traditional forms of bibliometrics research) regions of the World Wide Web that, based on the number of times they are hyperlinked to other web sites, appear to be the most helpful or influential.

Because some research methodologies are employed on the World Wide Web (WWW) to discover and extract information from the web's linking structure and format, the notion of webometrics has a strong correlation to the fields of scientometrics and bibliometrics. The original concept behind webometrics was based on the idea that the hyperlinks that connect websites could be a significant source of information. This is analogous to the way that citations can provide information about the use and exposure of scientific articles, in addition to the connections that exist between various authors and publications. Because of this new similarity, links on the internet and citations in scientific journals are now considered to serve the same purpose, which is to point in the direction of something else or another method of acquiring information. Webometrics is a quantitative approach to online-related operations that might be deployed to the web using raw data offered

by commercial web search engines. Webometrics is also known as web analytics or web metrics.

Although the term "webometrics" was coined by Almind and Ingwersen (1997) to characterise the science of web analysis, the Journal of Cybermetrics prefers the term "cyber metrics." Initially, it was designed to be used as a citation analysis tool for the citation databases maintained by the Institute for Scientific Information (ISI). In addition, it was later defined for tracking and evaluating outgoing links from the website, which are known as outlinks, and inbound links, which are known as inlinks; this function is analogous to citation analysis (Bjorneborn & Ingwersen, 2001). Bjorneborn (2004) defined webometrics as "The study of the quantitative aspects of the construction and use of information resources, structures, and technologies on the web, drawing on bibliometric and informetric approaches." Webometrics is the study of the quantitative aspects of the construction and use of information resources, structures, and technologies on the web. The aforementioned explanation takes into account both the creation and utilisation of the web, in addition to the four subfields of webometrics research that are as follows:

- i. Web page content evaluation
- ii. Weblink structure evaluation (e.g., hyperlink, self-link, and external link).
- iii. Web usage analysis (e.g., manipulating log files for patrons seeking and browsing performance).
- iv. Web technology evaluation (integrating search engine optimization).

Webometrics currently provides a vast array of methodologies and software for conducting a variety of quantitative web assessments. Despite earlier concerns that web data could be easily manipulated because it is not quality-controlled, proponents of webometrics argue that it can be used to analyse both different aspects of the web, such as hyperlinking within and between institutional websites.

4.8. Altmetrics

Altmetrics, also known as alternative metrics, are new measurements that take social media, online reader behavior, and network interactions with content into consideration. These are examples of altmetrics:

- i. Mentions on twitter, facebook, or news on websites
- ii. Exports to citation management systems such as Mendeley and Zotero
- iii. Downloads (of software and full-text articles etc.)
- iv. Discussions on online forums (e.g. blogs)

4.8.1. Strengths of Altmetrics

- i. **Currency** - Unlike traditional citations, which take time to build up, altmetrics may be gathered and calculated immediately.
- ii. **Diversity** - Altmetrics collect data from a range of sources rather than simply the usual academic publishing environment, and as a result, they may be able to capture the broad impact of research outside the scholarly community. Apart from papers, other research outputs such as data sets, software, etc. can also be tracked using altmetrics.

4.9. Relationship Between The Five Metrics (Bibliometrics, Scientometrics, Informetrics, Cybermetrics, And Webometrics).

A vocabulary to distinguish between the research of web and internet applications was proposed by Bjorneborn and Ingwersen in 2004. They established that the ideas of bibliometrics, informetrics, and scientometrics varied significantly. Figure-4.1 depicts how bibliometrics, cyber metrics, informetrics, scientometrics, and webometrics are related to one another. It has been noted that webometrics has relationships with bibliometrics and perhaps overlaps scientometrics. It also demonstrates how bibliometrics and scientometrics are overlapping topics within informetrics. Because web documents, whether they are text or multimedia, are recorded data that is stored on web servers, the field of webometrics may be considered as being entirely encompassed by bibliometrics in this context. Although cyber metrics go beyond bibliometrics, some actions in cyberspace go beyond bibliometrics as well because they are typically not documented but are conveyed synchronously, such as in chat rooms. According to Tague Sutcliffe, studies of the quantitative features of information "in any social group" and "in any form" still fall under the general category of informetrics. The relationship between Informetrics,

Bibliometrics, Scientometrics, Cybermetrics, and Webometrics is clearly illustrated in Figure 4.1.

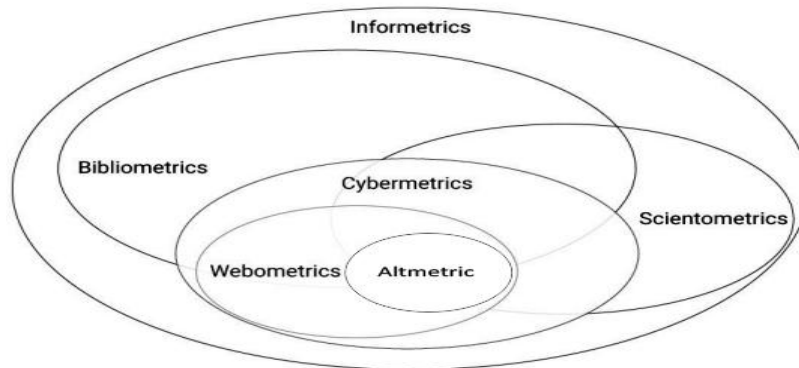


Figure-4.1: Metrics Relation
(Source: Bjorneborn and Ingwersen, 2004)

The web was developed to share a worldwide documentation infrastructure for academic purposes, and now it is used by a wide variety of people, which has claimed to be an obvious subject of research for information scientists, statisticians, and mathematicians. According to Bjorneborn and Ingwersen, there appears to be a significant difference among the concepts of scientometrics, bibliometrics, and informetrics (2004). Figure-4.1 illustrates very clearly the connection that exists among the many different types of metrics, including informetrics, bibliometrics, scientometrics, cyber metrics, and webometrics.

In 1969, bibliometrics was the first of these five different metrics disciplines to ever come into existence. In fact, it is a statistical method for analysing publishing patterns and other related aspects. Bibliometrics is the foundation upon which other metric sciences, such as informetrics, scientometrics, cyber metrics, and webometrics are built. These metrics sciences are statistical methodologies. Nevertheless, every one of them focuses on a different subject matter. When looking at the connections among informetrics, bibliometrics, scientometrics, cybermetrics, and webometrics, it is obvious that webometrics is connected to bibliometrics and it overlaps scientometrics to some degree. Cybermetrics and webometrics also have connections to informetrics. The study of bibliometrics encompasses the entirety of webometrics, even though information from web pages is collected and stored on web servers.

In this diagram, the field of webometrics is wholly encompassed by the discipline of cybermetrics and partially by the subfield of scientometrics. Determine activities that

take place in cyberspace that aren't typically documented but are conveyed simultaneously. The field of cyber metrics goes beyond bibliometrics and includes things like online discussion forums. According to Tague-Sutcliffe, evaluations of these types of activities using cyber metrics are included in the broader field of informetrics, which is the study of the quantitative characteristics of information "in any form" and "in any social group." Specifically, informetrics is the research of the relationship between information and social groups.

In addition, the inclusion of webometrics is intended to increase the scope of the field of bibliometrics. This is because the fundamental principles of webometrics are rooted in bibliometrics, scientometrics, and informetrics, all of which have played a role in the evolution of webometrics. The principles of webometrics may be able to contribute to the development of these extensive domains.

4.10. Content Analysis

A method of study called content analysis describes the content of scientific data gathered by checklists, questionnaires, interviews, and other methods in a methodical, logical, and measurable way. It is an effort to link metaphorical activity to scientific information. It's a system for classifying and organising scientific data according to the goals and research questions. Examining the messages that have been communicated in a conversation is called content analysis. Generally, content analysis is a method for drawing conclusions and inferences about the subject matter of the communication's content. In 1952, the publication of Bernard Berelsons-Content Analysis in Communication was considered a significant instrument for political scientists and media scholars. Some scholars adopted it for historical and political research as well (Holsti, 1968). The content analysis gave system, objectivity, quantification, viewpoint, and authenticity priority when ranking the conclusions drawn from communication messages regarding the sender, the message, or the recipient. Therefore, utilising predetermined parameters, the content analysis entails drawing precise, repeatable and unbiased conclusions regarding the message (Prasad, 2008).

In addition, according to Prasad (2008), content analysis integrates the following three scientific process principles:

- i. **Objectivity:** In objectivity, evaluations are conducted according to predetermined criteria, allowing many researchers to obtain the same insights from identical documents or communications.
- ii. **Systematic:** In this approach, contents are included or excluded based on particular rules that are consistently applied, which removes the possibility of selectively including resources that support the researcher's ideas.
- iii. **Generalizability:** The researcher's findings can also be applied to other similar situations.

The paradigm of content analysis serves prescriptive, analytic, and methodological objectives. Prescriptive guidelines aid in the conceptual framework and architecture of practical content analyses for any given situation. Analytical guidelines aid in the evaluation of content analysis information derived by others. Methodological guidelines encourage the development and advancement of content analysis techniques.

In addition, content evaluations typically involve the six phases mentioned by Prasad (2008) in his work.

- i. Formulating a research topic or a list of goals
- ii. Content of communication and sample selection
- iii. Creating content categories
- iv. Completing the analysis of the unit
- v. Developing a coding plan, conducting pilot tests, and guaranteeing intercoder dependabilities
- vi. Examining the collected data

4.11. Content Analysis Applications

The content analysis evaluates any documented or recorded interactions, and it is already included in a wide range of fields, such as branding and marketing investigations, publications and argumentative, ethnography and cultural studies, gender and age challenges, sociology and political science, psychology, and cognitive science, among others. The following list (derived from Berelson, 1952) provides further content analysis applications:

- i. Differentiate international communication content variances
- ii. Recognize the existence of propaganda
- iii. Determine the intentions, focus or communication trends of an individual, group or institution
- iv. Summarize behavioral and attitude responses to communications
- v. Identify the psychological or emotional condition of an individual or group

4.12. Content Analysis Types

Content analysis can be divided into two categories: conceptual analysis and relational analysis. Conceptual analysis determines the prevalence and occurrence of concepts most frequently portrayed by terms and phrases in a text. The relational analysis investigates the connections between the ideas in communication (Busch et.al. 2012).

i. *Conceptual Analysis*

In conceptual analysis, any thought can be put forward for inquiry, and the interpretation process must involve weighing and retelling the relevance of the concept in question. Even though the words may be implicit or explicit, the focus appears to be on analysing the frequency with which the advised technique appears within a message or text. Programming for implicit keywords and assessing the extent to which their connotations run deep is more challenging than programming for explicit words because it requires making judgments based on a more subjective approach. When coding such implicit terms, it is common to practise making use of either a specialised lexicon or a contextual framework. This is done to reduce the degree to which the terms are subjective (as well as reliability and validity constraints).

ii. *Relational Analysis*

The scope of conceptual analysis is typically expanded by relational analysis, which looks at how pieces of a text are connected. Nevertheless, it is necessary to decide which conceptualization patterns will be investigated in relational analysis initially. A significant amount of research has been conducted that incorporates those few as one concept types and as many as 500 conceptual categories. Including quite so many categories have the

potential to make the results more complicated, yet having too few categories can lead to judgments that are imprecise and possibly wrong. As a consequence of this, it is of the utmost importance to ensure that the entire coding procedure is led by the requirements and context of the study. As is the case with the vast majority of forms of research, relational analysis, although it appears to have a substantial degree of computer automation, is yet complicated and time-consuming. The most convincing argument would be that it maintains a significant amount of statistical consistency while also keeping the depth of information that is available in ways that are even more qualitative.

4.13. Technique of Content Analysis

Labeling relevant terms and phrases with 'codes' that suggest whether they would be present or omitted, or unless they are 'yes' or 'no' is a part of the content analysis. These codes can also indicate whether they are a 'yes' or a 'no.' The result of all of this is referred to as a "category set," which is considered to be a method of categorising or classifying data. There may be two or more different groups of these codes. As a consequence of this, the following categories can be summed up as follows: This segmentation is easy to understand because it is broken down as follows: very high, high, medium, low, and very low. The method utilised in this investigation is known as the encoding or symbolization approach, and it consists of the following steps:

- a) Words
- b) Themes
- c) Phrases
- d) Ideas; and
- e) Motives

4.14. Web Content

Tim Berners Lee, a software engineer, founded the World Wide Web (WWW), also known as the Web, in 1989 at the CERN high-energy physics laboratory in Geneva, Switzerland. Since then, the web's importance in our lives has increased exponentially. Even though there is a considerable distinction between the two terms Internet and World Wide Web are frequently used interchangeably. The World Wide Web has evolved into one of the services transmitted via the internet through linked hypertext sites and other components, whereas the Internet is a global data communications system that includes hardware and software components for computer connectivity, Shukla and Tripathi (2015). Web content production is the process of creating all the content on the website. It might involve everything from gathering data and doing analyses to creating original artwork, writing, and editing, as well as organising the finished result and publishing it online.

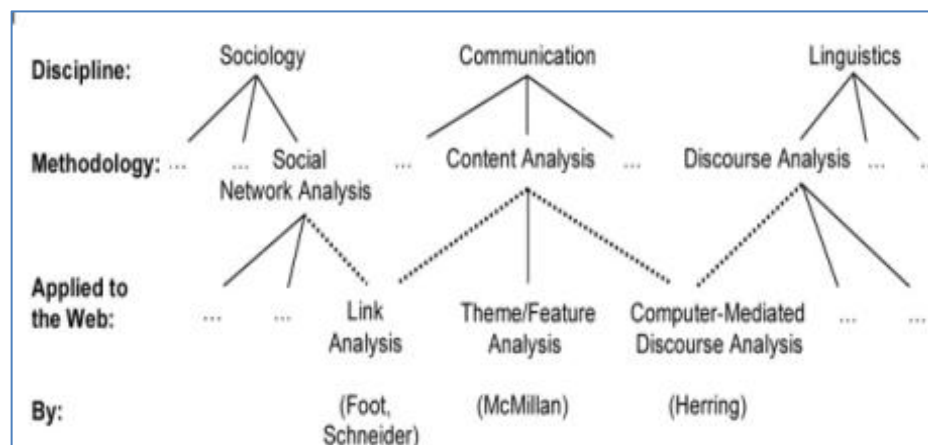


Figure-4.2: Diverse Approaches for Analyzing Web Content
 (Source: <https://www.semanticscholar.org/paper/Web-Content-Analysis%3AExpanding-the-Paradigm-Herring/d05507aec2e217a1f3ba35153153a64e135fb42c/figure/0>)

The figure demonstrates various methods of web content analysis developed by various philosophers. The concepts, theories, facts, ideas, or expressions that make up a web page or website are referred to by researchers as the content on the web. Content can be shared via texts, pictures, music, and video. The four main objectives of content are to inform, educate, entertain, and maintain connections. There are several reasons why people visit websites, but the content is probably the main one. Web content can be divided into two main categories: text and multimedia. Text refers to the written content of a web page. Users can get extra information and

conduct more effective information analysis thanks to internal links in text-based web content. On the other hand, the multimedia online content features animation, images, audio, and video.



Figure-4.3: Access to Web Content from Various Sources
(Source: <https://indieseducation.com/world-wide-web-backbone-of-the-internet/>)

With such a surge in complexity, specialised online document and website genres have expanded. The majority of the internet, which started as passive HTML pages, consists of text, hyperlinks, and images. Websites with aspects like user interface, user content, and user-to-user engagement have already incorporated audio, animations, and videos. Participants have combined with some other online and offline media to create prototype genres, including social networking sites, blog sites, forums, and websites for online sources, photographs, and videos. Numerous ways to get internet information are shown in Figure-4.3. The World Wide Web, the internet, mobile devices, laptops, computers, tablets, and other devices can all be used to view any content made available on the websites.

4.15. Web Content Analysis

The World Wide Web has evolved into a wonderful teaching tool that offers a variety of advantages in the fields of education, knowledge, networking, and other related fields; in addition, it promotes and maintains the intellectual studies conducted by the scientific community in the field of Information and Communication Technologies (ICT). The proliferation of Information and Communications Technology (ICT) and other internet technologies, as well as shifting user circumstances and expectations, are driving the transformation of traditional libraries into digital libraries, virtual libraries, mobile libraries, and cloud-

based libraries. As a corollary to this, offline content that is housed in libraries is being digitized and transformed into online information. This information is being disseminated through a variety of resources and is available 24/7 a day, seven days a week, in a variety of formats. Web content analysis is quickly becoming one of the most popular methods for investigating the World Wide Web. The majority of the time, content analysis is used as a comparison method, which enables researchers to carry out substantial content evaluations across web resources that are comparable to one another.

4.16. Procedure for Web Content Analysis

Website content analysis is a time-consuming method requiring three phases to analyze, identify, evaluate, and visualize web data (Devi and Verma, 2016)-



Figure-4.4: Diverse Web Content Processing Methods
(Source:<https://alamtariq.wordpress.com/category/content-analysis/>)

- i. Content Survey-* The first step in the process of analyzing the content of a website is called the content survey. During this phase, among other things, the quality of the material that is currently available is evaluated, business objectives are understood, the psychology of online users is understood, and content marketing strategies are understood. The core participants in the content survey methodology, which consists of a complete questionnaire, are the content suppliers as well as the essential stakeholders. A content

survey will help to acquire a better knowledge of how online users engage with the material, whether or not content utilization supports organizational goals, who the users are, as well as what commercial actions are currently being used. It will be helpful in the evaluation of the performance and reliability of the content that is currently being used, as well as in the determining of strategic goals, the creation of user profiles, the establishment of key performance indicators (KPIs), and the implementation of strategies for publishing content.

- ii. Content Inventory-** The second analytical step of web content analysis is known as the content inventory phase. During this phase, the various web content resources are gathered and cataloged. The purpose of the content inventory is to investigate the various possible types and formats of website content that are produced by website content producers. It will require the creation of a website project's content structure, as well as its usage and distribution models, and their subsequent revision. It is the most important tool for the content audit stage. A spreadsheet or any other online content-gathering method can be used to index material.
- iii. Content Audit-** The third phase of development is called the content audit, and it is comprised of a gap assessment and content mapping to professional advancement, user goals, key performance indicators (KPIs), and advertising platforms. Examining existing content in light of both business plans and the objectives of individual users is what a content audit is all about. It helps to discover any gaps in quality content that are required to achieve the goals of the company as well as the expectations of the customers. It helps to identify what components are essential, in addition to what aspects are superfluous and might be removed as a result of using them. It links content to company goals, user objectives, key performance indicators (KPIs), and marketing initiatives.
- iv. Content Audience-** Content audience is any potential customer or client who might consume or patronize the content. when a web designer creates content that stands out, whether it be visually appealing, informative,

engaging, or otherwise exceptional. It captures the attention of more people and encourages them to visit the website.

- v. **Mobile Content Strategy**- The term "mobile content strategy" refers to a method of adapting resources to meet the requirements and preferences of mobile users. We are all aware that searching on a mobile device is not the same as searching on a desktop computer. It suggests paying attention to the question of whether or not the content can be displayed on a mobile device. It ought to function properly across a variety of screen resolutions.

4.17. Web Impact Factor

In 1998, Peter Ingwersen developed the concept of measuring average link frequencies, also known as Web Impact Factor (WIF), as a quantitative indicator. Previously, Rodriguez Gairin (1997) developed the concept of information impact on the Internet in a Spanish documentation Journal. The WIF was a web-based adaptation of the journal "Impact Factor" (Garfield, 1972), based on a comparison of hyperlinks and citations. The WIF and the Journal Impact Factor (JIF) periods are different. The JIF tracks citations from one period's papers to another period's articles, whereas the WIF is a "snapshot" of a search engine database at a specific time. Web resource content, in comparison to journal paper content, lacks peer review and thus quality assurance. As a result, the WIF differs slightly from the JIF. On the other hand, the JIF was the driving force behind the WIF (Noruzi, 2006). Even though this information source is comparatively unregulated and troublesome, there has recently been much interest in analyzing links and web pages, particularly with commercial search engines like Alta Vista (Rodriguez Gairin, 1997; Ingwersen, 1998; Smith, 1999; Snyder & Rosenbaum, 1999; Thelwall, 2000; Thelwall, 2001; Smith & Thelwall, 2002; Thelwall, 2002; Kousha & Horri, 2004; Noruzi, 2006). The WIF provides quantitative tools for ranking, assessing, categorizing, and comparing websites, TLDs, and subdomains. There are three types of hyperlinks: outgoing links from web pages are known as outlinks, inlinks (backlinks) are known as links coming into a site from other sites, and self-links are known as links within the same site (from one page to another page). There are three types of WIF: (1) WIF overall, (2) WIF in the link (revised), and (3) WIF self-link. The number of in-link pages

from outside the site and the number of self-link pages within the site is the numerator for the overall WIF; the number of inlink pages counted from outside the site is the numerator for the inlink (revised) WIF, and the number of self-link pages counted from within site is the numerator for the self-link WIF. In Noruzi's (2006) study, the common denominator was the number of web pages on the website.

The calculation of Web Impact Factor is shown below:

A= Total link pages (inlinks and self-links)

D= The number of web pages published on the website that are indexed by the search engine, rather than the total number of web pages available on the website.

WIF= A/D = Web Impact Factor

The WIF is a measurement used to assess the relative standing of websites in specific fields or within a country, such as academic websites. The higher the impact factor, the better the perceived reputation of the website. The WIF answers the question, "What effect has this website had?" A WIF is a metric that indicates how frequently the "average web page" in a website is linked at any given time. A website with a higher impact factor may be considered more reputable or of higher quality than those with a lower impact factor. The WIF computes the average (external or absolute) impact per page for a single university website or all websites in a country. Noruzi (2006). The WIF can assist you in comprehending the significance of the inlink (or total link) frequency range. It eliminates some of the bias inherent in such counts, favoring large websites over small websites, well-known websites over less-known websites, and older websites over newer ones. Such websites have a larger body of linkable literature than smaller or younger websites, particularly in the latter case. If all other factors remain constant, the more previously published web pages a site has, the more frequently it will be linked. As a result, the WIF grows in proportion to the number of link pages to a website. The representational role of links in depicting a website's content is a broad aspect of information retrieval, and it can broaden the scope of information searching by retrieving not only websites that have linked to a primary website but also those are related to the linking web sites (Noruzi, 2006).

4.18. Analysing Content of Library Website

Websites serve as an efficient technique for delivering knowledge to every feasible aspect. Libraries are learning and knowledge centers that spread information to their users from numerous sources available at the library through the services they give. Libraries are always attempting to incorporate new technology, not only in information dissemination but also in information gathering and preservation, where ICT plays a significant role. Many studies have been undertaken to measure the efficacy of the services they provide to their clients, one of which is online content analysis, which checks the validity and quality of material available on the internet. Users can witness the impact and relevance of ICT in all sectors of life, including libraries, which benefit from it due to the desire for web-based trustworthy information. A University's, institutions, or organization's website establishes its visibility on the World Wide Web (Kannappanavar & Biradar, 2011). Because of technical improvements, anyone may now easily share information on the internet. It is currently arguable whether or not the information available on the internet is trustworthy. The sophistication of web material on library websites is dictated, among other things, by the collection, services, facilities, administrative support, and updating policies of the respective library. These parts are referred to as library website content. The content analysis exposes the qualitative and quantitative components of the material given on library websites. Applying criteria for evaluating library websites through content analysis is one approach for analysing the usefulness of websites. The purpose of the content analysis evaluation criteria is to determine how successful and efficient the websites and web pages of the libraries are in meeting their respective missions. Clyde (1996) provided ten pieces of advice for library website designers-

- i. The page's title should have a sensible title that includes the relevant keywords that visitors are most likely to use while looking for the page.
- ii. Graphics and photographs can add a lot of appeal to a page. Transmission may be too slow for the crowded user if they are too large or complex, or if there are too many of them.
- iii. The library, its location, and the organisation of which it is a part, all need to be identified clearly and concisely on the page.

- iv. The website ought to provide a summary of the library as well as the services it offers.
- v. A concise overview written in English would be helpful to users in other countries.
- vi. The page should have components that attract first-time visitors to continue reading and come back in the future.
- vii. People will be more likely to return to the page if they know they will always find something new when they visit.
- viii. Users of the homepage of a library stand to gain a great deal from access to links to various other internet resources.
- ix. Visitors to the page should be able to communicate with staff of the library via the page.
- x. Other notable features to include are a "way out" of the page, the most recent update, and the library's postal or street address.

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CHAPTER 5

Data Analysis and Interpretation

Objective of the Chapter

This chapter analyzes the collected data of selected 44 central university libraries' websites/web pages in India to examine the library website performance based on objectives formulated for the present study and presents the data in tables and graphs for interpretation.

5.1. Introduction

One of the most significant functions of libraries in academic institutions is the spread of knowledge. For their educational and research activities, teachers, researchers, and students are constantly in need of information and knowledge. Libraries are therefore, considered as the foundation of an academic institution where information and knowledge are circulated with users in order to maximise their usage and profit through knowledge management.

A website serves as a portal to an academic organization's information and services. In a similar way, library websites is one of the major resources for the exchange of information and knowledge. A library website serves as an addition to and extension of a typical physical library by providing access to electronic resources (such as e-books, journals, etc.), online catalogue, and online reference services. The importance of a library professional's technical skills to meet the needs of their users increases as libraries advance into the digital era. It is now absolutely necessary to manage the knowledge that is available online so that it can reach its intended audience without any obstacles.

It is important to process and analyse the information collected about a research problem in accordance with the guidelines established for that purpose when creating the research strategy. Data analysis is one of the most significant mechanisms to find out the result of any research work. In order to organise and summarise the collected data so that it can be used to answer the research questions, it therefore involves a variety of closely connected procedures. The major goal of the current study is to determine the layout and current web content trends of selected 44 central university libraries' websites/web pages.

5.2. State-wise Distribution of Universities in India

Table- 5.1 shows the distributions of central universities among the states including the union territories in India. In India, the capital territory Delhi secured the highest position in establishing the highest number of universities (6), namely Indira Gandhi National Open University, Jamia Millia Islamia, Jawaharlal Nehru University, Central Sanskrit University, Shri Lal Bahadur Shastri National Sanskrit University and University of Delhi.

In descending order, Uttar Pradesh is placed in the second position with having 4 central universities (Aligarh Muslim University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University and the University of Allahabad) and Telangana in the third position having 3 universities (those are, Maulana Azad National Urdu University, The English and Foreign Languages University and the University of Hyderabad).

Besides this, 4 no. of states namely Jammu and Kashmir, Madhya Pradesh, Bihar and Assam have 2 central universities each. Mention may be done of Central University of Jammu and Central University of Kashmir in Jammu and Kashmir; Dr. Harisingh Gaur Vishwavidyalaya and Indira Gandhi National Tribal University in Madhya Pradesh; Central University of Bihar and Mahatma Gandhi Central University in Bihar; Assam University and Tezpur University in Assam. The Remaining 23 states and union territories are equipped with one university each.

Table-5.1: State-wise Distribution of University in India

Name of the State/UT	No. of Central Universities
Delhi	7
Uttar Pradesh	4
Telangana	3
Assam	2
Bihar	2
Madhya Pradesh	2
Jammu&Kashmir	2
Arunachal Pradesh	1

Andhra Pradesh	1
Chahhhtisgarh	1
Gujarat	1
Haryana	1
Himachal Pradesh	1
Jharkhand	1
Karnataka	1
Kerela	1
Maharashtra	1
Manipur	1
Meghalaya	1
Mizoram	1
Nagaland	1
Odisha	1
Pondicherry	1
Punjab	1
Rajasthan	1
Sikkim	1
Tamilnadu	1
West Bengal	1
Uttarakhand	1

5.3. Classification of Central University Libraries' Website /Webpage by Domain Extension

In January 1985, the IANA (Internet Assigned Numbers Authority), a group of computer scientists responsible for internet categorization, created the first six top-level domains: .com, .edu, .gov, .net, .mil, and .org. The top-level portion of a domain name is referred as the domain extension. The abbreviation for URL is- Uniform Resource Locator. It specifies the precise location of a web resource on a computer network. Uniform Resource Locator is one type of Uniform Resource Identifier (URI). The address bar indicates that the page is a website or web page. A

Uniform Resource Locator typically consists of the Hyper Text Transfer Protocol (HTTP), the hostname (www.example.com), and a filename (index.html). Table-5.2 displays the 5 types of domain extensions- ac.in, edu.in, .org, .in, and .nic used by the central university library websites/web page.

The data were collected from the selected 44 university libraries websites/web pages; among which the number of universities that own .ac. in is 35(79.54%). Apart from this the number of universities that own .edu.in and .in are 4(9.09%) (i.e., Central University of Punjab, Dr. Harisingh Gaur Vishwavidyalaya, Mizoram University and Pondicherry University) and 3(6.81%) (i.e., Central University of Kerala, Tezpur University and Visva Bharati) respectively. The two universities own .org, i.e., Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya and .nic.in i.e., Central Sanskrit University each.

Table-5.2: Domain Extension of the Website/Webpage

SL No	Domain extension	Number of university having it
1	.ac.in	35(79.54%)
2	.edu.in	4(9%)
3	.in	3(6.81%)
4	.org	1(2.27%)
5	.nic.in	1(2.27%)

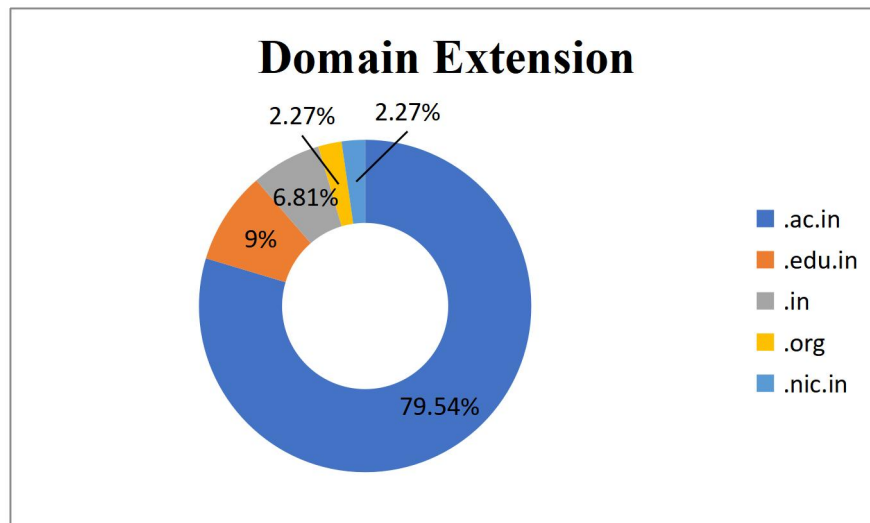


Figure-5.1: Domain Extension of Library Website/Webpage

5.4. Availability of Library Website/ Webpage

In order to highlight all the information and services offered to their library users', librarians and library science professionals applying the different ICT tools to reach to their users and provided library services. Design and develop a library website/web page and link the library services are one of the efforts to reach the library users remotely. A website is a collection of web pages that can be accessed from anywhere and at any time via the internet, and are typically managed by an individual or an organisation. These pages are interconnected through hyperlinks. Websites can also be interactive or static. Web page is a single document or page that is displayed in web browsers such as Mozilla Firefox, Google Chrome, Opera, etc. Additionally, the web pages can be either static or dynamic. The researcher has created two parameters -The library has a web page and separate website, under the heading of the availability of library websites/web page. It was visible in the data represented in Table-5.3 that all 44 central university libraries are having either websites or web pages to extend the library services. Among the selected central universities, 11(25%) are having the library websites namely- Babasaheb Bhimrao Ambedkar University, Central University of Haryana, Central University of Karnataka , Central University of Odisha, Jawaharlal Nehru University, Manipur University, Mizoram University, Pondicherry University, Sikkim University, University of Delhi, Visva Bharati. However, left out 33(75%) university libraries are having only library webpages. These universities are- Aligarh Muslim University, Assam University, Banaras Hindu University, Central University of Bihar ,Central University of Gujarat, Central University of Himachal Pradesh, Central University of Jammu , Central University of Jharkhand, Central University of Kashmir, Central University of Kerala, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Vishwavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Maulana Azad National Urdu University, Nagaland University, North-Eastern Hill University, Rajiv Gandhi University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Hyderabad,

Central Sanskrit University, Mahatma Gandhi Central University, Shri Lal Bahadur Shastri National Sanskrit University, National Sanskrit University.

Table-5.3: Availability of Library Website/ Webpage

SL. No.	Criteria	Total
1.	The library has web page	33(75%)
2.	The library has separate website	11(25%)

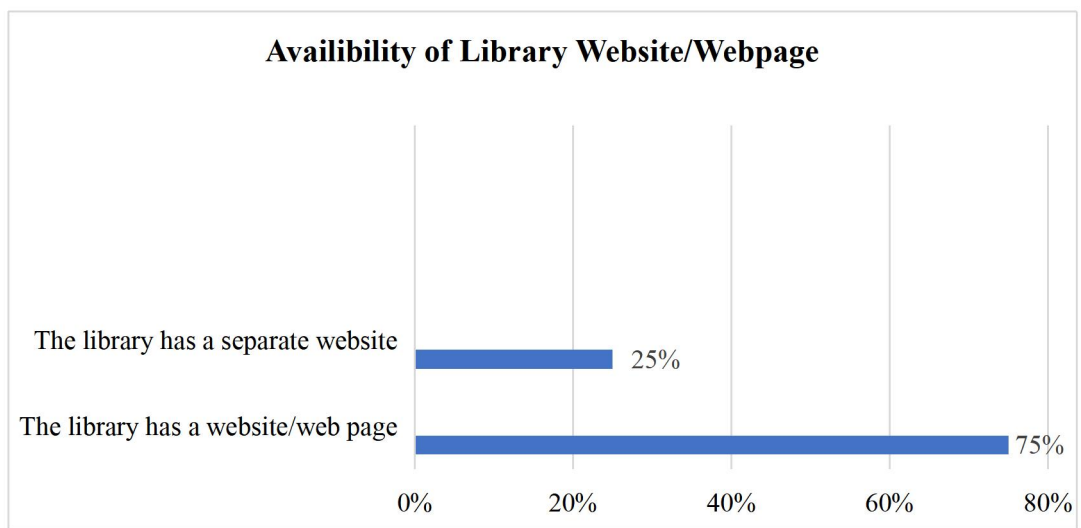


Figure-5.2: Availability of Library Website/ Webpage

5.5. Visited and Non-Visited Link

Web browsers maintain track of web usage by storing identifying information about visited pages. When navigating such a vast amount of information in the internet, it becomes crucial to recognise previously visited pages. When visited and unvisited links are not distinguished, the only way to determine if a page has been visited is to visit it again and again. When links are visually distinguished, users can proceed more efficiently by avoiding unproductive pages. The default browser setting colourises unvisited links as blue and visited links as purple. This combination is the most universal and will be generally recognisable. Due to the universality of this combination, designers should avoid using its opposite, i.e. purple text for unvisited links and blue text for visited links. The analysed data showed that all libraries' websites/web pages links are distinguished between visited and non-visited sites.

5.6. Accessibility of Library Website/Webpage

Providing library website/web page link on institutions websites is very important in the accessibility point of the library users. If the library link page is available in most suitable place on institute website, library users' can easily find and use it. Accessibility of a website or web page is the process of removing barriers that prevent interaction between the people with disabilities and websites. The designer of a website must ensure that everyone can understand, perceive, navigate, and interact with the website. The pages of the website must be readily accessible to anyone seeking specific information. Accessibility is an essential aspect of a website or web page, and the researcher has created 6 parameters for the current study under this heading. Those are- direct link on parent home page, link under facilities, link under administration, link under amenities, link under infrastructure and link under division.

The data collected regarding the accessibility of websites/web pages of selected 44 central university library websites/web pages and tabulated in Table-5.6. Analysis reveals that 27(61.36%) universities have the accessibility of library websites/web pages to the direct link on the parent homepage. Those are namely as- Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Gujarat, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jharkhand, Central University of Karnataka, Central University of Kashmir , Central University of Punjab, Indira Gandhi National Tribal University, Jamia Millia Islamia ,Jawaharlal Nehru University, Manipur University, Maulana Azad National Urdu University ,Nagaland University, North-Eastern Hill University, Pondicherry University, Rajiv Gandhi University, The English and Foreign Languages University, Tripura University, University of Delhi, Visva Bharati , Mahatma Gandhi Central University, Shri Lal Bahadur Shastri National Sanskrit University ,National Sanskrit University.

However, 12(27.27%) university libraries' websites/web pages are listed under facilities heading and those universities are- Central University of Jammu, Central

University of Kerala , Central University of Rajasthan, Central University of Odisha, Central University of Tamil Nadu, Hemvati Nandan Bahuguna Garhwal University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Mizoram University, Sikkim University, Tezpur University, University of Allahabad and University of Hyderabad .

The other 5 central universitiy libraries' websites/web pages, 1(2.27%) is listed under the heading of administration (Central Sanskrit University), 1(2.27%) under infrastructure (Central University of Bihar), 2(4.54%) are is under amenities (Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya) and one under the heading Division (Indira Gandhi National Open University)

Table-5.4: Accessibility of Website/Webpage

Direct link on parent home page	Link under				
	Facilities	Administration	Amenities	Infrastructure	Division
27(61.36%)	12(27.27%)	1(2.27%)	2(4.54%)	1(2.27%)	1(2.27%)

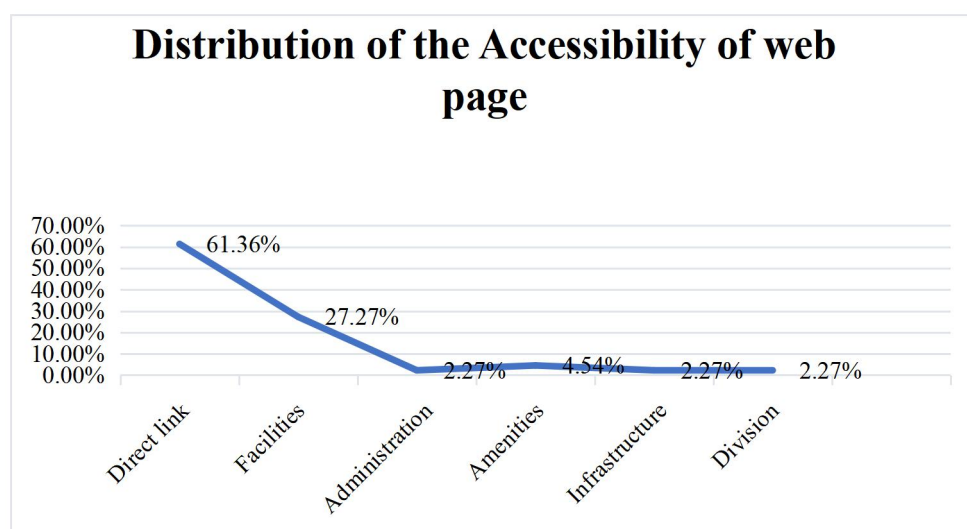


Figure-5.3: Accessibility of Library Website/Webpage

5.7. Navigation of Library Website/Webpage

It was visible in the data represented by the analysis that the page title appears in the top window bar in all universities. The navigation of a website is an important feature

for users who visits to view more than just the homepage. A website's navigation must be clear by providing accurate page titles of the web pages. It should make it easy for visitors to navigate from one web page to another. The title of the web page must be plain and specific. If the visitor wants to go back to the homepage from the web page, there must be a facility (link) that allows the user to do so without having to close the page and open a new window. Considering the significance of website navigation, the researcher has identified three parameters under the heading navigation: the page title appears in the top window bar; institute home link on the library web page/ website; and the page title describes the content or location in site structure. Table-5.5 demonstrates the navigational structure of the selected 44(100%) central university libraries' websites/web pages. It was also visible that out of 44 universities, the number of universities where the institute home link on the library web sites/ web pages found was 39(88.63%), i.e. Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Bihar ,Central University of Gujarat, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jammu, Central University of Jharkhand, Central University of Karnataka, Central University of Kashmir, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Maulana Azad National Urdu University, Mizoram University, Nagaland University, Rajiv Gandhi University, Sikkim University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Hyderabad, Visva Bharati, Central Sanskrit University, Mahatma Gandhi Central University, Shri Lal Bahadur Shastri National Sanskrit University, National Sanskrit University. The home link was not available on the libraries' websites/web pages in 5(11.36%) no. of the universities, They are namely Central University of Kerala, Jawaharlal Nehru University, North-Eastern Hill University, Pondicherry University and University of Delhi.

Furthermore, data showed that all 44(100%) university libraries' websites or web pages where the title describes content or location in site structure.

Table-5.5: Navigation of Library Website/Webpage

The page title appear in the top window bar		Institute home link on the library web page/ website		Title describes content or location in site structure	
Yes	No	Yes	No	Yes	No
44(100%)	0(0%)	39(88.63%)	5(11.36%)	44(100%)	0(0%)

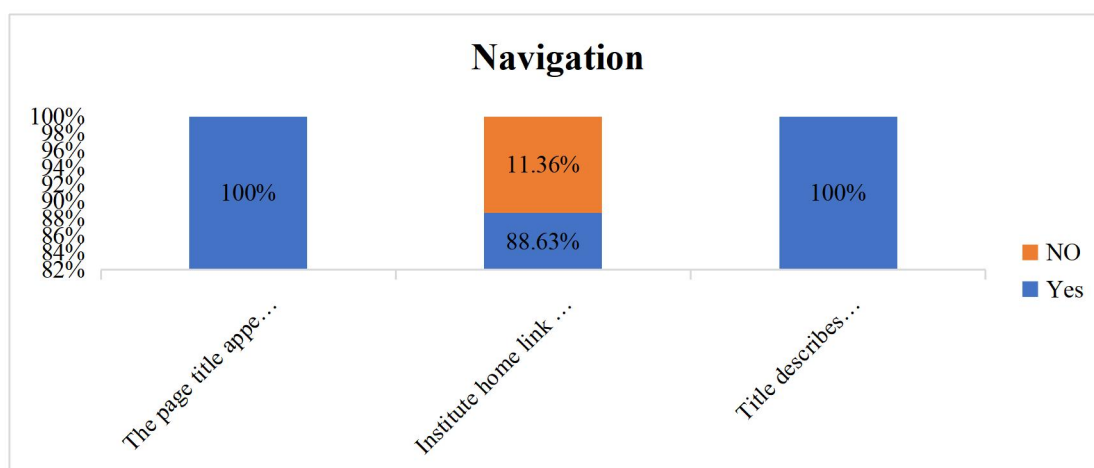


Figure-5.4: Navigation of Library Website/Webpage

5.8. Design Factor of Library Website/Webpage

The design of a website is influenced by a variety of factors, but for the present study, 4 categories were considered by the researcher-view resolution, browser compatibility, page format is same, no. of visitors. A design that is simple to read, and understandable is recommended by everyone. A clear design is certain to help the audience in focusing on the information they want. It is important that the content of homepage must be easily accessible. Before designing a website, it is also extremely essential to identify its intended audience, as this will help in its design.

The analyzed data showed that out of selected 44 universities of India, view resolution was only available for 3(6.81%) university libraries' websites/web pages, namely Babasaheb Bhimrao Ambedkar University & Central University of Odisha and University of Delhi. It was distinct from the collected data that none of the

libraries' websites/web pages had browse compatibility. Out of 44 universities, the page format was the same for all 44(100%) no. of university libraries' websites/web pages.

It was visible from the collected data that 22(50%) universities out of 44 had visible information for the number of visitors to their libraries' websites/web pages. Those are Aligarh Muslim University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Gujarat, Central University of Karnataka, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Manipur University, Pondicherry University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Mahatma Gandhi Central University and National Sanskrit University.

Table-5.6: Design Factor

View resolution		Browser compatibility		Page format is same		No. of visitors	
Yes	No	Yes	No	Yes	No	Yes	No
3(6.81%)	41(93.18%)	0(0%)	44(100%)	44(100%)	0(0%)	22(50%)	22(50%)

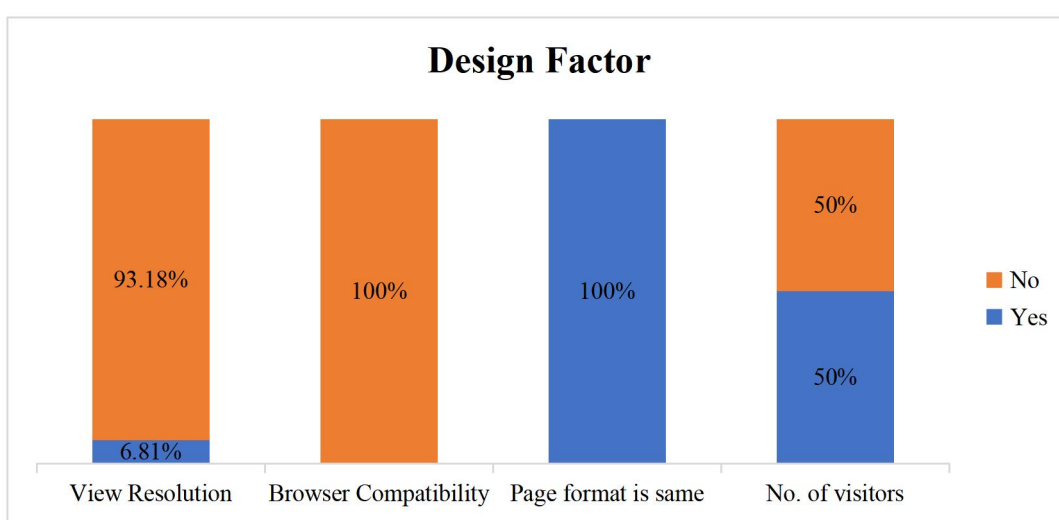


Figure-5.5: Design Factor of Library Website/Webpage

5.9. Site Description of Library Website/Webpage

Under the heading-site description, the researcher has applied three criteria/parameters: use of graphics, use of animation, and a text-only version. If the graphics images have been used to communicate with their users, it has to be fixed whether they are animated or not, and to check whether the website/web page uses only text or not. Table-5.7 displays site descriptions for the selected central university libraries' websites/web pages.

It was visible in the data represented by the analysis that out of 44 universities, 20 (45.45%) no. of university libraries' websites/web pages use graphics with text while no universities were found creating animation on their library website/web page. The university libraries' websites/web pages that were found using graphics with text on their library websites/webpages are Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Bihar, Central University of Haryana, Central University of Karnataka, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, North-Eastern Hill University, Pondicherry University, Sikkim University, Tezpur University, The English and Foreign Languages University, University of Delhi, University of Hyderabad, Visva Bharati and Mahatma Gandhi Central University.

Moreover, 24(54.54%) university libraries' websites/webpages were found only have text descriptions. Those are- Central University of Gujarat, the Central University of Himachal Pradesh, Central University of Jammu, Central University of Jharkhand, Central University of Kashmir, Central University of Kerala, Central University of Odisha, Central University of Punjab, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Maulana Azad National Urdu University, Nagaland University, Rajiv Gandhi University, Tripura University, University of Allahabad, Central Sanskrit University, Shri Lal Bahadur Shastri National Sanskrit University, National Sanskrit University.

Table-5.7: Site Description of Library Website/Webpage

Criteria	No. of library web page/website
Use graphics with text	20(45.45%)
Use animation	0 (0%)
Use only text	24(54.54%)

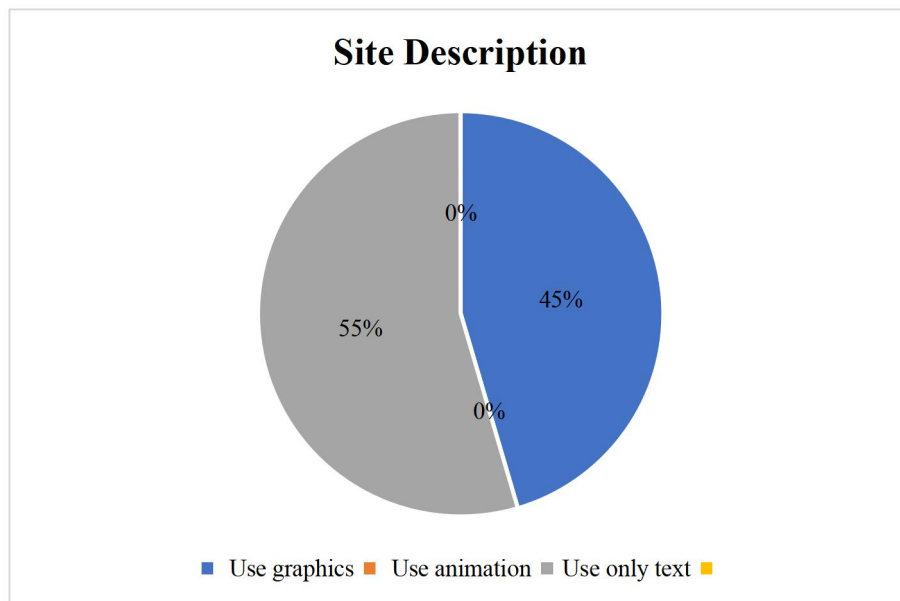


Figure-5.6: Site Description of Library Website/Webpage

5.10. Content of Library Website/Webpage

It was visible in the data represented by the analysis that out of selected 44 central university libraries', 44(100%) university sites were found 'site has not-found 404 page' in terms of content. Also, when it was observed for spelling errors, and spelling mistakes in the sites, found that all universities were free from those errors.

Table-5.8: Content of Library Website/Webpage

Criteria	No. of library web page/website
404 page	44(100%)
Site free from spelling errors	44 (100%)

5.11. Language of Library Website/Webpage

Language is one of the most essential website features for attracting and grabs targeted visitors. Now-a-days websites are accessible and visible on multiple multilingual platforms. A developer should provide the option to alter the website's language based on the needs of the site's visitors, most likely using the google translator service or a multilingual plugin. Table-5.9 demonstrates the language provided by the websites/web pages of 44 university libraries. Researcher developed 3 criteria for this heading- one language, two languages and more than two.

The analyzed data showed that out of 44 universities, a total 18(40.90%) no. of university libraries were found updating in only one language on their websites/web pages while other 17(38.63%) library websites/web pages were found with two languages. Out of the 17, the number of universities that updated in English and Hindi was 16 while the other one, i.e. Central University of Karnataka was found updated in English and Malayalam language. The analyzed data also showed that out of 44 university library websites/web pages across 36 States and union territories of India, a total of 9(20.45%) universities were found updating more than two languages among which 4 university libraries' websites/web pages updated in English, Hindi, And Urdu (Aligarh Muslim University, Jamia Milia Islamia, Maulana Azad National Urdu University, Manipur University); 2 university library website/web page were found updating in English, Hindi and Sanskrit (Central Sanskrit University, Shri Lal Bahadur Shastri National Sanskrit University); 1 was found updating in Arabic, Bengali, Chinese, Dutch, English, French language (Central University of Haryana); 1 was found updating in English, Hindi, and Kannada (Central University of Karnataka); and 1 was found updating in English, Hindi and Tamil (Central University of Tamilnadu).

Table-5.9: Language of Library Website/Webpage

Criteria	No. of library web page/website
One language	18(40.90%)
Two languages	17(38.63%)
More than two	9(20.45%)

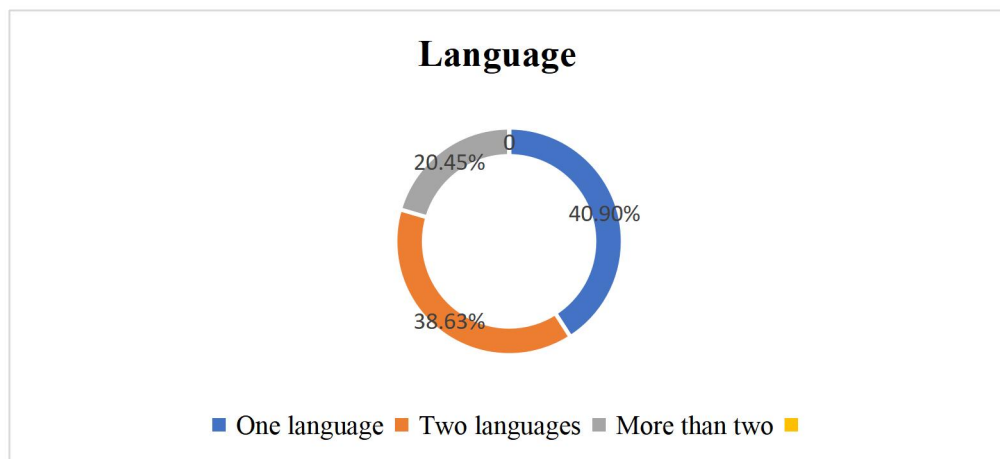


Figure-5.7: Language of of Library Website/Webpage

5.12. Statement of Responsibility of Library Website/Webpage

A statement that is related to the identification of any corporate bodies, organizations, families, persons is called statement of responsibility. It is very important to have a contact number, phone no., e-mail address, postal address on the website of the respective website. Table-5.10 illustrates the responsibilities of the central university libraries' websites/web pages. The researcher has brought out 5 parameters (i.e., the postal address of the library; phone number of the authority; fax numbers of the library; email of the concerned personnel in the library; and the separate contact link available in the respective library website/web page.) to identify the web page's authority with whom visitors can communicate if the need arises.

It was evident from the collected data that 28(63.63%) out of 44 universities had postal addresses updated on their libraries' websites/web pages whereas only 29 (65.90%) found their phone numbers updated. The university libraries' websites/web pages found updating postal addresses are Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Central University of

Haryana, Central University of Himachal Pradesh, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Punjab, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Manipur University, Nagaland University, North-Eastern Hill University, Pondicherry University, Sikkim University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Mahatma Gandhi Central University, Shri Lal Bahadur Shastri National Sanskrit University.

The universities found updating phone numbers on libraries' websites/web pages are Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Central University of Gujarat, Central University of Haryana, Central University of Himachal Pradesh, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Tamil Nadu, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Manipur University, Maulana Azad National Urdu University, Mizoram University, North-Eastern Hill University, Pondicherry University, Sikkim University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Mahatma Gandhi Central University, Shri Lal Bahadur Shastri National Sanskrit University. A visible distinction was observed in terms of updating fax in the websites/web pages of libraries which were found in only 9(20.45%) universities namely Assam University, Central University of Himachal Pradesh, Central University of Kashmir, Jamia Millia Islamia, Pondicherry University, Mizoram University, Tezpur University, Tripura University and Visva Bharati.

The analysed data showed that out of 44 universities across 36 states and union territories of India, a total 31(70.45%) no. of university libraries' websites/web pages were found updating their email addresses. Those are Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jharkhand,

Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Tamil Nadu, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Manipur University, Maulana Azad National Urdu University, Mizoram University, Nagaland University, North-Eastern Hill University, Pondicherry University, Sikkim University, Tezpur University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Mahatma Gandhi Central University, Central Sanskrit University, Shri Lal Bahadur Shastri National Sanskrit University) while 27(61.36%) were found providing separate contact link Those are- Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Central University of Gujarat, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jammu, Central University of Jharkhand, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Vishwavidyalaya, Hemvati Nandan Bahuguna Garhwal University Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Maulana Azad National Urdu University, Mizoram University, Nagaland University, The English and Foreign Languages University, Tripura University, University of Hyderabad, Visva Bharati, Mahatma Gandhi Central University.

Table-5.10: Statement of the Responsibility of Library Website/Webpage

Sl. No.	Criteria	No. of library web page/website
1	Postal address	28(63.63%)
2	Phone no.	29(65.90%)
3	Fax no.	9(20.45%)
4	E-mail address	31(70.45%)
5	Separate contact link	27(61.36%)

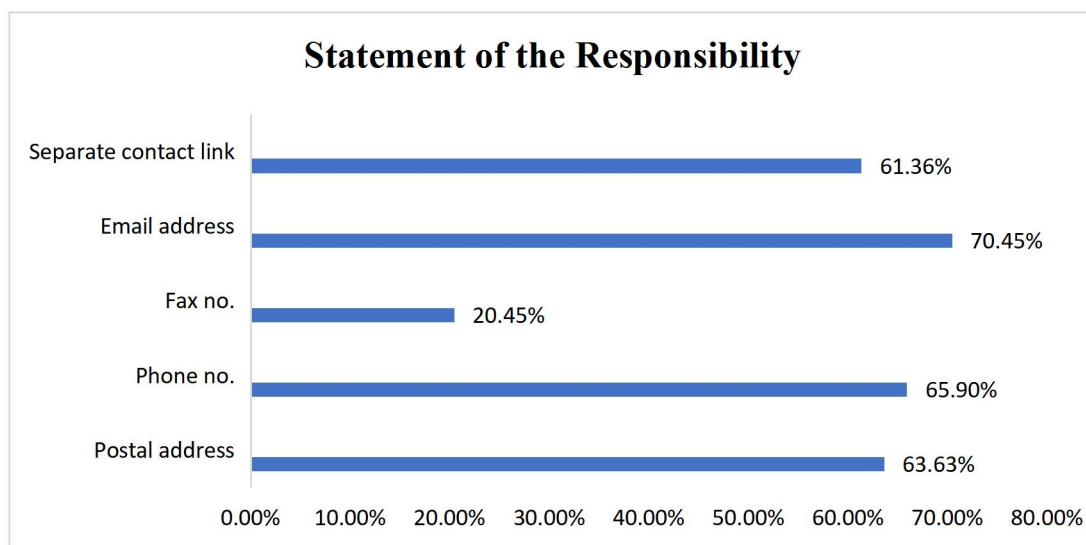


Figure-5.8: Statement of the Responsibility of of Library Website/Webpage

5.13. Webpage Aids and Tools of Library Website/Web page

One of the most important aspects of a website that a developer must properly maintain is the website's aids and tools, which help visitors in navigating the site and locating the information they seek quickly and easily. Table-5.11 illustrates the website aids and tools available on the websites and web pages of central universities libraries. The researcher categorized 4 evaluation criteria for this heading (i.e., feedback form/ mail link, search option, site map and FAQs).

The analyzed data showed that out of 44 universities across a total 11(25%) no. of universities were found updating the feedback form/ mail link on their libraries' websites/web pages. Those are Aligarh Muslim University, Babasaheb Bhimrao Ambedkar University, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jammu Central University of Karnataka, Central University of Kashmir, Jamia Millia Islamia, Manipur University, Tezpur University, Tripura University among which only 2(4.54%) were found updating mail link which are the libraries' websites/webpages Aligarh Muslim University and Central University of Karnataka.

It was evident from the collected data that 31(70.45%) out of 44 universities (i.e. Babasaheb Bhimrao Ambedkar University, Central University of Gujarat, Central University of Haryana, Central University of Jammu, Central University of

Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Hemvati Nandan Bahuguna Garhwal University, Dr. Harisingh Gaur Vishwavidyalaya, Indira Gandhi National Tribal University, Jamia Millia Islamia, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Mizoram University, North-Eastern Hill University, Rajiv Gandhi University, Sikkim University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Mahatma Gandhi Central University, National Sanskrit University) were found enabling 'search option' on their libraries' websites/web pages while only 4(9.09%) were found uploading sitemap, namely, Assam University, Central University of Bihar, Central University of Himachal Pradesh and Visva Bharati.

While in terms of FAQ, it was visible that only 14(31.81%) universities libraries' websites/web pages were updated namely Assam University, Central University of Himachal Pradesh, Central University of Odisha, Indira Gandhi National Open University, Jawaharlal Nehru University, Maulana Azad National Urdu University, Nagaland University, Mizoram University, North-Eastern Hill University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Hyderabad, Visva Bharati.

Table-5.11: Webpage Aids and Tools of Library Website/Webpage

Sl. No.	Criteria	No. of library web page/website
1	Feedback form/ mail link	11(25%)
2	Search option	31(70.45%)
3	Site map	4(9.09%)
4	FAQs	14(31.81%)

5.14. Authority Details of Library Website/Webpage

Making a website is fairly simple for someone who is very interested in information technology and networks. Anyone may create a website. Therefore, it is quite difficult to determine the identity of the creator, which is a very important factor to

know the reliability of the available data on the website/web page. Users of present-day are quite web-savvy, and they verify the reliability of the released information before using it or relying on it. The researcher has brought out 4 criteria-copyright information, maintenance information, designed and developed and RTI information for this heading.

It was visible from the collected data that copyright information was available for 39(88.63%) universities libraries' websites/web pages- Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Central University of Gujarat, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jammu, Central University of Jharkhand, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Mizoram University, Nagaland University, North-Eastern Hill University, Pondicherry University, Rajiv Gandhi University, Sikkim University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Central Sanskrit University, Shri Lal Bahadur Shastri National Sanskrit University, National Sanskrit University, except Banaras Hindu University, Central University of Bihar, Indira Gandhi National Open University and Maulana Azad National Urdu University and Mahatma Gandhi Central University. When it came to maintenance information, it was found only for 4(9.09%) universities libraries' websites/web pages. It was evident from the collected data that the mention of designed and developed was found in only 12(27.27%) libraries' websites/web pages.

It was noticeably low for the availability of RTI information on the libraries' websites/web pages only 1(2.27%) university (Aligarh Muslim University) was found.

Table-5.12: Authority Details of Library Website/Webpage

Sl. No.	Criteria	No. of library web page/website
1	Copyright information	39(88.63%)
2	Maintenance information	4(9.09%)
3	Designed and developed	12(27.27%)
4	RTI information	1(2.27%)

5.15. Currency of Library Website/Webpage

Due to the getting fast out of date of information in the current digital era, currency is one of the most crucial aspects of any website. Now-a-days newer generations always have the most current information in their hands. Keeping their websites updated with the most recent information is a difficult task for website developers and administrators. The researcher has brought out 3 criteria (i.e., the date of update, whether the page has been updated in the past three months, and the current date) to determine the currency of the websites of selected central university libraries. These parameters are outlined in Table 5.13.

It was found from the analysis that updated status was available for 13(29.54%) university libraries' websites/web pages. Those are-Banaras Hindu University, Indira Gandhi National Open University, Shri Lal Bahadur Shastri National Sanskrit University, Hemvati Nandan Bahuguna Garhwal University, Aligarh Muslim University, Babasaheb Bhimrao Ambedkar University, Dr. Harisingh Gaur Vishwavidyalaya, Rajiv Gandhi University, Sikkim University, University of Delhi, University of Hyderabad, Shri Lal Bahadur Shastri National Sanskrit University. No university library website/ web page has been updated in the past three months. Similarly, no universities mentioned the present date on their websites.

Table-5.13: Currency of Library Website/Webpage

Sl. No.	Criteria	No. of library web page/website
1	Date of update	13(29.54%)
2	Web page has been updated in the past three months	0(0%)

3	Mentioned present date	0(0%)
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5.16. General Information of Library Website/Webpage

Under the heading-general information, the researcher has developed 33 parameters (i.e., Introduction, genesis, mission/vision/aims/objectives/statement, working hours, library rules, user membership, library staff, library brochures, library infrastructure facilities, IT infrastructure facilities, physical infrastructure facilities, help link, ask the librarian, academic calendar, holidays of the library, future plans, budget allocation, physical location, floor plan/location guide, photo gallery, video lecture lab, library management system/software, outreach programme, registered vendor, budget head, library related forms, book donation form, book recommendation form, library feedback form, ILO request form, similarity report application form, committee, library museum, faculty profile) for evaluating the study's broad category. It is necessary to have general information on the websites/web pages of central university libraries.

Based on analysis of the data from the given sample, it appeared that all the universities in India (i.e., 44 numbers of universities) provided information about the introduction or genesis of their libraries on their libraries' websites/web pages. This indicates that all the universities recognize the importance of providing information about the history and background of their library to their users. Overall, the analysis suggests that the majority of central universities in India provide information about the genesis or introduction of their libraries' on their websites/web pages.

Similarly the libraries' websites/web pages provided information regarding the aims/objectives/ mission/statement of the libraries for all the universities. From the analysis, it can be inferred that all the universities place a high importance on the aims, objectives, and mission statement of their libraries and make an effort to communicate this information to their students, faculty, and the wider community. By providing this information on their libraries' websites or web pages, universities are likely seeking to showcase the unique features and resources of their libraries and to emphasize the vital role that the library plays in supporting the academic mission

of the institution. This suggests that universities recognize the importance of having a well-functioning library that is aligned with the institutions overall goals and values. It was visible from the collected data that the libraries' websites/web pages have provided information for working hours of the library for all the 44(100%) universities which indicates universities place a high importance on providing clear and accessible information to their students, faculty, and the wider community regarding the working hours of their libraries. This suggests that universities recognize that the library is a vital resource for students, faculty, and researchers, and want to ensure that it is open and available during convenient hours for those who need to access its resources and services. By providing information about working hours on their libraries websites or web pages, universities are likely seeking to improve the user experience and make it easier for students and faculty to plan their schedules and access the library when they need to. This can help to promote a culture of academic excellence and support the institution's overall goals for research, teaching, and learning. Overall, the provision of information about library working hours is an important aspect of university library services and indicates a commitment to meeting the needs of the academic community.

It was evident from the collected data that 43(97.72%) out of 44 universities in the analysis were found to be updating their libraries' websites/web pages with information about library rules except one i.e. Central University of Haryana. This indicates that universities recognize the need to establish clear policies and guidelines to ensure that the library is a safe, welcoming, and productive environment for all users. By providing information about library rules on their websites or web pages, universities help to promote a culture of responsibility and accountability among their students and faculty.

It was visible from the collected data that that 42(95.45%) out of 44 universities in the analysis were found to be updating their libraries' websites/web pages with information about user membership details except Central University of Himachal Pradesh and Dr. Harisingh Gaur Vishwavidyalaya. This indicates that universities recognize the need to establish clear policies and guidelines to ensure that library

resources and services are available to authorized users only. Through this, universities are likely seeking to improve the user experience and make it easier for students, faculty, and other authorized users to access the library's resources and services to promote a culture of academic excellence and support the institution's overall goals for research, teaching, and learning.

Similarly, 43(97.72%) out of 44 universities in the analysis were found to be updating their libraries' websites/web pages with information about library staff except Dr. Harisingh Gaur Vishwavidyalaya which indicates that universities recognize the important role of librarians and other library staff play in supporting the academic mission of the institution.

Library brochures is a useful resource for users, providing information about library resources, services, and policies in a concise and accessible format. By making library brochures available on their libraries' websites or web pages, universities can help to improve the user experience and make it easier for students, faculty, and other users to access important information about the library. Only 4(9.09%) out of 44 universities (i.e. Babasaheb Bhimrao Ambedkar University, Central University of Kerala, Central University of Tamil Nadu and Visva Bharati) in the analysis were found to be updating their libraries websites/web pages with library brochures which means that universities may not place as high of an importance on providing this type of resource to their students, faculty, and the wider community. The limited availability of library brochures among the universities in the analysis suggests that there may be opportunities for universities to improve the accessibility and visibility of their library resources and services by making use of this type of resource.

40(90.90%) out of 44 universities were found updating information about the infrastructure facilities of the library on their libraries websites/web pages except Central University of Himachal Pradesh, Central University of Kashmir, Shri Lal Bahadur Shastri National Sanskrit University and National Sanskrit University. The majority of universities prioritize updating information about IT and physical infrastructures facilities of their libraries on their library websites or web pages. This

suggests that these universities consider it important to keep their library users informed about the available infrastructure facilities such as computers, printers, study rooms, and other resources that can enhance the user experience in the library. Additionally, it indicates that these universities may place a high value on transparency and providing accurate and up-to-date information to their library users. Only 2(4.54%) out of 44 universities provided a help link or facility on their libraries' websites or web pages. Those are Assam University and Central University of Gujarat. The lack of a help link or facility on most library websites could make it more difficult for users to access the resources and services they need.

Providing "ask a librarian" is an essential function of any library, and having a clear way for users to access these services is crucial for a successful library-user relationship. Only 12(27.27%) out of 44 universities' libraries' websites/web pages provided any information regarding "ask the librarian". Those are Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Bihar, Central University of Odisha, Jawaharlal Nehru University, Mizoram University, Nagaland University, Pondicherry University, Sikkim University, Tezpur University, University of Delhi.

None of the library of the 44 universities in India provided an academic calendar on their site. Further research would be needed to fully understand the reasons behind this finding and its implications for library and academic services in India.

Out of the 44 universities studied, only 9(20.45%) universities provided information about library holidays on their libraries' websites/web pages. Those are Central University of Karnataka, Central University of Punjab, Jawaharlal Nehru University, Pondicherry University, University of Delhi, University of Hyderabad, Visva Bharati, Mahatma Gandhi Central University and Central Sanskrit University. This suggests that the majority of universities in the study did not provide information about library holidays on their libraries' websites/web pages. This finding may have implications for students and faculty who rely on library services, as they may not be aware of

when the library is closed and may have difficulty planning their work around these closures.

No library website/web page provided information about their future plans except 2(4.54%) universities i.e. Central University of Karnataka and Central University of Tamil Nadu. This finding suggests that the majority of universities do not share information about their plans for library services or development with their users. This lack of transparency about future plans may have implications for students and faculty who rely on library services, as they may not be aware of upcoming changes or improvements. It may also reflect a lack of communication between the library and the broader university community.

Also no library website/web page provided information about the budget allocation of the library which may reflect lack of transparency between administrator and user. 29(65.90%) out of 44 were found providing information about the physical location of the library (i.e. Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University , Central University of Bihar, Central University of Gujarat, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Jawaharlal Nehru University, Manipur University, Maulana Azad National Urdu University, Mizoram University, Nagaland University, North-Eastern Hill University, Pondicherry University, Sikkim University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Delhi and Visva Bharati) while 11(25%) were found updating information about the floor plan/ location of the library (i.e. Central University of Kerala, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Jawaharlal Nehru University, Manipur University, Pondicherry University, Sikkim University, The English and Foreign Languages University and Tripura University).

Out of 44 university libraries' websites/web pages, 16(36.36%) libraries provided floor plan/location guide. 22(50%) out of 44 universities were found updating photo gallery on their respective libraries' sites. Those are Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Central University of Haryana, Central University of Karnataka, Central University of Kerala, Central University of Rajasthan, Central University of Tamil Nadu, Indira Gandhi National Open University, Jamia Millia Islamia, Jamia Millia Islamia, Manipur University, Mizoram University, North-Eastern Hill University, Pondicherry University, Sikkim University, Tezpur University, Tripura University, University of Delhi, Visva Bharati, Shri Lal Bahadur Shastri National Sanskrit University. These universities are prioritizing their websites' content and presentation, and are making efforts to keep their websites up-to-date with fresh and relevant visual content.

Only 5(11.36%) out of 44 were found providing information of video lecture lab on their libraries' website/web page (i.e. Aligarh Muslim University, Central University of Haryana, Jawaharlal Nehru University, Mizoram University, Pondicherry University).

34(77.27%) out of 44 university libraries' websites/web pages were found providing the information of library management system/ software, while 10(22.72%) were not found (i.e. Assam University, Banaras Hindu University, Central University of Odisha, Central University of Punjab, Hemvati Nandan Bahuguna Garhwal University, University of Allahabad, Mahatma Gandhi Central University, Central Sanskrit University, Shri Lal Bahadur Shastri National Sanskrit University and National Sanskrit University). Only 7(15.90%) out of 44 university libraries' websites/web pages were found updating information about outreach programs: covid awareness, vocational awareness, information literacy program etc on their libraries' websites/web pages. Those are Aligarh Muslim University, Assam University, Central University of Haryana, Jawaharlal Nehru University, Mizoram University, University of Hyderabad, Visva Bharati.

Only 2(4.54%) out of 44 were found updating information about registered vendors (i.e. Aligarh Muslim University and Central University of Haryana) while 1(2.27%)

(i.e. Aligarh Muslim University) was found updating about budget head on their libraries' websites/web pages.

29(65.90%) out of 44 universities libraries' websites/web pages were found updating information about library related forms, out of which 2(4.54%) were found updating book donation form (i.e. Aligarh Muslim University, Assam University); 27(61.36%) were found updating book recommendation form (i.e. Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Bihar, Central University of Gujarat, Central University of Jammu, Central University of Jharkhand, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Rajasthan, Central University of Tamil Nadu, Indira Gandhi National Open University, Jamia Millia Islamia, Jawaharlal Nehru University, Manipur University, Nagaland University, North-Eastern Hill University, Rajiv Gandhi University, Sikkim University, University of Allahabad, University of Delhi, University of Hyderabad, Mahatma Gandhi Central University, Shri Lal Bahadur Shastri National Sanskrit University); 5(11.36%) were found updating library feedback form (i.e. Indira Gandhi National Open University, Jamia Millia Islamia, Jawaharlal Nehru University, Tezpur University, Tripura University); 4(9.09%) found updating ILO request form (i.e. Central University of Haryana, Central University of Karnataka, Central University of Kashmir, Indira Gandhi National Open University).

Only 3(6.81%) universities found with updating similarity report application form on their libraries' websites/web pages. Those are Central University of Karnataka, Central University of Kashmir, Indira Gandhi National Open University. Out of 44 universities, 27(61.36%) were found with the libraries' websites/web pages providing information about the registered committee. Those are Aligarh Muslim University, Assam University, Banaras Hindu University, Central University of Bihar, Central University of Haryana, Central University of Jammu, Central University of Jharkhand, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Odisha, Dr. Harisingh

Gaur Vishwavidyalaya, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Jawaharlal Nehru University, Manipur University, Maulana Azad National Urdu University, Mizoram University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Delhi, University of Hyderabad, Visva Bharati, Shri Lal Bahadur Shastri National Sanskrit University, National Sanskrit University. Aligarh Muslim University provided the information of library museum and information of faculty profile by IRINS (Indian Research Information Network System) was provided on the library websites/web pages of 8(18.18%) universities- Babasaheb Bhimrao Ambedkar University, Central University of Gujarat, Central University of Jharkhand, Central University of Karnataka, Central University of Tamil Nadu, Jawaharlal Nehru University, Nagaland University and Sikkim University.

Table-5.14: General Information of Library Website/Webpage

Sl. No.	Criteria	No. of library web page/website
1	Introduction genesis	44(100%)
2	Mission/vision/aims/objectives/statement	44(100%)
3	Working hours	44(100%)
4	Library rules	43(97.72%)
5	User membership	42(95.45%)
6	Library staff	43(97.72%)
7	Library brochures	4(9.09%)
8	Library infrastructure facilities	40(90.90%)
9	IT infrastructure facilities	40(90.90%)
10	Physical infrastructure facilities	40(90.90%)
11	Help link	2(4.54%)
12	Ask the librarian	12(27.27%)
13	Academic calendar	0(0%)
14	Holidays of the library	9(20.45%)
15	Future plans	2(4.54%)

16	Budget allocation	0(0%)
17	Physical location	29(65.90%)
18	Floor plan/Location guide	16(36.36%)
19	Photo gallery	22(50%)
20	Video lecture lab	5(11.36%)
21	Library management system/software	34(84.09%)
22	Outreach programme	7(15.91%)
23	Registered vendor	2(4.55%)
24	Budget head	1(2.27%)
25	Library related forms	29(65.91%)
26	Book donation form	2(4.55%)
27	Book recommendation form	27(61.36%)
28	Library feedback form	5(11.36%)
29	ILO request form	4(9.09%)
30	Similarity report application form	3(6.81%)
31	Committee	27(61.36%)
32	Library museum	1(2.27%)
33	Faculty profile	8(18.18%)

5.17. Library Resources of Library Website/Webpage

For the benefit of users, the library offers a variety of resources (including online resources, OPAC, databases, etc.). The researcher has developed 5 criteria for the current study, i.e., Library resources, hyperlink of web OPAC/online catalogue, information of web OPAC/ online catalogue, information of bibliographic database and online catalogue of other libraries.

Based on analysis of the data from the given sample, it appears that all the universities in India (i.e., 44 numbers of universities) provided information about the library resources of their library on their libraries' websites/web pages. Hyperlink of web OPAC/ online catalogue and information of web OPAC/ online catalogue were available on library websites/web pages of 41(93.18%) universities; those are-

Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Gujarat, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jammu , Central University of Jharkhand, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Maulana Azad National Urdu University, Mizoram University, Nagaland University, North-Eastern Hill University, Pondicherry University, Rajiv Gandhi University, Sikkim University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Mahatma Gandhi Central University, Shri Lal Bahadur Shastri National Sanskrit University.

Bibliographic database was available for 38(86.36%) university libraries' websites/web pages; those are- Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Gujarat, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jammu, Central University of Jharkhand, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Maulana Azad National Urdu University, Mizoram University, Nagaland University, North-Eastern Hill University, Pondicherry University, Rajiv Gandhi University,

Sikkim University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Mahatma Gandhi Central University, Shri Lal Bahadur Shastri National Sanskrit University.

Table-5.15: Library Resources of Library Website/Webpage

Sl. No.	Criteria	No. of library web page/website
1	Library resources	44(100%)
2	Hyperlink of web OPAC/ online catalogue	41(93.18%)
3	Information of web OPAC/ online catalogue	41(93.18%)
4	Information of bibliographic database	38(86.36%)
5	Online catalogue of other libraries	0(0%)

5.18. Library Collection of Library Website/Webpage

User satisfaction is the most important factor for evaluating the efficiency of a library's operations. Because, users have diverse information requirements, it can be difficult to locate collections that will draw to everyone. Now-a-days library collections are hybrid, incorporating both print and digital resources. It is interesting to observe how well the libraries at central universities meet the requirements of their viewers. The information in Table- 5.18 is related to library collections that can be found on the websites/web pages of central universities libraries. The researcher has brought out 18 parameters under this heading (i.e., library collections, books, journals, reference sources, manuscripts, theses/dissertations, newspaper/magazines, conference proceedings, monographs, archives, audio-visual material, CD/DVDs/ CD ROM, microforms, microfilms, newsletters, patents, standards, rare books).

It was evident, all the university libraries' websites/web pages provided information about library collections (books, journals, reference sources). The information of manuscripts was available on 19(43.18%) library websites/web pages of central universities. Those are-Aligarh Muslim University, Assam University, Babasaheb

Bhimrao Ambedkar University, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Guru Ghasidas Viswavidyalaya, Indira Gandhi National Open University, Jamia Millia Islamia, Jawaharlal Nehru University, Mizoram University, Nagaland University, Tezpur University, University of Allahabad, University of Delhi, University of Hyderabad. It was visible for 35(79.54%) out of 44 universities that theses/dissertations were available on their libraries' websites/web pages-Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Bihar, Central University of Gujarat, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jammu, Central University of Jharkhand, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Maulana Azad National Urdu University, Mizoram University, Nagaland University, North-Eastern Hill University, Pondicherry University, Rajiv Gandhi University, Sikkim University, Tezpur University, The English and Foreign Languages University, Tripura University.

In case of newspaper/magazines, 42(95.45%) universities libraries' websites/web pages provided the information; those are-Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Bihar, Central University of Gujarat, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jammu, Central University of Jharkhand, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna

Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Maulana Azad National Urdu University, Mizoram University, Nagaland University, Pondicherry University, Rajiv Gandhi University, Sikkim University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Central Sanskrit University, Mahatma Gandhi Central University, Shri Lal Bahadur Shastri National Sanskrit University, National Sanskrit University.

21(47.72%) universities provided; viz., Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Bihar, Central University of Haryana, Central University of Himachal Pradesh, Central University of Kerala, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Vishwavidyalaya, University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, North-Eastern Hill University, Pondicherry University, Rajiv Gandhi University, Sikkim University, University of Allahabad the information of conference proceedings on their libraries' websites/web pages.

Out of 44 universities, 12(27.27%) universities offered the information of manuscripts on their libraries' websites/webpages. Those are- Babasaheb Bhimrao Ambedkar University, Babasaheb Bhimrao Ambedkar University, Central University of Karnataka, Central University of Punjab, Dr. Harisingh Gaur Vishwavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Mizoram University, Nagaland University, Sikkim University, Tripura University, University of Delhi, University of Hyderabad. Only 8 universities- Assam University, Banaras Hindu University, Central University of Bihar, Central University of Jharkhand, Central University of Karnataka, Jawaharlal Nehru University, Mizoram University and Nagaland University. Out Assam University, Central University of Himachal Pradesh, Central University of Jammu, Jawaharlal Nehru University, Tezpur University, University

of Delhi, found with providing the archive information on their libraries' websites/web pages.

Assam University, Central University of Himachal Pradesh, Central University of Jammu, Jawaharlal Nehru University, Tezpur University and University of Delhi provided audio-visual material information on their libraries' websites/web pages while information about CD/DVDs/CD ROM was provided by 8(18.18%) university libraries' websites/webpages- Central University of Karnataka, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Jawaharlal Nehru University, Tezpur University, University of Delhi. No information available for microforms, microfilms and standards on any library website/web page.

Out of 44 universities, 12(27.27%) university libraries websites/webpages- Aligarh Muslim University, Banaras Hindu University, Central University of Karnataka, Central University of Kashmir, Central University of Punjab, Central University of Rajasthan, Jamia Millia Islamia, Jawaharlal Nehru University, Tezpur University, University of Allahabad, University of Delhi, Mahatma Gandhi Central University provided information of newsletter. While 2(4.54%) universities libraries' websites/web pages were found in providing the information of patent and only 1(2.27%)- Aligarh Muslim University was found for rare books.

Table-5.16: Library Collection of Library Website/Webpage

Sl. No.	Criteria	No. of library webpage/website
1	Library collections	44(100%)
2	Books	44(100%)
3	Journals	44(100%)
4	References sources	44(100%)
5	Manuscripts	19(43.18%)
6	Theses/dissertations	35(79.54%)
7	Newspaper/magazines	42(95.45%)
8	Conference proceedings	21(47.72%)
9	Monographs	12(27.27%)

10	Archives	8(18.18%)
11	Audio-visual material	6(13.63%)
12	CD/DVDs / CD ROM	8(18.18%)
13	Microforms	0(0%)
14	Microfilms	0(0%)
15	Newsletters	12(27.27%)
16	Patents	2(4.54%)
17	Standards	0(0%)
18	Rare books	1(2.27%)

5.19. Library Services of Library Website/Webpage

A library cannot continue to serve the community efficiently without quick service. The needs of the users are a top priority for library services. The researcher has developed 23 criteria-library service, circulation service, research & reference service, referral service, binding service, user education/orientation/awareness, inter-library loan, document delivery service, reprographic service, CAS, SDI, newspaper clippings, resource/ subject guides, book bank, video viewing facility, bulletin board service, telephone directory, new book display, online book renewal, online book reservation, CCTV, QR code, SMS alert system under this heading.

Based on analysis of the data from the given sample, it appears that all the universities in India (i.e., 44 numbers of universities) provided information about the library service, circulation service and reference service of their library on their website/web page. No information was available for referral service, binding service, DDS (Document Delivery Service), new book display, online book renewal and online book reservation on any library website/web page.

34(77.27%) universities- Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Bihar, Central University of Gujarat, Central University of Himachal Pradesh, Central University of Jammu, Central University of Jharkhand, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central

University of Odisha, Central University of Punjab, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya , Guru Ghasidas Viswavidyalaya, Jamia Millia Islamia, Manipur University, Maulana Azad National Urdu University, Mizoram University, Nagaland University, North-Eastern Hill University, Pondicherry University, Sikkim University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, Visva Bharati, Mahatma Gandhi Central University, Central Sanskrit University provided the information on user education/orientation/ awareness through their libraries' websites/web pages.

Information of inter-library loan service was provided by 15(34.09%) universities- Aligarh Muslim University, Banaras Hindu University, Central University of Bihar, Central University of Gujarat, Central University of Kerala, Central University of Odisha, Central University of Punjab , Central University of Rajasthan, Central University of Tamil Nadu, Guru Ghasidas Viswavidyalaya, Jamia Millia Islamia, Rajiv Gandhi University, Sikkim University, Tezpur University, Visva Bharati library websites/web pages. Out of 44 universities, 28(63.63%) universities offered the information of reprographic service on their library websites/web pages. Those are- AligarhMuslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Bihar, Central University of Gujarat, Central University of Haryana, Central University of Himachal Pradesh, Central University of Kerala, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jawaharlal Nehru University, Manipur University, Maulana Azad National Urdu University, Mizoram University, North-Eastern Hill University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi on their libraries' websites/web pages.

Information of CAS and SDI were provided on the libraries websites/web pages of Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar

University, Banaras Hindu University, Central University of Bihar, Central University of Gujarat, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Mizoram University, North-Eastern Hill University, Tripura University, University of Allahabad, University of Delhi, Visva Bharati, Mahatma Gandhi Central University and Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Bihar, Central University of Gujarat, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Tripura University, University of Allahabad, University of Delhi, Visva Bharati, Mahatma Gandhi Central University respectively. Aligarh Muslim University, Central University of Odisha, Tezpur University, The English and Foreign Languages University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Mahatma Gandhi Central University, Central Sanskrit University, Shri Lal Bahadur Shastri National Sanskrit University, National Sanskrit University were found information about newspaper clippings.

Only 2(4.54%) universities-Aligarh Muslim University, Sikkim University offered the information of resource/ subject guide's information through their libraries' websites/web pages while only Central University of Odisha was for book bank service.

The service, video viewing facility was provided through 5(11.36%) universities libraries websites/web pages; viz., Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Odisha.

Out of 44, 23(52.27%) university libraries' websites/web pages -Aligarh Muslim University, Assam University, Banaras Hindu University, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Jamia Millia Islamia, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University,

Mizoram University , North-Eastern Hill University, Pondicherry University, Sikkim University, Tezpur University, Tripura University, University of Allahabad provided the information of bulletin board service.

Telephone Directory of staff was uploaded on only Aligarh Muslim University library website/web page. The information of CCTV and QR code were provided on the libraries' websites/web pages of Assam University and University of Hyderabad. Only 3(6.81%) universities- Mizoram University, Central University of Kashmir and Pondicherry University provided the information of SMS alert system on their libraries' websites/web pages.

Table-5.17: Library Service of Library Website/Webpage

Sl. No.	Criteria	No. of library webpage/website
1	Library service	44(100%)
2	Circulation Service	44(100%)
3	Research & Reference Service	44(100%)
4	Referral Service	0(0%)
5	Binding Service	0(0%)
6	User education/orientation/awareness	34(77.27%)
7	Inter-library loan	15(34.09%)
8	Document delivery service	0(0%)
9	Reprographic service	28(63.63%)
10	CAS	17(38.63%)
11	SDI	14(31.81%)
12	Newspaper clippings	12(27.27%)
13	Resource/ subject guides	2(4.54%)
14	Book bank	1(2.27%)
15	Video viewing facility	5(11.36%)
16	Bulletin board service	23(52.27%)
17	Telephone directory	1(2.27%)
18	New book display	0(0%)

19	Online book renewal	0(0%)
20	Online book reservation	0(0%)
21	CCTV	2(4.54%)
22	QR code	2(4.54%)
23	SMS alert system	3(6.81%)

5.20. E-Resources of Library Website/Webpage

E-resources, in addition to print resources, have become an essential component of library collections as the number of collections grows. e-resources are currently accessible in all electronic formats (e.g., e-journal, e-book, e-magazine, e-thesis, etc.). Through consortium initiatives, online e-journal subscriptions from publishers, and open access journals, university libraries are acquiring a significant quantity of e-resources. Table-5.18 provides details on the e-resources provided by the website or web page of central universities libraries. Under the heading E-resources, 12 criteria, i.e., e-resource, e-journal, e-book, e-database, e-thesis & dissertations, institutional repository, e-question paper, online newspaper, MOOC, links to library networks, library consortium, e-newsletter were brought out by researcher.

It was evident, out of the 44 universities that information about e-resources was provided on 43(97.72%) university libraries' websites/web pages except 1 university- National Sanskrit University for their clientele in the library websites/web pages. E-journals and e-books were not available in the same mentioned university. E-database was available for 38(86.36%) universities; those are Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jammu, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Jawaharlal Nehru University,

Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Maulana Azad National Urdu University, Mizoram University, Nagaland University, North-Eastern Hill University, Pondicherry University, Rajiv Gandhi University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Mahatma Gandhi Central University, Central Sanskrit University, Shri Lal Bahadur Shastri National Sanskrit University.

It was visible that 26(59.09%) out of 44 university libraries' offered e-thesis and dissertations on their websites/webpages. Those are Assam University, Babasaheb Bhimrao Ambedkar University, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jammu, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Maulana Azad National Urdu University, North-Eastern Hill University, Pondicherry University, Rajiv Gandhi University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati.

Institutional repository found for 20(45.45%)out of 44 universities; those are Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jammu, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Tamil Nadu, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Jawaharlal Nehru University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Shri Lal Bahadur Shastri National Sanskrit University.

It was noticeably low in numbers in terms of the availability of the e-question paper i.e. 2(4.54%) out of 44 universities libraries' websites/web pages namely Central University of Kerala and University of Hyderabad while the online newspaper was found in 6(13.36%); those are Central University of Tamil Nadu, Jamia Millia Islamia, Visva Bharati, Mahatma Gandhi Central University, Central Sanskrit University, Shri Lal Bahadur Shastri National Sanskrit University.

Considerably low visibility of MOOC (Massive Open Online Course) was found which was only in one university i.e. Central University of Rajasthan. Only 2(4.54%) universities were found with links to the library network i.e. Aligarh Muslim University and Assam University on their libraries' websites/web pages.

Out of 44, half of the libraries' websites/web pages 22(50%) were found with library consortium which is a very significant instrument in sharing or coordinating resources. Those are Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Jamia Millia Islamia, Manipur University, Mizoram University, Nagaland University, North-Eastern Hill University, Pondicherry University, Rajiv Gandhi University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati, Shri Lal Bahadur Shastri National Sanskrit University. In terms of the e-newsletter, it was found for 3(6.81%) universities libraries' websites/web pages only. Those are Rajiv Gandhi University, University of Allahabad, and Central Sanskrit University.

Table-5.18: E-Resources of Library Website/Webpage

Sl. No.	Criteria	No. of library webpage/website
1	E-resource	43(97.72%)
2	E-journal	43(97.72%)
3	E-book	43(97.72%)
4	E-database	38(86.36%)

5	E-theses & dissertations	26(59.09%)
6	Institutional repository	20(45.45%)
7	E-question paper	2(4.54%)
8	Online newspaper	6(13.63%)
9	MOOC	1(2.27%)
10	Links to library networks	2(4.54%)
11	Library consortium	22(50%)
12	E-newsletter	3(6.81%)

5.21. Library Sections of Library Website/Webpage

The data represented out of 44 universities that 14(31.81%) universities were found on libraries' websites/web pages providing information respectively in the library section namely Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Punjab, Central University of Rajasthan, Indira Gandhi National Open University, Jamia Millia Islamia, Maulana Azad National Urdu University, Mizoram University, Pondicherry University, Tezpur University.

Out of 44 universities, 8(18.18%) universities were found the information of structuring their libraries' websites/web pages with periodical section, acquisition section and technical processing section namely Assam University, Central University of Karnataka, Central University of Kerala, Central University of Rajasthan, Indira Gandhi National Open University, Mizoram University Pondicherry University and Tezpur University. The same sample showed that only 12(27.27%) universities made it the information of circulation section on their website/web page, those are namely Assam University, Babasaheb Bhimrao Ambedkar University, Central University of Karnataka, Central University of Kashmir, Central University of Kerala, Central University of Rajasthan, Indira Gandhi National Open University, Jamia Millia Islamia, Maulana Azad National Urdu University, Mizoram University, Pondicherry University, Tezpur University.

Only one university was found to provide information of a digital library section i.e. Tezpur University out of 44 universities libraries' websites/web pages while only 2(4.54%) were found to the provide information of updating the book bank section and stack section, which are Central University of Karnataka and Central University of Kerala. Also only one university library website/web page i.e. Pondicherry University was found to have the information of reprographic/photocopy section while only 4(9.09%) were found to have Reference and Readers Advisory Section. Those are Central University of Kerala, Central University of Punjab, Central University of Rajasthan and Jamia Millia Islamia. Only 1(2.27%) university library website/web page was found with an automation section i. e. Central University of Kashmir out of 44.

No information was found for administration and common room while 4(18.18%) universities libraries' websites/web pages were found with study room information namely Aligarh Muslim University, Babasaheb Bhimrao Ambedkar University, Jamia Millia Islamia and Pondicherry University. Also, only 1(2.27%) was found to have information about the meeting room i. e. Pondicherry University. 7(15.90%) universities libraries' websites/web pages Babasaheb Bhimrao Ambedkar University, Central University of Gujarat, Central University of Odisha, Central University of Punjab, Jawaharlal Nehru University, Pondicherry University and Visva Bharati provided the information of braille section.

Table-5.19: Library Section of Library Website/Webpage

Sl. No.	Criteria	No. of library website/webpage
1	Section information	14(31.81%)
2	Periodical section	8(18.18%)
3	Circulation section	12(27.27%)
4	Acquisition section	8(18.18%)
5	Technical processing section	8(18.18%)
6	Digital library section	1(2.27%)
7	Book bank section	2(4.54%)

8	Stack section	2(4.54%)
9	Reprographic/Photocopy section	1(2.27%)
10	Reference & readers advisory section	4(9.09%)
11	Automation section	1(2.27%)
12	Administration	0(0%)
13	Common room	0(0%)
14	Study room	4(9.09%)
15	Meeting room	1(2.27%)
16	Braille section	7(15.90%)

5.22. Web2.0 : Tools of Library Website/Webpage

Social media are free and accessible websites that allow library patrons to easily create an account and collaborate on the creation and use of content. It creates numerous opportunities for libraries to provide effective services. Some of them are like-

24*7 User Engagement- Facebook and twitter allow the library to remain connected with a large number of patrons at all times, regardless of location. Social media channels such as facebook, twitter, and pinterest provide an engaging and multimedia environment that helps libraries to connect with potential users and acquire new ones.

Quick Prompt Information Delivery- Twitter tweets and Facebook wall posts make it easy for libraries to provide immediate information to their patrons and receive instant feedback. It serves as an efficient feedback mechanism for determining the area's users' interests. In the facebook, library users can like, remark, and share a post with their facebook friends. Patrons can subscribe to various library-related content on twitter and retweet posts.

Promotion of the Product or Services- Facebook and Twitter can aid in the effective promotion and marketing of library services, including dissemination of library-related news, events, services, and other resources. It helps to maintain positive relationships with customers. It results in the enhancement of reputation and social media presence of the library.

It was evident from the collected data from 44 universities that the libraries' websites/web pages provided information about web tools available for only 7 (15.90%) universities namely Aligarh Muslim University, Assam University, Central University of Gujarat, Central University of Odisha, Central University of Kerala, Tezpur university and the University of Hyderabad while no information was found for RSS in the websites of any of the universities.

Information tool- facebook was found for only 4(9.09%) i.e. Aligarh Muslim University, Assam University, Central University of Odisha, Tezpur University; Youtube in 3(6.81%) i.e. Aligarh Muslim University, Assam University, Tezpur University; twitter in 4(9.09%) i.e. Aligarh Muslim University, Assam University, Central University of Odisha, Tezpur university; blog in 3(6.81%) i.e. Central University of Gujarat, Central University of Kerala, University of Hyderabad; LinkedIn in 1(2.27%) i.e. Assam University; google+ in 1(2.27%) i.e. Assam University only on their libraries' websites/web pages only. No information was available for wiki, instagram, researchgate, pinterest, skype and other sections for any of the universities from the chosen sample.

Table-5.20: Web2.0: Tools of Library Website/Webpage

Sl. No.	Criteria	No. of library website/web page
1	Web 2.0	7(15.90%)
2	RSS	0(0%)
3	Facebook	4(9.09%)
4	YouTube	3(6.81%)
5	Twitter	4(9.09%)
6	Blog	3(6.81%)
7	LinkedIn	1(2.27%)
8	Google+	1(2.27%)
9	Wiki	0(0%)
10	Instagram	0(0%)
11	ResearchGate	0(0%)
12	Pinterest	0(0%)

13	Skype	0(0%)
14	Others	0(0%)

5.23. Events of Library Website/Web page

Events are essential for any institution because they foster the growth of academic and professional communities. The location of the events must be described in detail on the website or web page of the library. As a result, it is easy to understand the efforts made by specific institutions to train library employees in a variety of areas, such as updating their knowledge to better serve their readers, staying current, and developing skills that will allow them to be more aware of global events. Table-5.21 outlines detailed information regarding the information of events provided on the websites/web pages of the respective institutions. The researcher has divided the events into six categories: events, conferences, workshops, seminars, book fairs, and training programme under this heading.

It was visible from the collected data that the central universities libraries' websites/web pages that provided event information for the library was found for 20 (45.45%) universities, those are Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Central University of Haryana, Central University of Jammu, Central University of Karnataka, Central University of Odisha, Central University of Rajasthan, Central University of Tamil Nadu, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Maulana Azad National Urdu University, North-Eastern Hill University, Mizoram University, Rajiv Gandhi University, Sikkim University, University of Delhi, University of Hyderabad, Visva Bharati.

Information on conferences and seminars was available for 14(31.81%) universities libraries' websites/web pages only i.e., Aligarh Muslim University, Assam University, Central University of Haryana, Central University of Jammu, Central University of Odisha, Central University of Rajasthan, Central University of Tamil Nadu, Jawaharlal Nehru University, Maulana Azad National Urdu University, North-Eastern Hill University, Mizoram University, University of Delhi, University of Hyderabad while information of workshops was available for 13(29.54%)

universities namely Aligarh Muslim University, Central University of Haryana, Central University of Jammu, Central University of Odisha, Central University of Rajasthan, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Maulana Azad National Urdu University, North-Eastern Hill University, Sikkim University, University of Delhi, University of Hyderabad, Visva Bharati.

Information about the book fair was available for only 2(4.54%) out of 44 universities namely Central University of Haryana and Visva Bharati while information about the training program was available for only 9(20.45%) i.e. Babasaheb Bhimrao Ambedkar University, Central University of Haryana, Central University of Odisha, Central University of Rajasthan, Jawaharlal Nehru University, Maulana Azad National Urdu University, Sikkim University, University of Delhi, University of Hyderabad on their library websites/web pages.

Table-5.21: Events of Library Website/Webpage

Sl. No.	Criteria	No. of library website/web page
1	Events	20(45.45%)
2	Conferences	14(31.81%)
3	Seminars	14(31.81%)
4	Workshops	13(29.54%)
5	Book Fair	2(4.54%)
6	Training Programs	9(20.45%)

5.24. Covid-19 Services of Library Website/Webpage

The collected data represented that the library website/web page gave information about Covid-19 for only 4(9.09%) out of 44 university libraries' websites/web pages i.e. Aligarh Muslim University, Babasaheb Bhimrao Ambedkar University, Central University of Gujarat and Jawaharlal Nehru University while the link to resources related to Covid-19 was available for only 2(4.54%) i.e. Aligarh Muslim University and Central University of Gujarat.

In terms of multiple important qualitative factors like types of services provided remote access, link of open access resources, special services during Covid-19, sharing of notification of WHO/Govt. of India, restricted working hours, news/orders or guidelines, safety measures for the library workforce, ad-hoc services introduced in view of the situation; only one i.e. Aligarh Muslim University was found having information in the website.

Only 1(2.27%) university- Jawaharlal Nehru University published COVID-19 scholarly resources/publications on their library website/web page.

Noticeably there was no information on easing of penalty rules, organization of virtual events, display of UGC initiatives during Covid-19 for online access available for any universities library website/web page while only display of SOPS for Covid-19 was found for 2(4.54%) i.e. Aligarh Muslim University and Babasaheb Bhimrao Ambedkar University libraries' websites/web pages.

Table-5.22: Covid-19 Services

Sl. No.	Criteria	No. of library webpage/website
1	Information on Covid-19	4(9.09%)
2	Link to resources related to Covid-19	2(4.55%)
3	Types of services provided remote access	1(2.27%)
4	COVID – 19 scholarly resources/publications	1(2.27%)
5	Link of open access resources	1(2.27%)
6	Special services during covid-19	1(2.27%)
7	Share of notification of WHO/government of India	1(2.27%)
8	Display of SOPs for covid-19	2(4.55%)
9	Restricted working hours	1(2.27%)
10	News / order and guidelines	1(2.27%)
11	Safety measures for library workforce	1(2.27%)
12	Adhoc services introduced in view of the situation	1(2.27%)

13	Easing of penalty rules	0(0%)
14	Organisation of virtual events	0(0%)
15	Display of UGC initiatives during COVID-19 for online teaching & learning	0(0%)

5.25. Web Page Analyzing of Libraries of Central Universities of India

Site24x7 is an all-in-one monitoring solution for cloud-scale applications that keeps track of your websites, servers, applications, network, cloud, and more. Site24x7 brings together the monitoring of metrics, traces, and logs under one console for different layers of cloud architecture. It helps to monitor the uptime and performance of websites, online applications, and servers. It also provides key performance indexes for your web pages and critical multi-step web transactions. Out of 44 Central University Libraries' websites/web pages, the website/web page was not found of GGV University through Site24x7. The data for this table were collected on 5th July, 2022 to 10th July, 2022 between 6 pm-11 pm.

The Page speed score ranges from 0 to 100 points. A higher score is better and a score of 85 or above indicates that the page is performing well. According to the table, Page score data were not found in BHU, CUH, CUKR, and HGV. LNSU is placed in 1st place with having 98 score. NSU and CUG are placed in 2nd and 3rd rank with having 97 and 96 scores respectively. PCU scores the lowest 51 score followed by CUJH and CUHP with 57 and 63 scores.

In its simplest terms, page load time is the average amount of time it takes for a page to show up on your screen. It's calculated from initiation (when you click on a page link or type in a web address) to completion (when the page is fully loaded in the browser). Usually measured in seconds, page load time is made up of two different parts:

Network and Server Time: based on how speedy the internet connection is and how swiftly static assets like photos and other files are served up

Browser Time: how long it takes for the browser to parse and execute the document and render the page to make it available for user interaction. It is observed from the

Table-5.23, CUKS takes the lowest time- 2170 ms to load the page followed by NAU which takes 2174ms. CUK are placed in 3rd place with 2699 ms page load time. AMU takes the highest time for page loading- 45039. CUB and CUO are at the 2nd and 3rd lowest rank by taking 42035 ms & 27556 ms for page loading.

An HTTP request is made by a client, to a named host, which is located on a server. The aim of the request is to access a resource on the server. To make the request, the client uses components of a URL (Uniform Resource Locator), which includes the information needed to access the resource (<https://www.ibm.com/docs/en/cics-ts/5.3?topic=protocol-http-requests>). It is observed from the Table-5.23, BHU and UOD gets 1st rank by getting the lowest requests-9 followed by CSU (13) and CUK(19). RGU gets highest requests-307.

In web pages, page size (also called page weight) refers to the overall size of a particular web page. A page size includes all of the files that create the web page. These files include the HTML document, any included images, style sheets, scripts, and other media. For example, a web page with an HTML document size of 10 K, a 20K image file, and a 5 K style sheet file has a 35 K page size(<https://www.computerhope.com/jargon/p/pagesize.html>)

It is observed from the Table-5.23, BHU (109.87KB) is placed in the first position having the lowest minimum size of the website/web page, whereas total size of the image is 98.83 KB. It is also clear, CUKR (26081.62KB) is placed in the last position having the highest maximum size of the website/web page, whereas total size of the image is 25574.55 KB. Which is followed by HGV (total size of the website/web page: 8876.42KB, total size of the image: 7228.54KB).

Table-5.23: Web Page Analyzing of Libraries of Central Universities of India

AMU (Aligarh Muslim University), ASU (Assam University), BBAU (Babasaheb Bhimrao Ambedkar University), BHU (Banaras Hindu University), CUB (Central University of Bihar), CUG (Central University of Gujarat), CUH (Central University of Haryana), CUHP (Central University of Himachal Pradesh), CUJ (Central University of Jammu), CUJH (Central University of Jharkhand), CUKR (Central

University of Karnataka), CUKS (Central University of Kashmir), CUK (Central University of Kerala), CUO (Central University of Odisha), CUP (Central University of Punjab), CUR (Central University of Rajasthan), CUTN (Central University of Tamil Nadu), GHV (Dr. Harisingh Gaur Vishwavidyalaya), GGV (Guru Ghasidas Vishwavidyalaya), HN BG (Hemvati Nandan Bahuguna Garhwal University), IGNOU (Indira Gandhi National Open University), IGNTU (Indira Gandhi National Tribal University), JMI (Jamia Millia Islamia), JNU (Jawaharlal Nehru University), MGHV (Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya), MAU (Manipur University), MNAU (Maulana Azad National Urdu University), MZU (Mizoram University), NAU (Nagaland University), NEHU (North-Eastern Hill University), PCU (Pondicherry University), RGU (Rajiv Gandhi University), SKU (Sikkim University), TZU (Tezpur University), TFLU (The English and Foreign Languages University), TPU (Tripura University), UoA (University of Allahabad), UoD (University of Delhi), UoH (University of Hyderabad), VBH (Visva Bharati), MGCU (Mahatma Gandhi Central University), CSU (Central Sanskrit University), LNSU (Shri Lal Bahadur Shastri National Sanskrit University), NSU (National Sanskrit University).

SL. No.	Name of the University	Page Speed Score	Page Load Time(ms)	No. of Requests	Page Size (KB)	Image Size (KB)
1	AMU	83	45039	55	6741.26	593.32
2	ASU	90	10126	118	2814.67	402.01
3	BBAU	84	14432	63	3485.95	2084.01
4	BHU	-	7781	9	109.87	98.83
5	CUB	68	42035	151	666.5	126.6
6	CUG	96	6069	23	239.68	105.37
7	CUH	-	5828	39	1922.31	582.25
8	CUHP	63	6073	24	195.89	4.22
9	CUJ	65	7967	55	1306.92	317.44
10	CUJH	57	7055	30	831.38	500.59
11	CUKR	-	2890	27	26081.62	25574.55

12	CUKS	80	2170	31	1144.24	34.5
13	CUK	68	2699	19	301.31	242.45
14	CUO	90	27556	196	7811.32	1705.25
15	CUP	93	13771	68	6001.96	3429.95
16	CUR	94	18614	85	1176.36	101.71
17	CUTN	89	6876	112	4451.3	1847.95
18	HGV	-	7354	115	8876.42	7228.54
19	GGV	-	-	-	-	-
20	HNBG	92	4467	54	2675.28	119.69
21	IGNOU	92	10049	53	2609.22	125.04
22	IGNTU	79	17268	138	1651.72	292.76
23	JMI	81	10962	138	736.44	236.4
24	JNU	86	5700	78	497.96	34.31
25	MGHV	77	7122	26	1053.33	158.41
26	MNU	64	2784	39	1119.27	143.02
27	MANU	59	4200	41	1567.42	1280.94
28	MZU	91	8242	77	2574.88	648.56
29	NAU	96	2174	20	523.09	54.16
30	NEHU	70	5509	79	2801.43	1907.54
31	PCU	51	16907	73	4395.13	3144.18
32	RGU	75	16223	307	3243.99	383.33
33	SKU	89	12886	51	6458.31	4009.41
34	TZU	69	12526	84	3629.97	2812.02
35	TFLU	83	6731	52	1325.16	108.59
36	TPU	70	10121	68	2904.8	1813.39
37	UOA	66	9825	47	2071.99	226.99
38	UOD	58	9428	9	330.69	278.31
39	UOH	79	4615	22	346.42	208.3
40	VBH	77	8131	116	4426.29	2772.43
41	MGCU	67	4619	51	1864.78	518.14

42	CSU	71	8785	13	582.49	51.46
43	LNSU	98	8679	84	1798.59	678.89
44	NSU	97	14053	123	5275.56	538.81

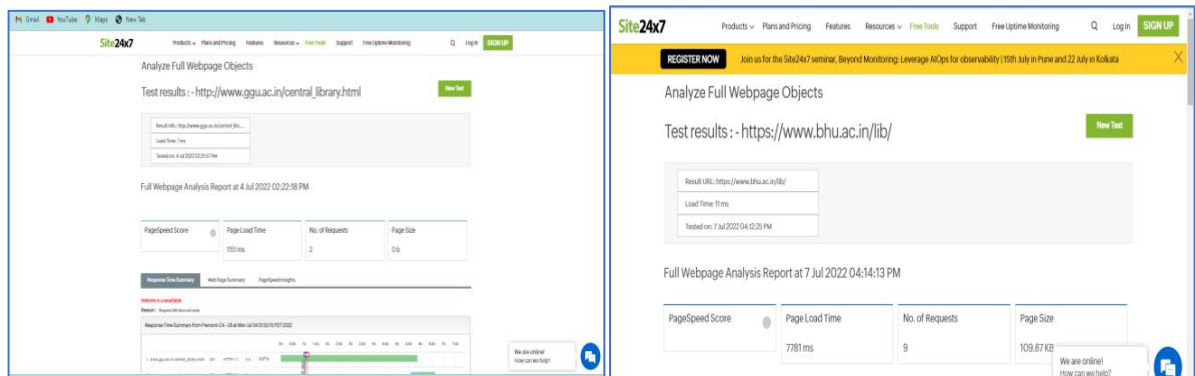


Figure-5.9: Site24x7 Analyzing Full Web Page Objects
(Source: <https://www.site24x7.com/help/getting-started.html>)

5.26. Mobile View Compatibility of Library Website/Webpage

In simple terms, a mobile-friendly website is a site that is designed to display properly on smaller screens, such as Android smartphones and iPhone, or intermediate sized tablets. Standard desktop websites do not provide well on these devices, whereas a mobile-optimized site adjusts to the smaller screen formats and size and the content and interface in a mobile-friendly manner, including-

- Easier to read text
- Mobile-friendly navigation
- Faster download speed
- Touch-friendly buttons and page elements
- Having a mobile-friendly website brings with it various key advantages, including: Improved search visibility, Improved user experience, Increased lead generation, Improved brand identity

Nowadays, smartphones or android mobiles/tablets have been used as a significant tool for information dissemination across the community and these devices are impacting and changing the academic world too. A mobile-friendly website has become an important segment of having an online existence and visibility. The term

"mobile compatible" means that a website can be viewed, browsed, accessed, and used on a mobile device. The researcher attempted to identify the mobile friendliness of central universities libraries' Websites/Web Pages with the help of mobile-friendliness tools (<https://search.google.com/test/mobile-friendly>) as shown in the Table-5.24. The data for this table was collected on 13th September, 2022 to 15th September, 2022.

The analysis shows that out of a total of 44 central university libraries' websites/web pages, only 24(54.54%) Central Universities Libraries' websites/web pages are mobile-friendly (Aligarh Muslim University, Assam University, Central University of Bihar, Central University of Gujarat, Central University of Haryana, Central University of Karnataka, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Vishwavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Nagaland University, North-Eastern Hill University, Sikkim University, Central Sanskrit University, Mahatma Gandhi Central University, Shri Lal Bahadur Shastri National Sanskrit University, National Sanskrit University). whereas, rests 20(45.45%) Central Universities Libraries' Websites/Web Pages (Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Himachal Pradesh, Central University of Jammu, Central University of Jharkhand, Central University of Kashmir, Central University of Kerala, Central University of Tamil Nadu, Jamia Millia Islamia, Maulana Azad National Urdu University, Mizoram University, Pondicherry University, Rajiv Gandhi University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati) are not compatible with mobile devices as of now.



Figure-5.10: Mobile View Compatibility

(Source:<https://www.weblite.com.my/blog/reasons-why-a-mobile-friendly-website-is-important>)

Table-5.24: Mobile View Compatibility of Libraries' Websites/Webpages

SL. No.	Name of the University	Page is Mobile-Friendly
1	AMU	Yes
2	ASU	Yes
3	BBAU	No
4	BHU	No
5	CUB	Yes
6	CUG	Yes
7	CUH	Yes
8	CUHP	No
9	CUJ	No
10	CUJH	No
11	CUKR	Yes
12	CUKS	No
13	CUK	No
14	CUO	Yes
15	CUP	Yes

16	CUR	Yes
17	CUTN	No
18	HGV	Yes
19	GGV	Yes
20	HNBG	Yes
21	IGNOU	Yes
22	IGNTU	Yes
23	JMI	No
24	JNU	Yes
25	MGHV	Yes
26	MNU	Yes
27	MANU	No
28	MZU	No
29	NAU	Yes
30	NEHU	Yes
31	PCU	No
32	RGU	No
33	SKU	Yes
34	TZU	No
35	TFLU	No
36	TPU	No
37	UOA)	No
38	UOD	No
39	UOH	No
40	VBH	No
41	MGCU	Yes
42	CSU	Yes
43	LNSU	Yes
44	NSU	Yes

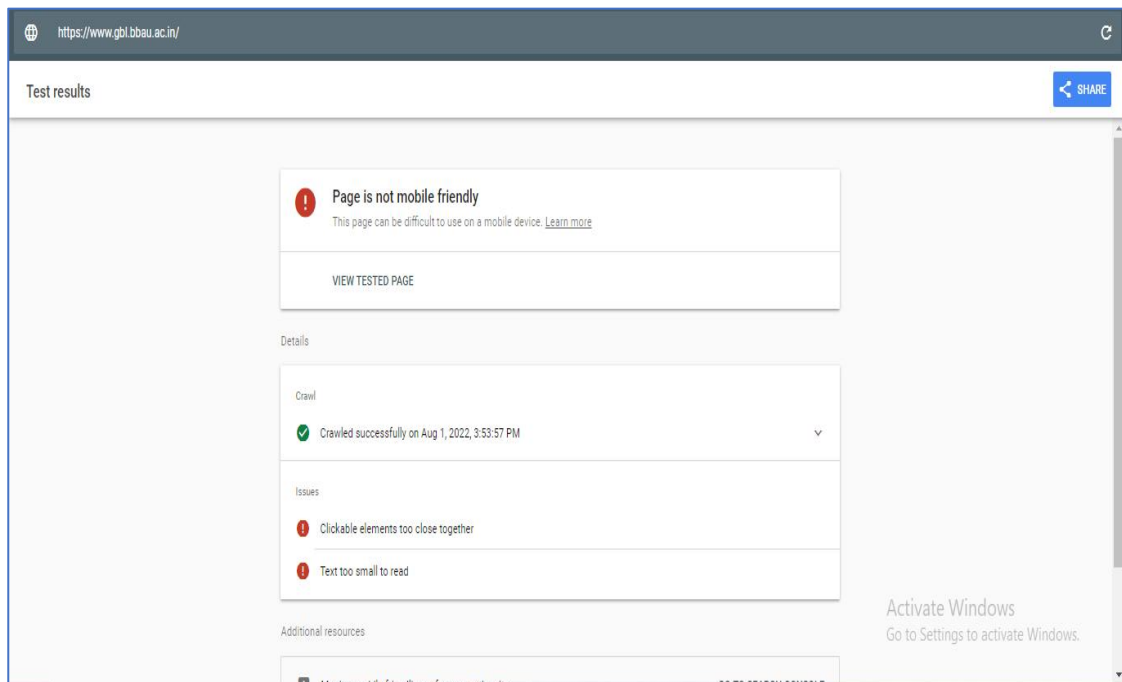


Figure-5.11: Page is not Mobile Friendly (Source: <https://www.site24x7.com/help/getting-started.html>)

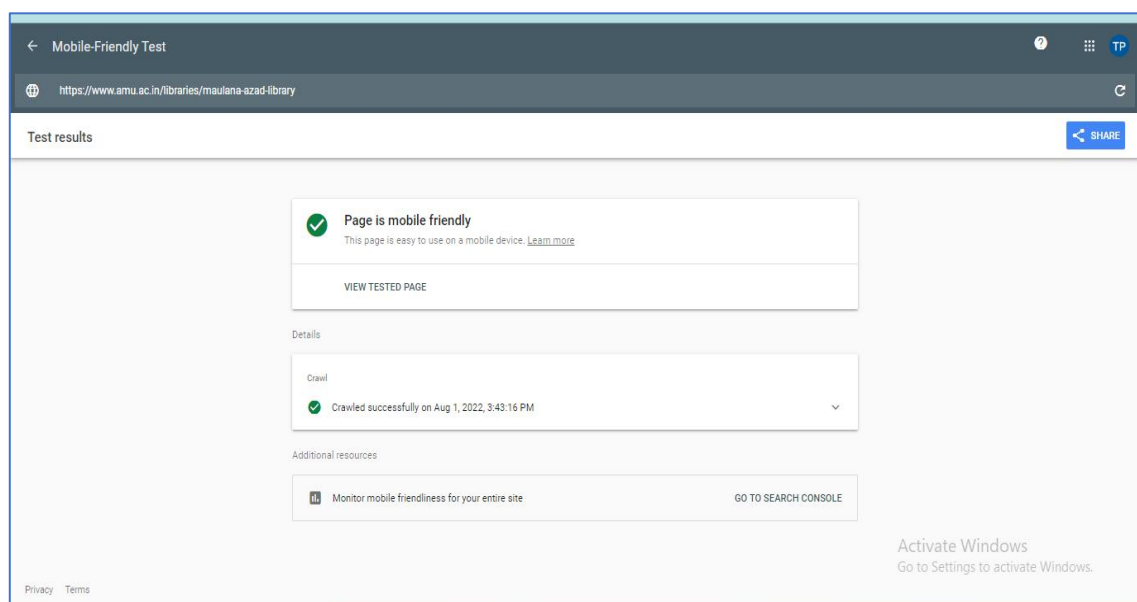


Figure-5.12: Page is Mobile Friendly (Source: <https://www.site24x7.com/help/getting-started.html>)

5.27. Global Rank of Library Website/ Webpage

The Alexa rank is calculated using a combination of average daily visitors to this site and page views on this site over the past 3 months. The site with the highest combination of visitors and page views is ranked. Table-5.25 depicts the ranking of central university libraries' websites/web pages globally by using an online tool- Alexa Traffic Rank (www.alexa.com/siteinfo/). The data for this table were collected on 7th March 2022 between 6 pm-11 pm.

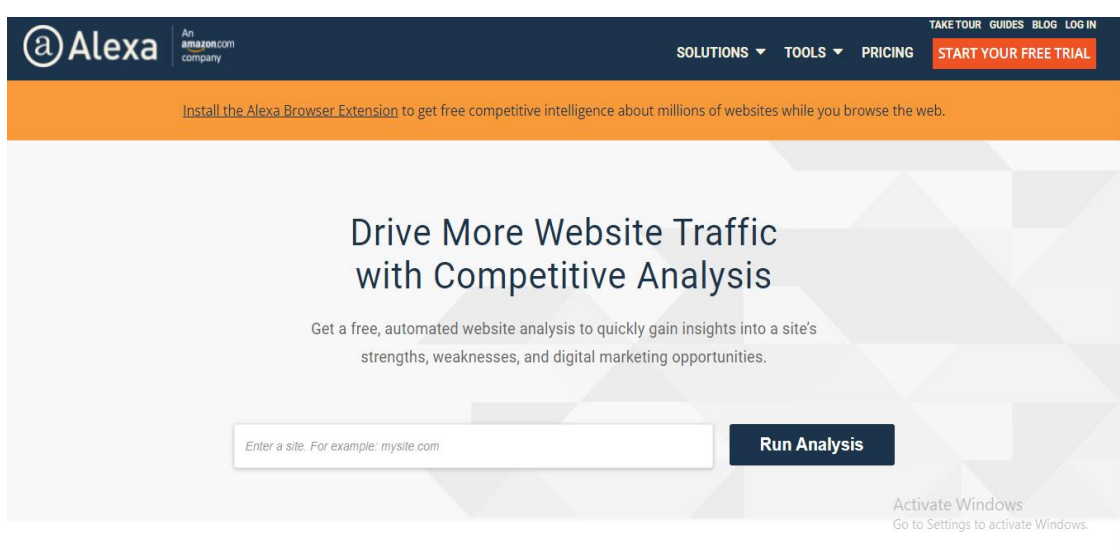


Figure-5.13: Alexa Traffic Rank Website (Source- <https://www.alexa.com/siteinfo/>)

Out of 44 libraries' websites /web pages of central university, no results were found of 6 libraries' websites/web pages- Central University of Jharkhand, Maulana Azad National Urdu University, Pondicherry University, The English and Foreign Languages University, Mahatma Gandhi Central University and Central Sanskrit University. According to the Table-5.25, it is very clear that Central University of Karnataka secured the top position with 3984252 ranks, which is followed by Central University of Kerala with 3224776 ranks at second and Visva Bharati with 2508642 ranks occupied third places globally. While, National Sanskrit University (1519961 ranks), Rajiv Gandhi University (535330 ranks), Banaras Hindu University (475222 ranks), Shri Lal Bahadur Shastri National Sanskrit University (444998 ranks), Central University of Jammu (420274 ranks), Nagaland University (401043 ranks), and Sikkim University (385309 ranks) obtained 4th, 5th, 6th, 7th, 8th, 9th, and 10th rank respectively.

Table-5.25: Global Rank of library Website/Webpage

SL. No.	Central University	Global Rank
1	AMU	72657
2	ASU	171616
3	BBAU	123868
4	BHU	475222
5	CUB	170451
6	CUG	191536
7	CUH	109023
8	CUHP	235955
9	CUJ	420274
10	CUJH	-
11	CUKR	3984252
12	CUKS	330911
13	CUK	3224776
14	CUO	238540
15	CUP	-
16	CUR	104249
17	CUTN	135907
18	DHGV	176400
19	GGV	115117
20	HNBG	108496
21	IGNOU	4907
22	IGNTU	196686
23	JMI	53650
24	JNU	42059
25	MGHV	336640
26	MNU	201767
27	MANU	-
28	MZU	345992

29	NAU	401043
30	NEHU	132005
31	PCU	96444
32	RGU	535330
33	SKU	385309
34	TZU	27130
35	TFLU	-
36	TPU	110131
37	UOA	102480
38	UOD	5599
39	UOH	53687
40	VBH	2508642
41	MGCU	-
42	CSU	-
43	LNSU	444998
44	NSU	1519961

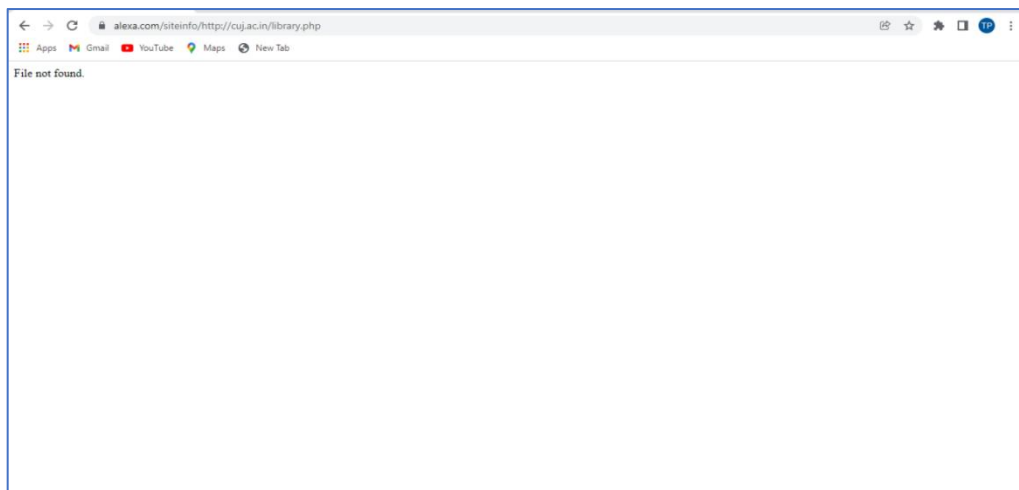


Figure-5.14: Library Website/ Web page with No Result (Source: <https://www.alexa.com/siteinfo>)

5.28. Central University Library Websites: An Evaluation through Silktide

Silktide develops software for analysing and enhancing websites, encompassing topics such as accessibility, data privacy, SEO, and more. Silktide's platform is utilised by organisations worldwide to evaluate millions of websites annually. They are a globally distributed crew with members in numerous countries. Silktide incorporates and educates web teams and provides them with a single platform to manage their accessibility, content, and marketing roles. It was founded in 2001 and assists thousands of consumers in analysing ten million websites annually. Its users are found in over 900 places around the world. Silktide (<https://silktide.com/>) addresses nearly every aspect of an organization's web presence, including accessibility, content, marketing, mobile, social, and performance. The silktide report contains four sections: Content, Accessibility, User Experience, and Marketing. The scores for these four sections range from 0 to 100, with higher numbers being greater.

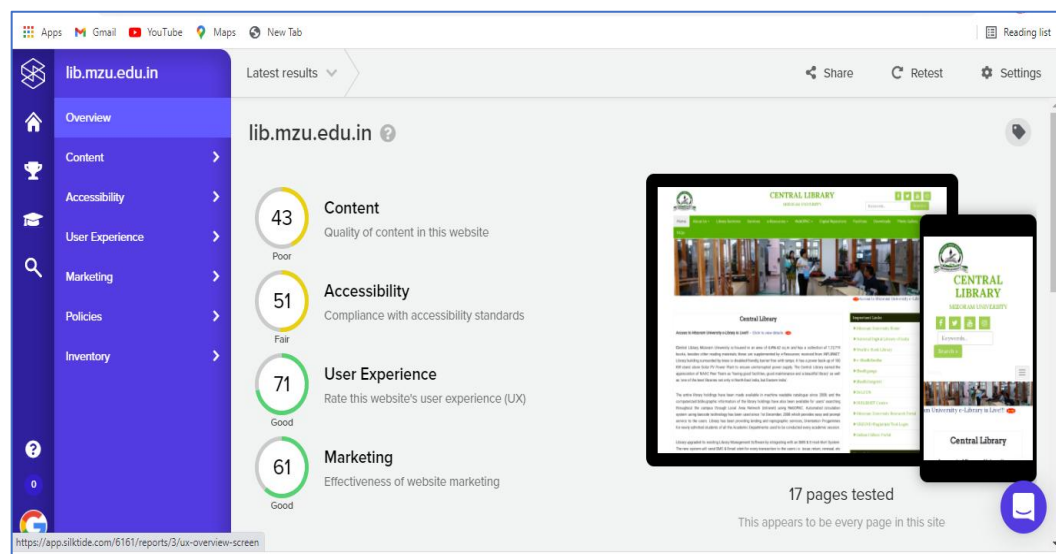


Fig-5.14: Scores of Mizoram University

a) Content

The Content module of silktide includes a variety of checks: Spelling, Grammar, Broken Links, Content Accessibility, Content SEO, and Reading Age. The Content module is used most frequently by non-technical content editors, as the most common issues involve content that falls under their area of expertise. However,

some particularly severe issues (such as when a website is entirely unavailable) may involve developers.

Spelling Screen

This silktide screen displays misspelt words spotted on the website. It examines both the visible text of your website and other areas that visitors may only see indirectly, including page titles, drop-down navigation, and alternative text. Poor grammar creates a negative impression of your website and can make its content more difficult for readers to understand.

The most suspected misspelt words are listed first.

- i. Likely spelling errors include words that are known to be misspelt (such as "color" if your language is UK English) or words that appear extremely likely to be misspelt.
- ii. Potential mistakes in spelling include unknown words that resemble a person's or company's name.
- iii. Invisible spelling errors list unrecognised words that are not ordinarily visible when a page loads, such as alternative text, meta tags, and CSS-hidden text.

Broken Links Screen

This screen displays broken links detected within the website. A broken link is a link that, when visited, does not load a functioning page. For example, the web address is incorrect or the page no longer exists. Broken links negatively impact on the user experience and are typically associated with:

- i. Technical issues and
- ii. Out of date content

Occasionally, a link may be temporarily broken because the website is down or overloaded. This test differentiates between internal and external links. Internal links are those that point to pages within the website you are testing; for example- a link to silktide.com/example would be an internal link. Every other link is external. Silktide considers an internal link as a more serious issue because internal links are under the control of the website. If a user selects a link to a third-party website and that link breaks, it is more likely to be considered a problem with the third-party; if a link to

the website's own site is broken, it is more likely to be perceived as an internal issue with the website.

Grammar Screen

This screen displays potential grammatical errors in multiple languages. It searches for grammatical errors in the visible text of the website as well as other areas that visitors may only see indirectly, including page titles, drop-down menus, and alternative text. A website with poor grammar is difficult to understand and leaves a negative impression on visitors. silktide supports the grammar verification in multiple languages, but only one language can be checked per page. Therefore, if a page combines, say, French and Spanish, silktide will select the language it believes to be the most prevalent on that page and only verify that language.

Readability Display

This screen indicates the readability of a website's text, also known as the "reading age." The "reading age" analyses the number of years of education required for understanding a piece of writing. For instance, a reading age of 14 would indicate that a person would require full-time education until the age of 14 in order to comprehend the text. Text that is simpler to comprehend is more engaging and effective. No matter how educated the audience may be, no one likes reading difficult text. Google considers reading age to be a minor ranking factor, meaning that harder to understand websites will, on average, rank lower than easier ones. In practise, the average adult reading age may be lower than this might suggests – developed countries typically average around 13 years old. In the United Kingdom, approximately 16% of adults have a reading age of 11 or below.

Content Accessibility

The criteria for content accessibility and content SEO include alternative text (which should be added to images), page headings (required for screen reader compatibility), and readability. The content must be accessible to as many individuals as possible. Better SEO increases a website's search engine rankings. The visibility of a website is directly impacted by its content.

b) Accessibility

Accessibility helps in making websites accessible to all users, including those with disabilities and slow Internet connections. Everyone working on a website, including content editors, designers, developers, and administrators, can be impacted by the accessibility module. This module of silktide covers the visual, auditory, motor, and cognitive domains.

Visual: The number of problems that affect users with visual impairments, such as blindness or low vision.

Auditory: The number of problems experienced by users with hearing impairments, such as deafness.

Motor: The number of issues that affect users with motor impairments, such as tremors or rheumatism.

Cognitive: The number of problems experienced by users with cognitive impairments, such as dyslexia or attention deficit disorder.

c) User Experience

User experience identifies a website's design, performance, and technical issues. The user experience module of silktide includes the following checks: a) Mobility, and b) Speed and Functionality. User experience identifies "design, technical, and speed issues"

Mobile Screen

This screen displays sections of this website that are incompatible with mobile devices.

Speed Screen

This screen measures the speed of your website as perceived by your visitors. Speed is measured by load time, or "how long it takes for web pages to fully load." The graph of page load times displays the number of web pages that require a specific amount of time to load, such as "16 pages take between 1-2 seconds to load." This screen also provides technical recommendations for enhancing the overall and individual page performance. Frequently, speed recommendations are of a technical nature and may necessitate the implementation of a qualified developer. It is one of the most essential aspects of a website's user experience. Users are more likely to

abandon slow websites. Google now considers speed a ranking factor, so slower websites will rank lower on average than quicker websites.

Functionality Screen

This screen displays technical issues with the website, including error messages and non-rendered images. Errors may indicate that a section of your website is unable to function without your knowledge.

d) Marketing

Marketing allows you to acquire more online business by (a) attracting more relevant visitors and (b) converting those visitors more effectively. The marketing module is primarily utilised by digital marketers with limited technical knowledge. However, editors and developers may also be concerned with certain areas.

Content Optimization

This screen shows areas of the website which are not following a range of marketing best practices. You should improve the content on your website for SEO and SEM. This page focuses on areas content editors can improve.

Technical Optimization Screen

This screen shows areas of the website which are not following a range of marketing best practices.

i) Test Score of Central University Library Websites through Silktide

There is a total of four sections of the Silktide report –Content, Accessibility, User Experience, Marketing. These four scores range from 0 – 100, with higher numbers being better.

The Content module is most frequently used by non-technical content editors, as the most common issues concern content that they are usually responsible for. However, some other issues can involve developers (e.g. if a website is completely unavailable). The libraries' websites/web pages of Jawaharlal Nehru University scores the highest 68, Sikkim University and Nagaland University libraries' websites/web pages score 65 and 62 respectively in the content section.

Accessibility helps to make websites accessible to all types of users, including people with disabilities, people with slow internet access. The Accessibility module can

impact everyone working on a website, including content editors, designers, developers, and managers. Central University of Rajasthan is ranked first by scoring 69, Assam University (65) and Jawaharlal Nehru University (63) stands 2nd and 3rd in the accessibility section.

User Experience finds design, speed, and technical issues of a website. Central University of Karnataka library website/web page scores the highest 76 and the libraries' websites/web pages of Mizoram University and Nagaland University (NU) score 71 and 70 in the user experience section.

More generally, marketing helps websites to gain more business online, by (a) gaining more relevant visitors and (b) converting those visitors more effectively. In the case of marketing, both Nagaland University library website/web page stand first by scoring 87. The libraries' websites/web pages of Sikkim University and Jawaharlal Nehru University scores 84 and 80 respectively.

The library website/web page of Nagaland University scores the highest 267 in total and Sikkim University and Central University of Rajasthan libraries' websites/web pages were ranked as 2nd and 3rd score 265 and 254 respectively. Library website/web page of Jawaharlal Nehru University is ranked 4th and Assam University is ranked 5th. Central University of Himachal Pradesh scores the lowest 113.

Table-5.26: Test Score of Central University Library Websites through Silktime

Serial No.	Name of the Library	Content	Accessibility	User Experience	Marketing	Total Score
1	TU	45	30	25	61	161
2	NEHU	43	46	47	52	188
3	MZU	43	51	71	61	226
4	VBU	30	38	25	60	153
5	MGU	48	35	37	56	176
6	MNU	22	37	35	32	126

7	MU	50	38	51	73	212
8	NU	62	48	70	87	267
9	SU	65	60	56	84	265
10	OU	46	38	49	60	193
11	CUG	50	51	30	55	186
12	PU	30	45	42	50	167
13	JNU	68	63	31	80	242
14	CUK	21	43	49	31	144
15	IGNTU	29	32	13	47	121
16	MGHV	39	56	33	48	176
17	EALFU	44	23	20	55	142
18	CUTN	34	58	55	62	209
19	CUR	61	69	55	69	254
20	CUP	30	45	26	42	143
21	CUKR	36	44	76	40	196
22	CUKS	40	29	33	60	162
23	CUJ	48	40	29	56	192
24	CUJH	28	36	40	33	137
25	CUHP	22	26	27	38	113
26	CUH	33	39	29	42	143
27	DU	39	44	39	56	178
28	BHU	34	43	39	53	169
29	BBAU	34	42	53	38	167
30	AU	55	65	49	71	240
31	AMU	51	46	31	74	202
32	UoA	21	17	38	43	119

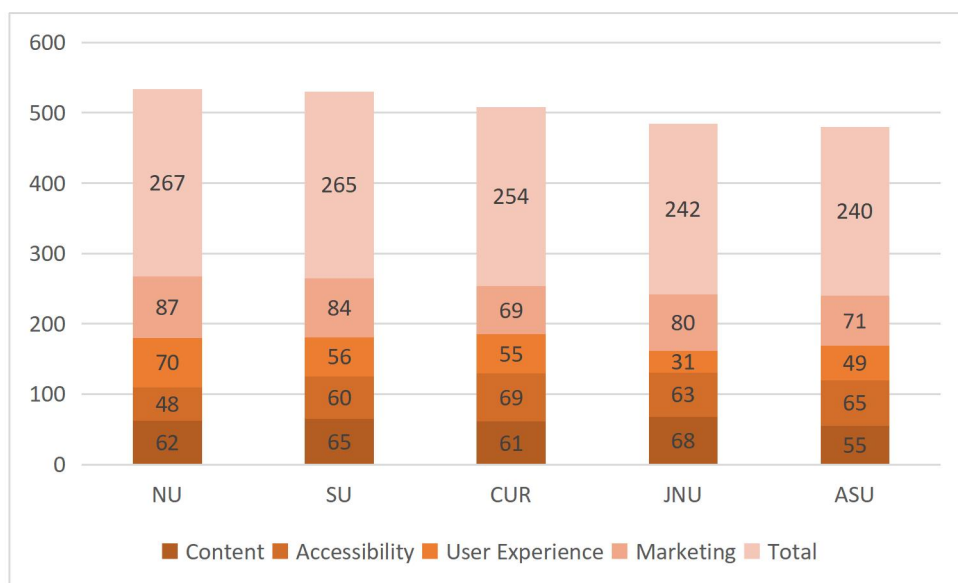


Fig-5.15: Summary of Test (Top five libraries)

ii) Test Score of Central University Libraries through Silktime

It is observed from the Table-5.27, broken links fail to load the pages when visited. Viswa Bharati has the highest broken links (300) and the Mizoram University has the lowest broken link (1). According to the table, Mahatma Gandhi Hindi Vishwavidyalaya library website ranks 1st in reading age section (18.7) and Central University Gujarat ranks last (10.9). The library website of Central University of Jammu stands first (96) in content accessibility and Odisha University stands last (40).

Accessibility covers Visual, Auditory, Motor, Cognitive. Indira Gandhi National Tribal University library website gets the highest number (24) of issues affecting users with visual impairments, such as blindness or low vision and the library website of Central University of Rajasthan gets the lowest number (9). In case of auditory category, Central University of Gujarat, Pondicherry University and University of Hyderabad gets 1st rank by scoring 11 and Central University of Rajasthan stands in last rank which scores 3. Delhi University library website is analysed first in issues affecting users with motor disabilities, such as tremors or arthritis. The website gets the score 13. The Central University of Rajasthan and Banaras Hindu University score number 4 and stand in last rank.

Mobile screen, speed screen and functionality screen test belong to user experience test. Nagaland University scores the highest 87 marks in mobile screen test. Maximum library website cannot be tested through silktide for speed screen test. According to the test, Manipur University, Nagaland University, Sikkim University, Central University of Tamilnadu, Central University of Rajasthan, Central University of Karnataka, University of Hyderabad have no technical faults with the websites, such as error messages that are displayed, or images which don't load. All these libraries websites/web pages score 100.

Nagaland University library website/web page gets the highest score, 90 in content optimization and Jawaharlal Nehru University library website scores 88, which gets the 2nd rank in content optimization and Babasaheb Bhimrao Ambedkar University is ranked as last which scores only 24. In technical optimization, Sikkim University library website/web page scores the highest 87.

Table-5.27: Test Score of Central University Libraries through Silktide

SL.No.	University	Content					Accessibility				User xperience			Marketi ng	
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
1	TU	98	9	12.3	47	46	22	9	11	11	12	-	83	56	67
2	NEHU	50	74	12.5	89	32	17	8	7	7	15	72	59	46	61
3	MZU	5	23	13.7	50	36	17	6	6	5	50	75	97	48	79

14	13	12	11	10	9	8	7	6	5	4
CUK	JNU	PU	CUG	OU	SU	NU	MU	MNU	MGU	VBU
16	25	11	154	11	41	8	1	12	3	300
90	32	26	6	17	112	4	8	28	128	105
14.1	12.0	14.7	10.9	12.8	12.5	14.5	13.8	13.9	13.5	12.6
51	91	62	89	40	86	92	92	44	83	76
15	85	23	45	38	77	88	76	9	63	44
14	14	22	22	22	20	13	12	18	20	20
6	5	11	11	9	8	5	6	9	8	9
6	6	9	9	11	9	8	7	7	12	8
6	5	10	9	10	8	8	6	7	11	9
67	37	49	24	22	33	87	71	58	7	22
-	-	-	26	82	49	34	-	-	49	-
97	69	94	45	98	100	100	100	51	65	70
32	88	38	56	51	81	90	80	27	71	55
29	68	67	55	83	87	81	62	41	34	68

25	24	23	22	21	20	19	18	17	16	15
CUHP	CUJH	CUJ	CUKS	CUKR	CUP	CUR	CUTN	EALFU	MGHV	IGNTU
26	5	19	12	5	19	9	10	5	11	52
43	25	5	53	22	94	11	5	20	1	119
13.5	13.3	13	11.9	15	12.6	12.3	12.8	13.3	18.7	12.9
48	54	96	66	56	68	82	70	85	82	70
30	21	59	36	19	35	63	44	49	34	32
21	15	12	19	17	21	9	15	18	22	24
7	7	7	9	8	7	3	6	7	10	10
9	8	6	10	8	11	4	7	12	10	12
9	8	6	10	7	11	4	7	10	12	11
64	60	48	48	58	40	23	24	27	19	29
-	-	-	-	79	-	58	57	-	57	
14	72	46	60	100	44	100	100	43	16	11
44	37	67	49	35	48	70	55	59	47	46
28	28	40	78	47	32	68	71	50	49	49

32	UoA	31	AMU	30	AU	29	BBAU	28	BHU	27	DU	26	CUH
8		31		10		2		23		63		6	
78		17		30		28		19		21		49	
13.2		13		12.9		13.6		13.7		13.8		12.8	
66		84		82		49		59		62		75	
9		73		62		5		34		52		27	
25		15		14		20		16		23		18	
11		5		4		8		7		8		7	
11		7		8		9		4		13		7	
11		8		8		8		7		11		7	
36		11		1		14		67		69		32	
-		21		87		68		-		-		-	
100		92		63		88		55		51		69	
27		79		69		24		47		61		41	
67		68		73		60		62		48		42	

Content: (a) Broken link, (b) Grammar issues, (c) Reading age, (d) Content accessibility, (e) Content SEO. **Accessibility:** (f) Visual, (g) Auditory, (h) Motor, (i) Cognitive. **User Experience:** (j) Speed, (k) Mobile, (l) Functionality. **Marketing:** (m) Content optimization, (n) Technical optimization.

It is observed from the Table-5.26 and 5.27, the library website of Jawaharlal Nehru University scores the highest 68, Sikkim University and Nagaland University libraries websites/webpages score 65 and 62 respectively in the content section. Central University of Rajasthan is ranked first by scoring 69, Assam University and Jawaharlal Nehru University (63) stands 2nd and 3rd in the accessibility section. Central University of Karnataka library website scores the highest 76 and the libraries' websites/webpages of Mizoram University and Nagaland University score 71 and 70 in the user experience section. In case of marketing, both Nagaland

University library website stand first by scoring 87. The libraries' websites/web pages of Sikkim University (SU) and Jawaharlal Nehru University scores 84 and 80 respectively. Nagaland University library website scores the highest 87 marks in mobile screen test. Nagaland University library website gets the highest score, 90 in content optimization and Jawaharlal Nehru University library website scores 88, which gets the 2nd rank in content optimization and Babasaheb Bhimrao Ambedkar University is ranked as last which scores only 24. In technical optimization, Sikkim University library website scores the highest 87. In total, Nagaland University library website gets the highest score (267) and Central University of Himachal Pradesh scores the lowest (113).

The platform of Silktide is used by organizations around the world to review millions of websites every year. The four sections of silktide report –Content, Accessibility, User Experience, Marketing scores range from 0 – 100. With higher numbers being better. The library website of Jawaharlal Nehru University scores the highest 68 in content module. The Accessibility module can impact everyone working on a website, including content editors, designers, developers, and managers. Central University of Rajasthan is ranked first. User Experience finds design, speed, and technical issues of a website. Central University of Karnataka library website scores the highest 76. More generally, marketing helps websites to gain more business online, by (a) gaining more relevant visitors and (b) converting those visitors more effectively. In the case of marketing, both Nagaland University libraries' websites/web pages stand first by scoring 87.

5.29. Interlinking Pattern in the Websites /Webpage of Central University

Interlinking is the process to acquire hyperlinks from other websites to their website. It helps the users to navigate between pages on the internet. It is observed from the Table-5.28 that not a single library website/web page is interlinked with any other library website/web page.

Table-5.28: Interlinking Pattern in the Websites /Webpages of Central University

SL.No.	Name of the university	Links with No. of the university	Name of linked university
1	AMU	-	-
2	ASU	-	-
3	BBAU	-	-
4	BHU	-	-
5	CUB	-	-
6	CUG	-	-
7	CUH	-	-
8	CUHP	-	-
9	CUJ	-	-
10	CUJH	-	-
11	CUKR	-	-
12	CUKS	-	-
13	CUK	-	-
14	CUO	-	-
15	CUP	-	-
16	CUR	-	-
17	CUTN	-	-
18	HGV	-	-
19	GGV	-	-
20	HNBG	-	-
21	IGNOU	-	-
22	IGNTU	-	-
23	JMI	-	-
24	JNU	-	-
25	MGHV	-	-
26	MNU	-	-
27	MANU	-	-

28	MZU	-	-
29	NAU	-	-
30	NEHU	-	-
31	PCU	-	-
32	RGU	-	-
33	SKU	-	-
34	TZU	-	-
35	TFLU	-	-
36	TPU	-	-
37	UOA	-	-
38	UOD	-	-
39	UOH	-	-
40	VBH	-	-
41	MGCU	-	-
42	CSU	-	-
43	LNSU	-	-
44	NSU	-	-

5.30. Internal Followed Links and External Followed Links

An internal followed link is a hyperlink that is located on one page of a website that sends the reader to a target page located on the same website or domain. Internal links are also known as self-links, navigational links, or inner links. The hyperlinks that point to any domain other than the one where the link is located on the source are known as external followed links. It is also referred to as an outlink. Table-5.29 depicts the ranking the average result for internal followed links, external followed links of central university library websites/web pages by using online tool “Link Explorer” (<https://analytics.moz.com/pro/link-explorer/home>). The data for this table were collected on 10th June 2022 between 10am-5 pm.

It is observed from the study that the library website/web page of University of Delhi obtained highest internal followed links with an average value of 241870666, which is followed by Jamia Millia Islamia with an average value of 85715918 and Tezpur

University with 53526143 at third. The rest are Guru Ghasidas Viswavidyalaya, with 24837231, Mahatma Gandhi Central University with 21807397, Aligarh Muslim University with 16095874, University of Allahabad with 14524372, Indira Gandhi National Open University with 9531854, Babasaheb Bhimrao Ambedkar University 7018521, and North-Eastern Hill University with 6751247 were at four, five, six, seven, eight, nine and ten respectively. The lowest was occupied by the library website/web page of Nagaland University with an average value of 8 which indicates of having less internal hyperlinks due to poor visibility.

The study further observed that the average value of external followed links of the library website/web page of Central University of Haryana highest i.e.,17743921 which is followed by Tezpur University with 9141820 North-Eastern Hill University with 3379508. While, others are Pondicherry University library website/web page an average value of 2141266, Indira Gandhi National Open University with an average value of 2171752, occupied fourth and fifth rank respectively. The lowest average was obtained by the Central University of Karnataka library website/web page with 96 only.

Table-5.29: Internal Followed Links and External Followed Links

Sl.No	Name of the University	Internal followed links (In average)	External followed links (In average)
1	AMU	16095874	321134
2	ASU	2744650	1371789
3	BBAU	7018521	35029
4	BHU	503711	220893
5	CUB	23634	25494
6	CUG	567375	419026
7	CUH	803991	17743921
8	CUHP	189246	113485
9	CUJ	523053	6450
10	CUJH	81305	4636

11	CUKR	268	96
12	CUKS	139811	577469
13	CUK	228	33951
14	CUO	144679	5285
15	CUP	4693937	118207
16	CUR	243551	17562
17	CUTN	1426142	30900
18	HGV	907992	80364
19	GGV	24837231	29223
20	HNBG	1508607	52667
21	IGNOU	9531854	2171752
22	IGNTU	6343938	8046
23	JMI	85715918	75360
24	JNU	3788501	284683
25	MGHV	18069	118156
26	MNU	543525	23420
27	MANU	468071	30509
28	MZU	1939671	46277
29	NAU	8	17973
30	NEHU	6751247	3379508
31	PCU	5366429	2141266
32	RGU	2499646	17611
33	SKU	1084045	44534
34	TZU	53526143	9141820
35	TFLU	203852	54682
36	TPU	2527879	170371
37	UOA	14524372	107127
38	UOD	144727698	185298
39	UOH	2278869	436147
40	VBH	20477	4367

41	MGCU	21807397	3881
42	CSU	60860	92975
43	LNSU	624827	4312
44	NSU	343616	24438

5.31. Spam Score of Library Website/Webpage

A technique created by SEO data and software company Moz that tries to determine how 'spammy' websites are and, as a result, how trustworthy a website is (or is not). A low spam score is one between 1% and 30%. A score between 31% and 60% is regarded as a "medium spam score." A high spam score is one between 61% and 100%. Table-5.30 shows the average value of spam score of central university libraries' websites and the analysis observed that the Hemvati Nandan Bahuguna Garhwal University library has got maximum spam score i.e., 48% which indicates medium level of risk and should continue its maintenance, followed by Central University of Kerala with 44% showing medium level of risk, Mahatma Gandhi Central University with 43% and Central University of Odisha, with 32% which are also showing medium level of risk. If the web designer/library professionals want to stay out of this danger then frequent checking of the website is necessary as well while creating the website, the developer needs to be very careful to not have similar features with other website. Because the spam score indicates the status of the website, i.e., higher the score of spam, higher the chance of being spammy, indicating website has some trouble.

It is further observed that 40 libraries' websites/web pages viz., Aligarh Muslim University, Assam University, Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Bihar, Central University of Gujarat, Central University of Haryana, Central University of Himachal Pradesh, Central University of Jammu, Central University of Jharkhand, Central University of Karnataka, Central University of Kashmir, Central University of Punjab, Central University of Rajasthan, Central University of Tamil Nadu, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jamia Millia Islamia, Jawaharlal Nehru University,

Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Maulana Azad National Urdu University, Mizoram University, Nagaland University, North-Eastern Hill University, Pondicherry University, Rajiv Gandhi University, Sikkim University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati , Central Sanskrit University, Shri Lal Bahadur Shastri National Sanskrit University, National Sanskrit University come under the category 1-30% indicating low spam.

Table-5.30: Spam Score of Library Website/Webpage

Sl. No.	Name of the University	Spam Score
1	AMU	4%
2	ASU	5%
3	BBAU	11%
4	BHU	15%
5	CUB	9%
6	CUG	12%
7	CUH	2%
8	CUHP	1%
9	CUJ	9%
10	CUJH	4%
11	CUKR	9%
12	CUKS	5%
13	CUK	44%
14	CUO	32%
15	CUP	4%
16	CUR	1%
17	CUTN	1%
18	HGV	11%
19	GGV	6%

20	HNBG	48%
21	IGNOU	6%
22	IGNTU	7%
23	JMI	1%
24	JNU	4%
25	MGHV	1%
26	MNU	1%
27	MANU	8%
28	MZU	7%
29	NAU	1%
30	NEHU	1%
31	PCU	3%
32	RGU	9%
33	SKU	4%
34	TZU	8%
35	TFLU	5%
36	TPU	10%
37	UOA	2%
38	UOD	2%
39	UOH	4%
40	VBH	9%
41	MGCU	43%
42	CSU	28%
43	LNSU	25%
44	NSU	4%

5.32. Ranking of Central Universities Library Websites' based on Web Content

The ranking of the central universities library websites' based on web content is listed under Table-5.31. The ranking of the institutes has been done according to the score point obtained by the websites/web pages on the availability of the web content.

It was observed from the study that, in the quantitative five-point rating scale, none of the central university library website/web page found excellent, very good ranking but on a ranking scale Aligarh Muslim University library website/web page holding secured 1st position with 117.5 score points; followed by Babasaheb Bhimrao Ambedkar University library website/web page with 109.5 score points; Assam University with 109 score points; Central University of Karnataka with 101 score points, Visva Bharati with 99.5 score points; Tezpur University with 99 score points, Jawaharlal Nehru University 97.5 score points. 18 central universities libraries taken for the study have been placed under the average (41-80) grading system. Those are- Central University of Bihar (76), Central University of Himachal Pradesh (73), Central University of Jammu (71), Central University of Jharkhand (67), Central University of Punjab (72.5), Dr. Harisingh Gaur Vishwavidyalaya (74), Guru Ghasidas Vishwavidyalaya (70), Hemvati Nandan Bahuguna Garhwal University (74), Indira Gandhi National Tribal University (77.5), Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya (67), Nagaland University (77), Rajiv Gandhi University (69), The English and Foreign Languages University (80), University of Allahabad (74.5), Central Sanskrit University (56), Mahatma Gandhi Central University (78.5), Shri Lal Bahadur Shastri National Sanskrit University (71.5), National Sanskrit University (49.5).

Table-5.31: Central University Library Websites /Webpages and their Total Score

SL. No.	Name of the University	Total Score	Grading
1	AMU	117.5	Good
2	ASU	109	Good
3	BBAU	109.5	Good
4	BHU	85	Good
5	CUB	76	Average
6	CUG	86.5	Good
7	CUH	93.5	Good
8	CUHP	73	Average

9	CUJ	71	Average
10	CUJH	67	Average
11	CUKR	101	Good
12	CUKS	85.5	Good
13	CUK	91	Good
14	CUO	90.5	Good
15	CUP	72.5	Average
16	CUR	84.5	Good
17	CUTN	92	Good
18	HGV	74	Average
19	GGV	70	Average
20	HNBG	74	Average
21	IGNOU	85.5	Good
22	IGNTU	77.5	Average
23	JMI	94	Good
24	JNU	97.5	Good
25	MGHV	67	Average
26	MNU	85.5	Good
27	MANU	81.5	Good
28	MZU	94.5	Good
29	NAU	77	Average
30	NEHU	82	Good
31	PCU	91	Good
32	RGU	69	Average
33	SKU	90	Good
34	TZU	99	Good
35	TFLU	80	Average
36	TPU	94	Good
37	UOA	74.5	Average
38	UOD	95.5	Good

39	UOH	93	Good
40	VBH	99.5	Good
41	MGCU	78.5	Average
42	CSU	56	Average
43	LNSU	71.5	Average
44	NSU	49.5	Average

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CHAPTER 6

Findings, Conclusion and Suggestions

6.1. Major Findings of the Study

Based on the data analysis and interpretations of the study, the findings are drawn and presented in this chapter. As the study is based on certain objectives which need to be answered very clearly though this study however, in the process of research many other insights and useful information also generated which is equally important. Therefore, the findings of study are categorized into two broad groups: (a) Findings according to the objectives of the study and (b) General findings of the study.

A. Findings According to the Objectives of the Study

1) The findings based on the first objective of the study

- a) In the first chapter, the researcher has designed and developed a checklist approach to evaluating the website contents of selected central universities' websites/web pages with 65 criteria and 200 score points based on previous research i.e.; Madhusudhan (2012), Jayasundari and Jeyshankar (2014), Verma & Devi (2016) as mentioned in the research methodology and enclosed in (Appendix-III).

2) The findings based on the second objective of the study

- a) Under the heading of the availability of library websites/web pages, it was visible from the analysis that out of that all 44 central university libraries' websites are having either websites or web pages to extend the library services. Among the selected central universities, 11(25%) are having library websites. However, left out 33(75%) university libraries are having only library web pages.
- b) The analyzed data showed that out of selected 44 universities of India, view resolution was only available for 3(6.81%) university libraries' websites/web pages, namely Babasaheb Bhimrao Ambedkar University & Central University of Odisha, and the University of Delhi. It was distinct from the collected data that none of the library websites/web pages had browse compatibility. It was visible from the collected data that 22(50%) universities out of 44 had visible information for the number of visitors to their websites/web pages.

- c) Under the heading site description of central university libraries' websites/web pages, three criteria have been developed. 24(54.54%) central university libraries' websites/web pages used text-only versions and 20(45.45%) libraries' websites/web pages used graphics with text. None of the selected central university libraries' websites/web pages have any animation features.
- d) It was evident, all the university libraries' websites/web pages provided information about library collections (books, journals, reference sources). The information on manuscripts was available on 19(43.18%) library websites/web pages of central universities. It was visible that out of 44 universities, theses/dissertations were available on 35(79.54%) libraries' websites/web pages. In the case of newspapers/magazines, 42(95.45%) university libraries' websites/web pages provided the information and 21(47.67%) universities provided information on conference proceedings on their libraries' websites/web pages. Out of 44 universities, 12(27.27%) universities offered the information of newsletter on their libraries' websites/web pages.
- e) It was evident that, out of the 44 universities information about e-resources was provided on 43(97.72%) universities except 1 university- National Sanskrit University for their clientele in the library websites/web pages. E-journals and e-books were not available at the same mentioned university. E-database was available for 38 universities and it was visible that e-theses and dissertations were available on 26(59.09%) university libraries' websites/web pages. Institutional repositories were found for 20(45.45%) out of 44 universities. Considerably low visibility of MOOC (Massive Open Online Course) was found which was only in one university i.e. Central University of Rajasthan. Only 2(4.54%) universities were found with links to the library network i.e. Aligarh Muslim University and Assam University on their library websites/web pages.
- f) Out of 44, half of the library websites/web pages 22(50%) were found with library consortium which is a very significant instrument in sharing or coordinating resources. In terms of the e-newsletter, it was found for 3

universities(6.81%) libraries websites/web pages only. Those are Rajiv Gandhi University, University of Allahabad, and Central Sanskrit University.

- g) Based on analysis of the data from the given sample, it appeared that all the universities in India (i.e., 44 universities) provided information about the library service, circulation service, and reference service of their library on their website/web page. No information was available for referral service, binding service, DDS (Document Delivery Service), new book display, online book renewal, and online book reservation on any library websites/web pages. 34(77.27%) universities provided information on user education/orientation/awareness through their library websites/web pages. Information of inter-library loan service was provided by 15(34.09%) university libraries' websites/web pages. Out of 44 universities, 12(27.27%) universities offered information on manuscripts on their library websites/web pages. Only 2(4.54%) universities offered resource/ subject guide information through their library websites/web pages while only the Central University of Odisha library website/web page was for book bank service.
- h) The information on the telephone directory of staff was provided on only the Aligarh Muslim University library website/web page. The information on CCTV and QR codes was provided on the libraries' websites/web pages of Aligarh Muslim University, Assam University, and Assam University, University of Hyderabad. Only 3(6.81%) universities- Mizoram University, Central University of Kashmir, and Pondicherry University provided information on SMS alert system on their libraries' websites/web pages.

3. The findings based on the third objective of the study

- a) It was visible that out of 44 universities, the number of universities where the Institute home link on the libraries' web site/ web page found was 39(88.63%). The home link was available on the libraries' websites/web pages of 5(11.36%) no. of the universities; they are namely Central University of Kerala, Jawaharlal Nehru University, North-Eastern Hill

University, Pondicherry University, and the University of Delhi. Also, data represented that the university libraries' websites/web pages where the title describes content or location in site structure were 44(100%).

- b) Under the heading currency, It was found from the analysis that updated status was available for 13(29.54%) universities libraries' websites/web pages. Those are Banaras Hindu University, Indira Gandhi National Open University, Shri Lal Bahadur Shastri National Sanskrit University, Hemvati Nandan Bahuguna Garhwal University, Aligarh Muslim University, Babasaheb Bhimrao Ambedkar University, Dr. Harisingh Gaur Vishwavidyalaya, Rajiv Gandhi University, Sikkim University, University of Delhi, University of Hyderabad, Shri Lal Bahadur Shastri National Sanskrit University.
- c) None of the university library websites or web pages has been updated in the past three months. Similarly, none of the universities mentioned the present date on their websites. Under the heading, accessibility of central university libraries' websites/web pages, 27(61.36%) universities have the accessibility of libraries' websites/web pages to the direct link on the parent homepage. However, 12(27.27%) universities' library websites/web pages are listed under the facilities heading, and for the other 5(11.36%) central university libraries' websites/web pages, one is listed under the heading of administration (Central Sanskrit University), one under infrastructure (Central University of Bihar), two are under amenities (Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya) and one under the heading Division (Indira Gandhi National Open University).
- d) It is observed from the analysis, Central University of Kashmir takes the lowest time- 2170 ms to load the page followed by Nagaland University which takes 2174 ms. The Central University of Kerala is placed in 3rd place with a 2699 ms page load time. Aligarh Muslim University takes the highest time for page loading- 45039. The Central University of Bihar and the Central University of Odisha are at the 2nd and 3rd lowest rank by taking 42035 ms & 27556 ms for page loading.

- e) It is observed from the analysis Banaras Hindu University (109.87KB) was placed in the first position having the lowest minimum size of the library website/web page, whereas the total size of the image is 98.83 KB. It is clear from the analysis that Central University of Karnataka (26081.62KB) is placed in the last position having the highest maximum size of the library website/web page, whereas the total size of the image was 25574.55 KB. which is followed by Dr. Harisingh Gaur Vishwavidyalaya (Total size of the website/web page: 8876.42KB, total size of the image: 7228.54KB).

4. The findings based on the fourth objective of the study

- a) Under the heading Domain Extension, all the central universities libraries' websites/web pages used different domain extensions. The data were collected from the selected 44 university libraries' websites/web pages; among which the number of universities that own .ac. in is 35(9.09%). Apart from this the number of universities that own .edu.in and .in are 4(9.09%) (i.e., Central University of Punjab, Dr. Harisingh Gaur Vishwavidyalaya, Mizoram University, and Pondicherry University) and 3(6.81%) (i.e. Central University of Kerala, Tezpur University and Visva Bharati) respectively. The two universities own .org, i.e., Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya and .nic.in i.e., Central Sanskrit University each.

5. The findings based on the fifth objective of the study

- a) In the quantitative five-point rating scale, none of the central university library website/web page found excellent, very good ranking but on a ranking scale Aligarh Muslim University library website/web page holding secured 1st position with 117.5 score points; followed by Babasaheb Bhimrao Ambedkar University library website/web page with 109.5 score points; Assam University with 109 score points; Central University of Karnataka with 101 score points, Visva Bharati with 99.5 score points ; Tezpur University with 99 score points, Jawaharlal Nehru University 97.5 score points. 18 central universities libraries taken for the study have been placed under the average (41-80) grading system. Those are-Central

University of Bihar (76), Central University of Himachal Pradesh (73), Central University of Jammu (71), Central University of Jharkhand (67), Central University of Punjab (72.5), Dr. Harisingh Gaur Vishwavidyalaya (74), Guru Ghasidas Viswavidyalaya (70), Hemvati Nandan Bahuguna Garhwal University (74), Indira Gandhi National Tribal University (77.5), Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya (67), Nagaland University (77), Rajiv Gandhi University (69), The English and Foreign Languages University (80), University of Allahabad (74.5), Central Sanskrit University (56), Mahatma Gandhi Central University (78.5), Shri Lal Bahadur Shastri National Sanskrit University (71.5), National Sanskrit University (49.5).

B. General findings of the study

The collected data was analysed, and the following general findings were made -

- a) Under the heading statement of the responsibility 28(63.63%) of the central university libraries' websites/web pages have provided information about their physical address/postal address. 31(70.45%) central university libraries' websites/web pages gave e-mail information. 29(65.90%) central university libraries' websites/web pages provide phone information no. and 27(61.36%) were found providing separate contact links.
- b) Under the heading general information about the library, all 44 of the central university libraries' websites/web pages provide information about the library. 44 central university libraries' websites/web pages provided information about the mission/vision/aims/objectives statement. 27(61.36%) central university libraries' websites/web pages mentioned information about the library committee. 43(97.72%) central university libraries' websites/web pages revealed information about library rules and library staff. 44 central university libraries' websites/web pages stated information about library hours. 42(95.45%) of central university libraries' websites/web pages revealed information about library membership details. Only 7(15.90%) out of 44 university libraries' websites/web pages were found updating information about outreach programs: vocational awareness, info literacy program, etc. on their libraries' websites/web pages. Also, no library

website/web page provided information about the budget allocation of the library which may reflect a lack of transparency between administrator and user.

- c) 29(65.90%) out of 44 university libraries' websites/web pages were found updating information about library-related forms, out of which 2(4.54%) were found updating book donation forms, 27(61.36%) were found updating book recommendation forms, 5(11.36%) were found updating library feedback forms and 4(9.09%) were found updating ILO request form.
- d) All the central university libraries' websites/web pages are used in the English language. 17(38.63%) of central university libraries' websites/web pages have been used in both English & Hindi language. 9(20.45%) central university libraries' websites/web pages have been used multilingual (other languages). The researcher has divided the events into six categories: events, conferences, workshops, seminars, book fairs, and training programs under the event heading. It was visible from the collected data that the central university libraries' websites/web pages that provided event information for the library were found for 20(45.45%) universities. Information on conferences and seminars was available for 14(31.81%) university libraries' websites/web pages while information on workshops was available for 13(29.54%) university libraries' websites/web pages. Information about the book fair was available for only 2(4.54%) out of 44 universities and the training program was available for only 9(20.45%) library websites/web pages.
- e) It was evident from the collected data from 44 universities that the libraries' websites/web pages provided information about web tools available for only 7(15.90%) universities while no information was found for RSS in the websites of any of the universities. Information tool- facebook was found for only 4(9.09%) i.e. Aligarh Muslim University, Assam University, Central University of Odisha, Tezpur University; Youtube in 3(6.81%) i.e. Aligarh Muslim University, Assam University, Tezpur University; Twitter in 4(9.09%) i.e. Aligarh Muslim University, Assam University, Central University of Odisha, Tezpur university; blog in 3(6.81%) i.e. the Central

University of Gujarat, Central University of Kerala, University of Hyderabad; LinkedIn in 1(2.27%) i.e. Assam University; google+ in 1(2.27%) i.e. Assam University only on their library websites/web pages only.

- f) According to the analysis, it is very clear that the Central University of Karnataka secured the top position with 3984252 ranks, which is followed by the Central University of Kerala with 3224776 ranks at second and Visva Bharati with 2508642 ranks occupied third places globally. While, National Sanskrit University (1519961 ranks), Rajiv Gandhi University (535330 ranks), Banaras Hindu University (475222 ranks), Shri Lal Bahadur Shastri National Sanskrit University (444998 ranks), Central University of Jammu (420274 ranks), Nagaland University (401043 ranks), and Sikkim University (385309 ranks) obtained 4th, 5th, 6th, 7th, 8th, 9th, and 10th rank respectively.
- g) The analysis shows that out of a total of 44 central university libraries' websites/web pages, only 24(54.54%) Central Universities Libraries' websites/web pages were mobile-friendly (Aligarh Muslim University, Assam University, Central University of Bihar, Central University of Gujarat, Central University of Haryana, Central University of Karnataka, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Nagaland University, North-Eastern Hill University, Sikkim University, Central Sanskrit University, Mahatma Gandhi Central University, Shri Lal Bahadur Shastri National Sanskrit University, National Sanskrit University). Whereas, rests 20(45.45%) Central University Libraries' Websites/Web Pages (Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central University of Himachal Pradesh, Central University of Jammu, Central University of Jharkhand, Central University of Kashmir, Central University

of Kerala, Central University of Tamil Nadu, Jamia Millia Islamia, Maulana Azad National Urdu University, Mizoram University, Pondicherry University, Rajiv Gandhi University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati) were not compatible with mobile devices as of now.

- h) The platform of Silktide is used by organizations around the world to review millions of websites every year. The four sections of the Silktide report—content, accessibility, user Experience, and marketing scores range from 0 – 100. With higher numbers being better. The library website of Jawaharlal Nehru University scored the highest 68 in the content module. The accessibility module can impact everyone working on a website, including content editors, designers, developers, and managers. The Central University of Rajasthan was ranked first. User experience finds design, speed, and technical issues of a website. Central University of Karnataka library website scored the highest at 76. More generally, marketing helps websites to gain more business online, by (a) gaining more relevant visitors and (b) converting those visitors more effectively. In the case of marketing, both Nagaland University libraries' websites/web pages stood first by scoring 87.
- i) A low spam score is between 1% and 30%. A score between 31% and 60% is regarded as a "medium spam score." A high spam score is between 61% and 100%. It is observed that the average value of spam score of central university libraries' websites/web pages and the analysis observed that the Hemvati Nandan Bahuguna Garhwal University library has got maximum spam score i.e., 48% which indicates a medium level of risk and should continue its maintenance, followed by Central University of Kerala with 44% showing medium level of risk, Mahatma Gandhi Central University with 43% and Central University of Odisha, with 32% which are also showing medium level of risk.

6.2. Conclusion

In the present era of Information and Communication Technology (ICT), the World Wide Web (WWW) has become an indispensable tool for accessing and sharing information online. With a big amount of information being generated worldwide, the World Wide Web has emerged as a significant source of information for both academic and research purposes. It plays a pivotal role in connecting users to a vast array of online information, facilitating efficient and effective dissemination. A website serves as a collection of interconnected web pages that contain various multimedia elements like photographs, videos, etc. These web pages are published on at least one web server and share a common domain name (URL). The accessibility of a website can extend to the general public over the internet or be limited to a smaller group of individuals through a private network, often referred to as an intranet.

In the context of an academic institution, the library's website or web page serves as a crucial information hub. It acts as a gateway to intellectual resources, providing relevant and high-quality information to cater to the diverse needs of students and scholars. In the ICT era, the existence of a library website has become increasingly essential to meet the demands of users effectively. These websites offer a wide range of electronic resources such as e-books, e-journals, and open-access materials. Additionally, they provide various library services like Online Public Access Catalog (OPAC), online reference resources, and email alert systems.

Web content analysis, derived from fields like webometrics, bibliometrics, scientometrics, and informetrics, plays a vital role in evaluating the reliability and quality of information available online. It involves a scientific examination of the content communicated through the internet. As a discipline, content analysis focuses on studying web documents to gain insights into their characteristics and assess their credibility.

In the current digital age, the internet has emerged as the primary source of information transmission. Its pervasive influence highlights the importance of web content analysis in ensuring the integrity and trustworthiness of online information.

And the study of content analysis of web documents is known as web content analysis, which is prevalent in the web domain for determining the veracity and quality of information accessible via the internet. In the current digital era, the Internet has become the most important information source for disseminating information. Therefore, the evaluation of library websites must be performed frequently to assess the website's structure, web content, and available information.

After analyzing selected 44 central university libraries' websites/web pages, it was found that only 11(25%) have a separate library website which is not convincing at all. The majority of central universities libraries' website/web pages-27(61.36%) have a direct link to the main websites while other universities libraries' websites have given the library link under some submenu: such as-link under facilities, link under administration, amenities, infrastructure and division. As per the information on their respective website, it was found that all the central universities' websites are using different domain extensions but the majority of central universities' websites/web pages used ac. in i.e.; 35(79.54%). Today, it is important to have a website that is mobile-friendly so that users can access the same functions on their mobile device as they do on their desktop but only 24(54.54%) central university libraries' websites/web pages were mobile-friendly.

According to the analysis, it is very clear that the Central University of Karnataka secured the top position with 3984252 ranks, which is followed by the Central University of Kerala with 3224776 ranks at second, and the Indira Gandhi National Open University library website/web page is having the least global rank (i.e.; 4907) among the central university libraries' websites/web pages. By using multimedia applications, the website can be made more user's friendly, attractive, and interactive but that is lacking in central university libraries' websites/web pages, and, 20(45.45%) central university libraries' websites/web pages were using text-only versions and use graphics. None of the central university library website/web page used animation.

A developer should have provided the option to alter the website's language based on the needs of the site's visitors, most likely using the google translator service or a

multilingual plugin. A total of 18(40.90%) no. of university libraries were found updating in only one language on their websites/web pages while other 17(38.63%) library websites/web pages were found in two languages. 9(20.43%) universities were found updating more than two languages. Social media has emerged as one of the most popular platforms for disseminating information in the modern knowledge-based society, however; only 7(15.90%) central university libraries' websites/web pages are adopting Web 2.0 Tools. It is observed from the analysis that not a single library website/web page is interlinked with any other library website/web page. By including relevant hyperlinks to other libraries' websites/web pages, library websites/web pages can help users to move quickly different pages or sections of other libraries' websites/web pages. It makes it easier for them to find the information they need from other libraries. Thus it is needed to link all the central university libraries' websites/web pages to each other. Further, it was also observed that none of the central universities was ranked under the excellent and very good category in the five-point rating scale. Only 26(59.09%)university libraries are listed under the good category and 18(40.90%) are categorised under average group. Thus, this result indicates that there is a need to change and improvement in the content and design of central university library websites/web pages.

6.3. Suggestions

The present study comprehensively analyzed the contents of central university libraries' web pages/websites in India. As per the analysis of detailed collected data, the following suggestions and recommendations were made for the future improvement of the websites/web pages of central universities libraries:

1. Based on the web content available on the website, the performance of all the central universities libraries' websites/web pages is not up to the mark and does not come with the expectation of the user's points of view. The majority of them are unsatisfactory performance to be improved the web content of central universities libraries' websites/web pages.
2. All central university libraries should have a dynamic library website instead of using a responsive tab plug-in for creating a library web page, mobile

friendly/mobile compatible, and multilingual library website to draw users' attention.

3. The majority of central university libraries' websites/web pages are bulky in size and take a lot of time for downloading which should be redesigned and make lighter in size so that users can download and browse easily.
4. Website developers should provide regular statistical reports using (Visitor Counter Tools) detailing which files and pages are being accessed most frequently so that administrators may recognize and understand which page is most frequently visited by users.
5. All central university libraries should provide a library mobile app facility for multiple operating systems, which is one of the important tools to enhance library services. In addition, the Quick Response (QR) codes are a popular and widely used technology but only two university libraries' websites/web pages have implemented this technology. The concerned university libraries should facilitate this system which could be useful for quick access to library resources.
6. The availability of the link of library websites of central university libraries must be present on their institutes' home page which will help the clientele in removing the barriers for accessing the website. Because the website must be easily accessible by anyone without any hindrance.
7. Central university libraries' websites/web pages should use more Web 2.0 tools because it helps in communicating and spreading the news easily. Further, the library can link the library collections and services through the app so that the users/clientele can enjoy the services from anywhere.
8. All central university libraries' websites/web pages must have good interlinking with one another so that their clientele can easily access the collections and services they offer.
9. The number of visitors to their library websites/web pages must be available to keep track of visitors. This will help the web developer to keep a record on the website crawlers because the higher the number of visitors, the more website impression will be achieved.

10. Availability of the feedback option allows users to share their views and opinions regarding the website. This will help the website designer to enhance it in a way better than before. As the study found that the majority of the central university libraries have not been provided. Thus, providing of feedback facility on the respective website is suggested.
11. Date of update must be present on the respective library website/web page, to give the visitors the latest information and to assure that the website is dynamic. The currency of the website needs to be maintained to avoid obsolete content. The factor language is very important when the website developer builds the website. It is always mandatory to provide parallel language i.e., English along with other languages. It is suggested to provide online software i.e., a web translator to enable users to read the website in multilingual options.

6.4. Areas for Further Research


The following areas have been identified as prospective research topics for library and information science professionals based on the findings of this study. On the following aspects of content analysis, additional research may be conducted.

1. To enhance the use of Web 2.0 technologies in libraries, it was necessary to examine librarians' opinions and perceptions of Web 2.0 tools about university library services, whether positive or negative. In addition, these tools are becoming increasingly popular among the younger generation because they facilitate the dissemination of information quickly and efficiently.
2. It is essential to consider user and librarian feedback when assessing the extent to which the library website has improved library services.
3. The usability and quality of library websites must take into account requirements for attaining international standards.
4. Further research could be conducted to determine of mobile app technology implementation procedure, its obstacles, and how they can be overcome.

APPENDICES

APPENDIX –I

Central Universities of India (Source-<https://www.education.gov.in/central-universities>)

 Ministry of Education Government of India			
ABOUT US ▾ MINISTERS DEPARTMENTS ▾ DOCUMENTS & REPORTS STATISTICS ▾ INSTITUTIONS ▾ BOARDS ▾			
Institutions			
Home » Higher Education » Central Universities » Institutions			
Central Universities			
S.No.	Name of the Organisation	AISHE Code	Website
1	Allgarh Muslim University Allgarh-202 002	U-0496	http://www.amu.ac.in/
2	Assam University Silchar - 788011	U-0050	http://www.aus.ac.in/
3	Babasaheb Bhimrao Ambedkar University Vidya Vihar, Rae Bareilly Road, Lucknow - 226025	U-0498	http://www.bbau.ac.in/
4	Banaras Hindu University Varanasi-221005, U.P.	U-0500	http://www.bhu.ac.in/
5	Central University of Bihar BIT Campus, P.O.:B.V. College, Patna - 800 014	U-0062	http://www.cub.ac.in/
6	Central University of Gujarat 95/1, Sector-2A, Gandhinagar - 382007	U-0126	http://www.cug.ac.in/
7	Central University of Haryana Near Jant-Pali Village, District- Mahendergarh, Tehsil-Narnaul, Haryana	U-0158	http://www.cuh.ac.in/
8	Central University of Himachal Pradesh P.B.No.21, Dharamshala District Kangra, Himachal Pradesh - 176215	U-0178	http://www.cuhimachal.ac.in/
9	Central University of Jammu Rahya Suchani, Samba District, Bagla, Jammu and Kashmir 181143	U-0631	https://www.cujammu.ac.in/
10	Central University of Jharkhand 601, Maru Tower, Kanmke Road, Ranchi Jharkhand- 834008	U-0204	http://cuja.ac.in/
11	Central University of Karnataka II Floor, Karya Soudha, Gulbarga University, Gulbarga - 585106	U-0216	http://www.cuk.ac.in/
12	Central University of Kashmir Bagi-Hyder, Hyderpora, Srinagar - 190014	U-0193	http://www.cukashmir.ac.in/
13	Central University of Kerala Jlmanis, SP-16/375 Sreekrayam, Trivandrum - 695017	U-0252	http://www.cukerala.ac.in/
14	Central University of Orissa At - Landiguda, P.O. - Koraput, Dist. - Koraput, Orissa - 764021	U-0352	http://cuo.ac.in/
15	Central University of Punjab D-13, Civil Station, Bhatinda - 151001	U-0372	http://www.cup.ac.in/
16	Central University of Rajasthan Dist.Ajmer-305001, Rajasthan	U-0392	http://www.curaj.ac.in/
17	Central University of Tamil Nadu C/o Collectorate Annexe, Tiruvarur - 610 001	U-0449	http://www.cutn.ac.in/
18	Dr. Harisingh Gaur Vishwa Vidyalaya Sagar, Madhya Pradesh - 470 003	U-0271	http://www.dhsgsu.ac.in/
19	Guru Ghasidas Vishwavidyalaya Bilaspur, Chhatisgarh	U-0085	http://www.ggu.ac.in/
20	Hemvati Nandan Bahuguna Garhwal University Srinagar, Uttarakhand - 246174	U-0557	http://www.hnbgu.ac.in/
21	Indira Gandhi National Open University (IGNOU) IGNOU Complex, Maidan Garhi, New Delhi - 110068	U-0104	http://www.ignou.ac.in/
22	Indira Gandhi National Tribal University Amarkantak Madhya Pradesh	U-0290	http://www.igntu.ac.in/
23	Jamia Millia Islamia Jamia Nagar, New Delhi - 110025	U-0108	http://jmi.ac.in/
24	Jawaharlal Nehru University New Mehrauli Road, New Delhi - 110067	U-0109	http://www.jnu.ac.in/
25	Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya Vardha (Maharashtra) P.B.No.16, Panchitteeta, Arvi Road, Umri, Wardha - 442 001	U-0314	http://www.hindivishwa.org/
26	Manipur University Canchipur Imphal - 795003	U-0337	http://www.manipuruniv.ac.in/

27	Maulana Azad National Urdu University Achibowli Hyderabad - 500032	U-0023	http://www.manuu.ac.in/
28	Mizoram University P.B.No.190, Aizawl Mizoram- 796012	U-0345	http://www.mzu.edu.in/
29	Nagaland University Kohima, Nagaland - 797001	U-0347	http://nagalanduniversity.ac.in/
30	North Eastern Hill University Lower Lachumere, Shillong-793022	U-0341	http://www.nehu.ac.in/
31	Pondicherry University Puducherry-605014	U-0369	http://www.pondiuni.edu.in/
32	Rajiv Gandhi University Itanagar Arunachal Pradesh - 791112	U-0047	http://www.rgu.ac.in/
33	Sikkim University C/o Youth Hostel, 6th Mile, Tadong, Gangtok, Sikkim - 737102	U-0430	http://www.cus.ac.in/
34	Tezpur University Nappam, Dist. Sonitpur, Tezpur, Assam - 784 025	U-0056	http://www.tezu.ernet.in/
35	The English and Foreign Languages University O.U. Campus, Hyderabad - 500007	U-0041	http://www.efluniversity.ac.in/
36	Tripura University Suryamaninagar Agartala - 799130	U-0495	http://www.tripurauniv.in/
37	University of Allahabad Allahabad, Uttar Pradesh - 211002	U-0548	http://www.alluniv.ac.in/
38	University of Delhi Delhi-110007	U-0120	http://du.ac.in/
39	University of Hyderabad Hyderabad-500134	U-0042	http://www.uohyd.ac.in/
40	Visva Bharati Shanti Niketan, West Bengal - 731235	U-0589	http://www.visva-bharati.ac.in/
41	Mahatma Gandhi Central University PO-Motihari, Motihari, Bihar - 845401	U-0835	http://www.mgcub.ac.in/
42	Central Sanskrit University, Delhi 56-57, Institutional Area, Janakpuri, New Delhi-110058	U-0115	http://www.sanskrit.nic.in/
43	Shri Lal Bahadur Shastri National Sanskrit University New Delhi	U-0117	https://www.slbsrsv.ac.in/
44	National Sanskrit University LIC Road, Tirupati	U-0030	https://nsktu.ac.in/

Last Updated by admin on Friday, 29 July 2022 - 5:18pm

APPENDIX-II

ANX: 1- State-wise List (Source: (<https://www.education.gov.in/en/central-universities>))

SL. No.	Name of the University	State
1	Aligarh Muslim University (AMU)	Uttar Pradesh
2	Assam University (ASU)	Assam
3	Babasaheb Bhimrao Ambedkar University (BBAU)	Uttar Pradesh
4	Banaras Hindu University (BHU)	Uttar Pradesh
5	Central University of Bihar (CUB)	Bihar
6	Central University of Gujarat (CUG)	Gujarat
7	Central University of Haryana (CUH)	Haryana
8	Central University of Himachal Pradesh (CUHP)	Himachal Pradesh
9	Central University of Jammu (CUJ)	Jammu & Kashmir
10	Central University of Jharkhand (CUJH)	Jharkhand
11	Central University of Karnataka (CUKR)	Karnataka
12	Central University of Kashmir (CUKS)	Jammu & Kashmir
13	Central University of Kerala (CUK)	Kerala
14	Central University of Odisha (CUO)	Odisha
15	Central University of Punjab (CUP)	Punjab
16	Central University of Rajasthan (CUR)	Rajasthan
17	Central University of Tamil Nadu (CUTN)	Tamilnadu
18	Dr. Harisingh Gaur Vishwavidyalaya (HGV)	Madhya Pradesh
19	Guru Ghasidas Viswavidyalaya (GGV)	Chhattisgarh
20	Hemvati Nandan Bahuguna Garhwal University (HNBG)	Uttarakhand
21	Indira Gandhi National Open University (IGNOU)	Delhi
22	Indira Gandhi National Tribal University (IGNTU)	Madhya Pradesh
23	Jamia Millia Islamia (JMI)	Delhi
24	Jawaharlal Nehru University (JNU)	Delhi
25	Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya (MGHV)	Maharashtra
26	Manipur University (MNU)	Manipur
27	Maulana Azad National Urdu University (MANU)	Telangana
28	Mizoram University (MZU)	Mizoram

29	Nagaland University (NAU)	Nagaland
30	North-Eastern Hill University (NEHU)	Meghalaya
31	Pondicherry University (PCU)	Pondicherry
32	Rajiv Gandhi University (RGU)	Arunachal Pradesh
33	Sikkim University (SKU)	Sikkim
34	Tezpur University (TZU)	Assam
35	The English and Foreign Languages University (TFLU)	Telangana
36	Tripura University (TPU)	Tripura
37	University of Allahabad (UOA)	Uttar Pradesh
38	University of Delhi (UOD)	Delhi
39	University of Hyderabad (UOH)	Telangana
40	Visva Bharati (VBH)	West Bengal
41	Mahatma Gandhi Central University (MGCU)	Bihar
42	Central Sanskrit University (CSU)	Delhi
43	Shri Lal Bahadur Shastri National Sanskrit University (LNSU)	Delhi
44	National Sanskrit University (NSU)	Andhra Pradesh

ANX-2: URL addresses of the University

SL. No.	Name of the University	Library Website/ Webpage link
1	AligarhMuslim University (AMU)	https://www.amu.ac.in/libraries/maulana-azad-library
2	Assam University (ASU)	http://www.aus.ac.in/library/
3	Babasaheb Bhimrao Ambedkar University (BBAU)	https://www.gbl.bbau.ac.in/
4	Banaras Hindu University (BHU)	https://www.bhu.ac.in/Site/UnitHomeTemplate/1_3240_4531_Main-Site-Central-Library
5	Central University of Bihar (CUB)	https://www.cusb.ac.in/index.php/2016-07-01-04-53-58/2016-03-09-15-31-33/central-library
6	Central University of Gujarat (CUG)	http://library.cug.ac.in/drupal/
7	Central University of Haryana (CUH)	https://library.cuh.ac.in/
8	Central University of Himachal Pradesh (CUHP)	https://www.cuhimachal.ac.in/index.php/Facilities/library

9	Central University of Jammu (CUJ)	https://cujammu.ac.in/Default.aspx?option=article&type=single&id=35&mnuid=738&prvtyp=site
10	Central University of Jharkhand (CUJH)	http://cu.j.cuj.ac.in/library-cuj.php
11	Central University of Karnataka (CUKR)	http://cuklibrary.ac.in/
12	Central University of Kashmir (CUKS)	https://www.cukashmir.ac.in/displaydepartment.aspx?sid=74&did=36&pag=494
13	Central University of Kerala (CUK)	http://www.kulib.in/
14	Central University of Odisha (CUO)	http://library.cuo.ac.in
15	Central University of Punjab (CUP)	http://www.cup.edu.in/library.php
16	Central University of Rajasthan (CUR)	http://www.curaj.ac.in/library
17	Central University of Tamil Nadu (CUTN)	https://cutn.ac.in/central-library/
18	Dr. Harisingh Gaur Vishwavidyalaya (HGV)	http://www.dhsgsu.edu.in/index.php/en/admission/central-library
19	Guru Ghasidas Viswavidyalaya (GGV)	https://www.ggu.ac.in/CentralLibrary.aspx https://ggu.ac.in/gguold/central_library.html
20	Hemvati Nandan Bahuguna Garhwal University (HNBG)	http://www.hnbg.ac.in/library-srinagar-campus
21	Indira Gandhi National Open University (IGNOU)	http://www.ignou.ac.in/ignou/aboutignou/division/ldd/introduction
22	Indira Gandhi National Tribal University (IGNTU)	http://www.igntu.ac.in/clib.aspx
23	Jamia Millia Islamia (JMI)	https://www.jmi.ac.in/zhlibrary
24	Jawaharlal Nehru University (JNU)	http://lib.jnu.ac.in/
25	Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya (MGHV)	http://hindivishwa.org/contentdtl.aspx?category=13&cgid=34
26	Manipur University (MNU)	https://mulibrary.manipuruniv.ac.in/
27	Maulana Azad National Urdu University (MANU)	http://manuu.ac.in/Eng-Php/central_library.php
28	Mizoram University (MZU)	https://lib.mzu.edu.in/
29	Nagaland University (NAU)	https://library.nagalanduniversity.ac.in/

30	North-Eastern Hill University (NEHU)	http://library.nehu.ac.in/ https://www.nehu.ac.in/library/
31	Pondicherry University (PCU)	http://lib.pondiuni.edu.in/
32	Rajiv Gandhi University (RGU)	https://rgu.ac.in/library/ https://rgu.ac.in/library-home/
33	Sikkim University (SKU)	https://library.cus.ac.in/
34	Tezpur University (TZU)	http://www.tezu.ernet.in/Library/
35	The English and Foreign Languages University (TFLU)	https://www.efluniversity.ac.in/rameshlibrary.php
36	Tripura University (TPU)	https://www.tripurauniv.ac.in/Home/CentralLibraryIndex
37	University of Allahabad (UOA)	https://www.alluniv.ac.in/facilities/about1
38	University of Delhi (UOD)	http://crl.du.ac.in/
39	University of Hyderabad (UOH)	http://igmlnet.uohyd.ac.in:8000/
40	Visva Bharati (VBH)	http://visva-bharati-library.in/
41	Mahatma Gandhi Central University (MGCU)	https://mgcub.ac.in/library.php
42	Central Sanskrit University (CSU)	http://www.sanskrit.nic.in/section_library.php
43	Shri Lal Bahadur Shastri National Sanskrit University (LNSU)	https://www.slbsrsv.ac.in/library/about-library-0
44	National Sanskrit University (NSU)	https://nsktu.ac.in/index.php/about-library/

ANX-3: Availability of Library Website/Web Page

SL. No.	Name of the University	Separate Library Website	Separate Webpage	Total score
1	AMU	-	Yes	1
2	ASU	-	Yes	1
3	BBAU	Yes	-	2
4	BHU	-	Yes	1
5	CUB	-	Yes	1
6	CUG	-	Yes	1
7	CUH	Yes	-	2
8	CUHP	-	Yes	1
9	CUJ	-	Yes	1
10	CUJH	-	Yes	1
11	CUKR	Yes	-	2
12	CUKS	-	Yes	1
13	CUK	-	Yes	1
14	CUO	Yes	-	2

15	CUP	-	Yes	1
16	CUR	-	Yes	1
17	CUTN	-	Yes	1
18	HGV	-	Yes	1
19	GGV	-	Yes	1
20	HNBG	-	Yes	1
21	IGNOU	-	Yes	1
22	IGNTU	-	Yes	1
23	JMI	-	Yes	1
24	JNU	Yes	-	2
25	MGHV	-	Yes	1
26	MNU	Yes	-	2
27	MANU	-	1	1
28	MZU	Yes	-	2
29	NAU	-	1	1
30	NEHU	-	1	1
31	PCU	Yes	-	2
32	RGU	-	1	1
33	SKU	Yes	-	2
34	TZU	-	1	1
35	TFLU	-	1	1
36	TPU	-	1	1
37	UOA	-	1	1
38	UOD	Yes	-	2
39	UOH	-	1	1
40	VBH	Yes	-	2
41	MGCU	-	1	1
42	CSU	-	1	1
43	LNSU	-	1	1
44	NSU	-	1	1

ANX-4: URL of Homepage

SL. No.	Name of the University	Distinguish between Visited and Non- Visited Site	Total score
1	AMU	Yes	2
2	ASU	Yes	2
3	BBAU	Yes	2
4	BHU	Yes	2
5	CUB	Yes	2
6	CUG	Yes	2
7	CUH	Yes	2

8	CUHP	Yes	2
9	CUJ	Yes	2
10	CUJH	Yes	2
11	CUKR	Yes	2
12	CUKS	Yes	2
13	CUK	Yes	2
14	CUO	Yes	2
15	CUP	Yes	2
16	CUR	Yes	2
17	CUTN	Yes	2
18	HGV	Yes	2
19	GGV	Yes	2
20	HNBG	Yes	2
21	IGNOU	Yes	2
22	IGNTU	Yes	2
23	JMI	Yes	2
24	JNU	Yes	2
25	MGHV	Yes	2
26	MNU	Yes	2
27	MANU	Yes	2
28	MZU	Yes	2
29	NAU	Yes	2
30	NEHU	Yes	2
31	PCU	Yes	2
32	RGU	Yes	2
33	SKU	Yes	2
34	TZU	Yes	2
35	TFLU	Yes	2
36	TPU	Yes	2
37	UOA	Yes	2
38	UOD	Yes	2
39	UOH	Yes	2
40	VBH	Yes	2
41	MGCU	Yes	2
42	CSU	Yes	2
43	LNSU	Yes	2
44	NSU	Yes	2

ANX-5: Accessibility of Web Page

SL. No.	Name of the University	Direct Link on Parent Homepage	Link Under Facilities, Administration, Sections, Resources, Infrastructure, Divisions	Total score
1	AMU	Yes	-	2
2	ASU	Yes	-	2
3	BBAU	Yes	-	2
4	BHU	Yes	-	2
5	CUB	-	Yes(Infrastructure)	1
6	CUG	Yes	-	2
7	CUH	Yes	-	2
8	CUHP	Yes	-	2
9	CUJ		Yes(Facilities)	1
10	CUJH	Yes	-	2
11	CUKR	Yes	-	2
12	CUKS	Yes	-	2
13	CUK	-	Yes(Facilities)	1
14	CUO	-	Yes(Facilities)	1
15	CUP	Yes		2
16	CUR	-	Yes(Facilities)	1
17	CUTN	-	Yes(Facilities)	1
18	HGV	-	Yes(Amenities)	1
19	GGV	-	Yes(Amenities)	1
20	HNBG	-	Yes(Facilities)	1
21	IGNOU	-	Yes(Divisions)	1
22	IGNTU	Yes	-	2
23	JMI	Yes	-	2
24	JNU	Yes	-	2
25	MGHV		Yes(Facilities)	1

26	MNU	Yes		2
27	MANU	Yes		2
28	MZU		Yes(Facilities)	1
29	NAU	Yes		2
30	NEHU	Yes		2
31	PCU	Yes		2
32	RGU	Yes		2
33	SKU		Yes(Facilities)	1
34	TZU		Yes(Facilities)	1
35	TFLU	Yes		2
36	TPU	Yes		2
37	UOA		Yes(Facilities)	1
38	UOD	Yes		2
39	UOH		Yes(Facilities)	1
40	VBH	Yes		2
41	MGCU	Yes		2
42	CSU		Yes(Administration)	1
43	LNSU	Yes		2
44	NSU	Yes		2

ANX-6: Navigation

SL. No.	Name of the University	The page title appear in the top window bar	Institute home link on the library web page/ website	Title describes content or location in site structure	Total score
1	AMU	Yes	Yes	Yes	6
2	ASU	Yes	Yes	Yes	6
3	BBAU	Yes	Yes	Yes	6
4	BHU	Yes	Yes	Yes	6
5	CUB	Yes	Yes	Yes	6

6	CUG	Yes	Yes	Yes	6
7	CUH	Yes	Yes	Yes	6
8	CUHP	Yes	Yes	Yes	6
9	CUJ	Yes	Yes	Yes	6
10	CUJH	Yes	Yes	Yes	6
11	CUKR	Yes	Yes	Yes	6
12	CUKS	Yes	Yes	Yes	6
13	CUK	Yes	No	Yes	4
14	CUO	Yes	Yes	Yes	6
15	CUP	Yes	Yes	Yes	6
16	CUR	Yes	Yes	Yes	6
17	CUTN	Yes	Yes	Yes	6
18	HGV	Yes	Yes	Yes	6
19	GGV	Yes	Yes	Yes	6
20	HNBG	Yes	Yes	Yes	6
21	IGNOU	Yes	Yes	Yes	6
22	IGNTU	Yes	Yes	Yes	6
23	JMI	Yes	Yes	Yes	6
24	JNU	Yes	No	Yes	4
25	MGHV	Yes	Yes	Yes	6
26	MNU	Yes	Yes	Yes	6
27	MANU	Yes	Yes	Yes	6
28	MZU	Yes	Yes	Yes	6
29	NAU	Yes	Yes	Yes	6
30	NEHU	Yes	No	Yes	4
31	PCU	Yes	No	Yes	4
32	RGU	Yes	Yes	Yes	6
33	SKU	Yes	Yes	Yes	6
34	TZU	Yes	Yes	Yes	6
35	TFLU	Yes	Yes	Yes	6

36	TPU	Yes	Yes	Yes	6
37	UOA	Yes	Yes	Yes	6
38	UOD	Yes	No	Yes	4
39	UOH	Yes	Yes	Yes	6
40	VBH	Yes	Yes	Yes	6
41	MGCU	Yes	Yes	Yes	6
42	CSU	Yes	Yes	Yes	6
43	LNSU	Yes	Yes	Yes	6
44	NSU	Yes	Yes	Yes	6

ANX-7: Design Factor

SL. No.	Name of the University	View resolution	Browser compatibility	Page format is same	No. of visitors	Total score
1	AMU	No	No	Yes	Yes	4
2	ASU	No	No	Yes	No	2
3	BBAU	Yes	No	Yes	Yes	6
4	BHU	No	No	Yes	Yes	4
5	CUB	No	No	Yes	No	2
6	CUG	No	No	Yes	Yes	4
7	CUH	No	No	Yes	No	2
8	CUHP	No	No	Yes	No	2
9	CUJ	No	No	Yes	No	2
10	CUJH	No	No	Yes	No	2
11	CUKR	No	No	Yes	Yes	4
12	CUKS	No	No	Yes	No	2
13	CUK	No	No	Yes	No	2
14	CUO	Yes	No	Yes	No	4
15	CUP	No	No	Yes	No	2
16	CUR	No	No	Yes	No	2
17	CUTN	No	No	Yes	No	2

18	HGV	No	No	Yes	Yes	4
19	GGV	No	No	Yes	Yes	4
20	HNBG	No	No	Yes	Yes	4
21	IGNOU	No	No	Yes	Yes	4
22	IGNTU	No	No	Yes	Yes	4
23	JMI	No	No	Yes	Yes	4
24	JNU	No	No	Yes	No	2
25	MGHV	No	No	Yes	No	2
26	MNU	No	No	Yes	Yes	4
27	MANU	No	No	Yes	No	2
28	MZU	No	No	Yes	No	2
29	NAU	No	No	Yes	No	2
30	NEHU	No	No	Yes	No	2
31	PCU	No	No	Yes	Yes	4
32	RGU	No	No	Yes	No	2
33	SKU	No	No	Yes	No	2
34	TZU	No	No	Yes	Yes	4
35	TFLU	No	No	Yes	Yes	4
36	TPU	No	No	Yes	Yes	4
37	UOA	No	No	Yes	Yes	4
38	UOD	Yes	No	Yes	Yes	6
39	UOH	No	No	Yes	Yes	4
40	VBH	No	No	Yes	Yes	4
41	MGCU	No	No	Yes	Yes	4
42	CSU	No	No	Yes	No	2
43	LNSU	No	No	Yes	No	2
44	NSU	No	No	Yes	Yes	4

ANX-8: Site Description

SL. No.	Name of the University	Use graphics with text	Use animation with	Only text	Total score
1	AMU	Yes	No	No	2
2	ASU	Yes	No	No	2
3	BBAU	Yes	No	No	2
4	BHU	Yes	No	No	2
5	CUB	Yes	No	No	2
6	CUG	No	No	Yes	1
7	CUH	Yes	No	Yes	2
8	CUHP	No	No	Yes	1
9	CUJ	No	No	Yes	1
10	CUJH	No	No	Yes	1
11	CUKR	Yes	No	No	2
12	CUKS	No	No	Yes	1
13	CUK	No	No	Yes	1
14	CUO	No	No	Yes	1
15	CUP	No	No	Yes	1
16	CUR	Yes	No	No	2
17	CUTN	Yes	No	No	2
18	HGV	Yes	No	No	2
19	GGV	Yes	No	No	2
20	HNBG	No	No	Yes	1
21	IGNOU	No	No	Yes	1
22	IGNTU	No	No	Yes	1
23	JMI	No	No	Yes	1
24	JNU	No	No	Yes	1
25	MGHV	No	No	Yes	1
26	MNU	No	No	Yes	1
27	MANU	No	No	Yes	1

28	MZU	No	No	Yes	1
29	NAU	No	No	Yes	1
30	NEHU	Yes	No	No	2
31	PCU	Yes	No	No	2
32	RGU	No	No	Yes	1
33	SKU	Yes	No	No	2
34	TZU	Yes	No	No	2
35	TFLU	Yes	No	No	2
36	TPU	No	No	Yes	1
37	UOA	No	No	Yes	1
38	UOD	Yes	No	No	2
39	UOH	Yes	No	No	2
40	VBH	Yes	No	No	2
41	MGCU	Yes	No	No	2
42	CSU	No	No	Yes	1
43	LNSU	No	No	Yes	1
44	NSU	No	No	Yes	1

ANX-9: Content Writing

SL. No.	Name of the University	Site has not-found 404 page	Site free from spelling errors, spelling mistakes	Total score
1	AMU	Yes	Yes	4
2	ASU	Yes	Yes	4
3	BBAU	Yes	Yes	4
4	BHU	Yes	Yes	4
5	CUB	Yes	Yes	4
6	CUG	Yes	Yes	4
7	CUH	Yes	Yes	4
8	CUHP	Yes	Yes	4
9	CUJ	Yes	Yes	4

10	CUJH	Yes	Yes	4
11	CUKR	Yes	Yes	4
12	CUKS	Yes	Yes	4
13	CUK	Yes	Yes	4
14	CUO	Yes	Yes	4
15	CUP	Yes	Yes	4
16	CUR	Yes	Yes	4
17	CUTN	Yes	Yes	4
18	HGV	Yes	Yes	4
19	GGV	Yes	Yes	4
20	HNBG	Yes	Yes	4
21	IGNOU	Yes	Yes	4
22	IGNTU	Yes	Yes	4
23	JMI	Yes	Yes	4
24	JNU	Yes	Yes	4
25	MGHV	Yes	Yes	4
26	MNU	Yes	Yes	4
27	MANU	Yes	Yes	4
28	MZU	Yes	Yes	4
29	NAU	Yes	Yes	4
30	NEHU	Yes	Yes	4
31	PCU	Yes	Yes	4
32	RGU	Yes	Yes	4
33	SKU	Yes	Yes	4
34	TZU	Yes	Yes	4
35	TFLU	Yes	Yes	4
36	TPU	Yes	Yes	4
37	UOA	Yes	Yes	4
38	UOD	Yes	Yes	4
39	UOH	Yes	Yes	4

40	VBH	Yes	Yes	4
41	MGCU	Yes	Yes	4
42	CSU	Yes	Yes	4
43	LNSU	Yes	Yes	4
44	NSU	Yes	Yes	4

ANX-10: Language

SL. No.	Name of the University	One language	Two language	More than two language	Total score
1	AMU	-	-	Yes	2.5
2	ASU	-	Yes	-	2
3	BBAU	-	Yes	-	2
4	BHU	Yes	-	-	1
5	CUB	Yes	-	-	1
6	CUG	Yes	-	-	1
7	CUH	-	-	Yes	2.5
8	CUHP	Yes	-	-	1
9	CUJ	Yes	-	-	1
10	CUJH	Yes	-	-	1
11	CUKR	-	-	Yes	2.5
12	CUKS	-	Yes	-	2
13	CUK	-	Yes	-	2
14	CUO	-	Yes	-	2
15	CUP	-	Yes	-	2
16	CUR	-	Yes	-	2
17	CUTN	-	-	Yes	2.5
18	HGV	-	Yes	-	2
19	GGV	-	Yes	-	2
20	HNBG	-	Yes	-	2

21	IGNOU	Yes	-	-	1
22	IGNTU	Yes	-	-	1
23	JMI	-	-	Yes	2.5
24	JNU	Yes	-	-	1
25	MGHV	-	Yes	-	2
26	MNU	-	-	Yes	2.5
27	MANU	-	-	Yes	2.5
28	MZU	Yes	-	-	1
29	NAU	Yes	-	-	1
30	NEHU	Yes	-	-	1
31	PCU	Yes	-	-	1
32	RGU	Yes	-	-	1
33	SKU	Yes	-	-	1
34	TZU	-	Yes	-	2
35	TFLU	-	Yes	-	2
36	TPU	-	Yes	-	2
37	UOA	-	Yes	-	2
38	UOD	Yes	-	-	1
39	UOH	Yes	-	-	1
40	VBH	Yes	-	-	1
41	MGCU	-	Yes	-	2
42	CSU	-	-	Yes	2.5
43	LNSU	-	-	Yes	2.5
44	NSU	-	Yes	-	2

ANX-11: Statement of Responsibility

SL. No.	Name of the University	Postal Address	Phone No.	Fax No.	Email. Address	Separate Contact Link	Total score
1	AMU	Yes	Yes	No	Yes	Yes	8
2	ASU	Yes	Yes	Yes	Yes	Yes	10
3	BBAU	Yes	Yes	No	Yes	Yes	8
4	BHU	Yes	Yes	Yes	Yes	Yes	10
5	CUB	Yes	Yes	Yes	Yes	Yes	10
6	CUG	No	Yes	No	Yes	Yes	6
7	CUH	Yes	Yes	No	Yes	Yes	8
8	CUHP	Yes	Yes	Yes	Yes	Yes	10
9	CUJ	No	No	No	No	Yes	2
10	CUJH	No	No	No	Yes	Yes	4
11	CUKR	Yes	Yes	No	Yes	Yes	8
12	CUKS	Yes	Yes	Yes	Yes	Yes	10
13	CUK	Yes	Yes	No	Yes	Yes	8
14	CUO	Yes	Yes	No	Yes	Yes	8
15	CUP	Yes	No	No	No	No	2
16	CUR	No	No	No	No	Yes	2
17	CUTN	Yes	Yes	No	Yes	Yes	8
18	HGV	Yes	No	No	No	Yes	4
19	GGV	No	No	No	No	Yes	2
20	HNBG	No	Yes	No	Yes	Yes	6
21	IGNOU	Yes	Yes	No	Yes	Yes	8
22	IGNTU	Yes	Yes	No	Yes	Yes	8
23	JMI	Yes	Yes	Yes	Yes	Yes	10
24	JNU	No	No	No	No	No	0
25	MGHV	No	No	No	No	No	0
26	MNU	Yes	Yes	No	Yes	No	6
27	MANU	No	Yes	No	Yes	Yes	6

28	MZU	No	Yes	Yes	Yes	Yes	8
29	NAU	Yes	No	No	Yes	Yes	6
30	NEHU	Yes	Yes	No	Yes	No	6
31	PCU	Yes	Yes	Yes	Yes	No	8
32	RGU	No	No	No	No	No	0
33	SKU	Yes	Yes	No	Yes	No	6
34	TZU	Yes	Yes	Yes	Yes	No	8
35	TFLU	Yes	Yes	No	No	Yes	6
36	TPU	Yes	Yes	Yes	Yes	Yes	10
37	UOA	Yes	Yes	No	Yes	No	6
38	UOD	Yes	Yes	No	Yes	No	6
39	UOH	Yes	Yes	No	Yes	Yes	8
40	VBH	Yes	Yes	Yes	Yes	Yes	10
41	MGCU	Yes	Yes	No	Yes	Yes	8
42	CSU	No	No	No	Yes	No	2
43	LNSU	Yes	Yes	No	Yes	No	6
44	NSU	No	No	No	No	No	0

ANX-12: Webpage Aids and Tools

SL. No.	Name of the University	Feedback form/ mail Link	Search Option	Sitemap	FAQs	Total score
1	AMU	Yes	No	No	No	2
2	ASU	No	No	Yes	Yes	4
3	BBAU	Yes	Yes	No	No	4
4	BHU	No	Yes	No	No	2
5	CUB	No	No	Yes	No	2
6	CUG	No	Yes	No	No	2
7	CUH	Yes	Yes	No	No	4
8	CUHP	Yes	No	Yes	Yes	6

9	CUJ	Yes	Yes	No	No	4
10	CUJH	No	No	No	No	0
11	CUKR	Yes	Yes	No	No	4
12	CUKS	Yes	Yes	No	No	4
13	CUK	No	Yes	No	No	2
14	CUO	Yes	Yes	No	No	4
15	CUP	No	Yes	No	No	2
16	CUR	No	Yes	No	No	2
17	CUTN	No	Yes	No	No	2
18	HGV	No	Yes	No	No	2
19	GGV	No	No	No	No	0
20	HNBG	No	Yes	No	No	2
21	IGNOU	No	No	No	Yes	2
22	IGNTU	No	Yes	No	No	2
23	JMI	Yes	Yes	No	No	4
24	JNU	No	Yes	No	Yes	4
25	MGHV	No	Yes	No	No	2
26	MNU	Yes	Yes	No	No	4
27	MANU	No	No	No	Yes	2
28	MZU	No	Yes	No	No	2
29	NAU	No	No	No	Yes	2
30	NEHU	No	Yes	No	Yes	4
31	PCU	No	No	No	No	0
32	RGU	No	Yes	No	No	2
33	SKU	No	Yes	No	No	2
34	TZU	Yes	Yes	No	Yes	6
35	TFLU	No	Yes	No	Yes	4
36	TPU	Yes	Yes	No	Yes	6
37	UOA	No	Yes	No	No	2
38	UOD	No	Yes	No	No	2

39	UOH	No	Yes	No	Yes	4
40	VBH	No	Yes	Yes	Yes	6
41	MGCU	No	Yes	No	No	2
42	CSU	No	No	No	No	0
43	LNSU	No	No	No	No	0
44	NSU	No	Yes	No	No	2

ANX-13: Authority Details

SL. No.	Name of the University	Copyright Information	Maintenance Information	Designed and Developed	RTI Information	Total score
1	AMU	Yes	No	Yes	Yes	6
2	ASU	Yes	No	Yes	No	4
3	BBAU	Yes	No	Yes	No	4
4	BHU	No	No	No	No	0
5	CUB	No	No	No	No	0
6	CUG	Yes	No	Yes	No	4
7	CUH	Yes	Yes	No	No	4
8	CUHP	Yes	Yes	No	No	4
9	CUJ	Yes	No	No	No	2
10	CUJH	Yes	No	No	No	2
11	CUKR	Yes	No	No	No	2
12	CUKS	Yes	No	No	No	2
13	CUK	Yes	Yes	No	No	4
14	CUO	Yes	No	No	No	2
15	CUP	Yes	No	No	No	2
16	CUR	Yes	No	No	No	2
17	CUTN	Yes	No	No	No	2
18	HGV	Yes	No	Yes	No	4
19	GGV	Yes	No	No	No	2
20	HNBG	Yes	No	No	No	2

21	IGNOU	No	No	No	No	0
22	IGNTU	Yes	No	Yes	0	4
23	JMI	Yes	No	Yes	No	4
24	JNU	Yes	No	No	No	2
25	MGHV	Yes	No	Yes	0	4
26	MNU	No	No	No	No	0
27	MANU	Yes	No	No	No	2
28	MZU	Yes	No	No	No	2
29	NAU	Yes	No	No	No	2
30	NEHU	Yes	No	Yes	No	4
31	PCU	Yes	No	No	No	2
32	RGU	Yes	No	No	No	2
33	SKU	Yes	No	Yes	No	4
34	TZU	Yes	No	No	No	2
35	TFLU	Yes	No	No	No	2
36	TPU	Yes	No	Yes	No	4
37	UOA	Yes	No	No	No	2
38	UOD	Yes	No	No	No	2
39	UOH	Yes	No	No	No	2
40	VBH	Yes	No	Yes	No	4
41	MGCU	No	No	No	No	0
42	CSU	Yes	No	No	No	2
43	LNSU	Yes	Yes	No	No	4
44	NSU	Yes	No	No	No	2

ANX-14: Currency

SL. No.	Name of the University	Date of updation	Web page has been updated in the past three months	Mentioned present date	Total score
1	AMU	Yes	No	No	2
2	ASU	No	No	No	0
3	BBAU	Yes	No	No	2
4	BHU	Yes	No	No	2
5	CUB	No	No	No	0
6	CUG	No	No	No	0
7	CUH	No	No	No	0
8	CUHP	No	No	No	0
9	CUJ	No	No	No	0
10	CUJH	No	No	No	0
11	CUKR	No	No	No	0
12	CUKS	No	No	No	0
13	CUK	No	No	No	0
14	CUO	No	No	No	0
15	CUP	No	No	No	0
16	CUR	No	No	No	0
17	CUTN	No	No	No	0
18	HGV	Yes	No	No	2
19	GGV	No	No	No	0
20	HNBG	Yes	No	No	2
21	IGNOU	Yes	No	No	2
22	IGNTU	No	No	No	0
23	JMI	No	No	No	0
24	JNU	No	No	No	0
25	MGHV	No	No	No	0

26	MNU	No	No	No	0
27	MANU	No	No	No	0
28	MZU	No	No	No	0
29	NAU	No	No	No	0
30	NEHU	No	No	No	0
31	PCU	Yes	No	No	2
32	RGU	Yes	No	No	2
33	SKU	Yes	No	No	2
34	TZU	No	No	No	0
35	TFLU	No	No	No	0
36	TPU	No	No	No	0
37	UOA	No	No	No	0
38	UOD	Yes	No	No	2
39	UOH	Yes	No	No	2
40	VBH	No	No	No	0
41	MGCU	Yes	No	No	2
42	CSU	No	No	No	0
43	LNSU	Yes	No	No	2
44	NSU	No	No	No	0

Note- In ANX No. 15, 17,18,19 20,21,22, 23 and 24, the serial name of the universities are given below-

1) Aligarh Muslim University, 2) Assam University, 3) Babasaheb Bhimrao Ambedkar University, 4) Banaras Hindu University, 5) Central University of Bihar, 6) Central University of Gujrat, 7) Central University of Haryana, 8) Central University of Himachal Pradesh, 9) Central University of Jammu, 10) Central University of Jharkhand, 11) Central University of Karnataka, 12) Central University of Kashmir, 13) Central University of Kerala, 14) Central University of Odisha, 15) Central University of Punjab, 16) Central University of Rajasthan, 17) Central University of Tamil Nadu, 18) Dr. Harisingh Gaur Vishwavidyalaya, 19) Guru Ghasidas Viswavidyalaya, 20) Hemvati Nandan Bahuguna Garhwal University, 21) Indira Gandhi National Open University, 22) Indira Gandhi National Tribal University, 23) Jamia Millia Islamia, 24) Jawaharlal Nehru University, 25) Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, 26) Manipur University, 27) Maulana Azad National Urdu University, 28) Mizoram University, 29) Nagaland University, 30) North-Eastern Hill University, 31) Pondicherry University, 32) Rajiv Gandhi University, 33) Sikkim University, 34) Tezpur University, 35) The English and Foreign Languages University, 36) Tripura University, 37) University of Allahabad, 38) University of Delhi, 39) University of Hyderabad, 40) Visva Bharati, 41) Mahatma Gandhi Central University, 42) Central Sanskrit University, 43) Shri Lal Bahadur Shastri National Sanskrit University, 44) National Sanskrit University

ANX-15: General Information

Criteria	*a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	aa	ab	ac	ad	ae	af	ag	Total score
**1	y	y	y	y	y	y	-	y	y	y	-	-	-	-	-	-	-	-	y	y	y	y	y	y	y	y	y	-	-	-	-	y	-	33
2	y	y	y	y	y	y	-	y	y	y	y	y	-	-	-	-	y		y	-	-	y	-	-	y	y	y	-	-	-	y	-	-	31
3	y	y	y	y	y	y	y	y	y	y	-	y	-	-	-	-	y	-	y	-	y	-	-	-	y	-	y	-	-	-	y	-	y	32.5
4	y	y	y	y	y	y	-	y	y	y	-	y	-	-	-	-	y	-	-	-	-	-	-	-	y	-	y	-	-	-	y	-	-	24.5
5	y	y	y	y	y	y	-	y	y	y	-	y	-				y	-	-	-	y	-	-	-	y	-	y	-	-	-	y	-	y	28.5
6	y	y	y	y	y	y	-	y	y	y	y	-	-	-	-	-	y	-	-		y	-	-	-	y	-	y	-	-	-	-	-	-	24.5
7	y	y	y	-	y	y	-	y	y	y	-	-	-	-	-		-	-	y	y	y	y	Y	-	y	-	y	-	y	-	y	-	-	29
8	y	y	y	y	-	y	-	-	-	-	-	-	-	-	-	-	-	-	-		y	-	-	-	-	-	-	-	-	-	-	-	-	12
9	y	y	y	y	y	y	-	y	y	y	-	-	-	-	-	-	-	-	-	-	y	-	-	-	-	-	y	-	-	-	y	-	-	20.5
10	y	y	y	y	y	y	-	y	y	y	-	-	-	-	-	-	-	-	-	-	y	-	-	-	-	-	y	-	-	-	y	-	y	22.5
11	y	y	y	y	y	y	-	y	y	y	-	-	-	y	y	-	y	-	y	-	y	-	-	-	y	-	y	-	y	y	y	-	y	33.5
12	y	y	y	y	y	y	-	-	-	-	-	-	-	-	-	-	y	-	y		y	-	-	-	y	-	y	-	y	y	y	-	-	23.5
13	y	y	y	y	y	y	y	y	y	y	-	-	-	-	-	-	y	y	y	-	y	-	-	-	y	-	y	-	-	-	y	-	-	30.5
14	y	y	y	y	y	y	-	y	y	y	-	y	-	-	-	-	y	-	-	-	-	-	-	-	-	-	-	-	-	-	y	-	-	22
15	y	y	y	y	y	y	-	y	y	y	-	-	-	y	-	-	y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
16	y	y	y	y	y	y	-	y	y	y	-	-	-	-	-	-	y	y	y	-	y	-	-	-	y	-	y	-	-	-	-	-	-	26.5
17	y	y	y	y	y	y	y	y	y	y	-	-	-	-	y	-	y	y	y	-	y	-	-	-	y	-	y	-	-	-	-	-	y	32.5
18	y	y	y	y	-	-	-	y	y	y	-	-	-	-	-	-	-	y	-	-	y	-	-	-	-	-	-	-	-	-	y	-	-	18
19	y	y	y	y	y	y	-	y	y	y	-	-	-	-	-	-	-	y	-	-	y	-	-	-	-	-	-	-	-	-	-	-	-	20
20	y	y	y	y	y	y	-	y	y	y	-	-	-	-	-	-	y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18
21	y	y	y	y	y	y	-	y	y	y	-	-	-	-	-	-	y	-	y	-	y	-	-	-	y	-	y	Y	Y	y	y	-	-	28
22	y	y	y	y	y	y	-	y	y	y	-	-	-	-	-	-	y	-	-	-	y	-	-	-	-	-	-	-	-	-	y	-	-	22
23	y	y	y	y	y	y	-	y	y	y	-	-	-	-	-	-	y	-	y	-	y	-	-	-	y	-	y	y	-	-	y	-	-	27
24	y	y	y	y	y	y	-	y	y	y	-	y	-	y	-	-	y	y	y	y	y	y	-	-	y	-	y	y	-	-	y	-	y	39

ANX-16: Library Resources

SL. No.	Name of the University	Info. about library resources	Hyperlink of Web OPAC/ Online Catalogue	Information of Web OPAC/ Online Catalogue	Information of bibliographic database	Total score
1	AMU	Yes	Yes	Yes	Yes	8
2	ASU	Yes	Yes	Yes	Yes	8
3	BBAU	Yes	Yes	Yes	Yes	8
4	BHU	Yes	Yes	Yes	Yes	8
5	CUB	Yes	No	No	No	2
6	CUG	Yes	Yes	Yes	Yes	8
7	CUH	Yes	Yes	Yes	Yes	8
8	CUHP	Yes	Yes	Yes	Yes	8
9	CUJ	Yes	Yes	Yes	Yes	8
10	CUJH	Yes	Yes	Yes	Yes	8
11	CUKR	Yes	Yes	Yes	Yes	8
12	CUKS	Yes	Yes	Yes	Yes	8
13	CUK	Yes	Yes	Yes	Yes	8
14	CUO	Yes	Yes	Yes	Yes	8
15	CUP	Yes	Yes	Yes	Yes	8
16	CUR	Yes	Yes	Yes	Yes	8
17	CUTN	Yes	Yes	Yes	Yes	8
18	HGV	Yes	Yes	Yes	Yes	8
19	GGV	Yes	Yes	Yes	Yes	8
20	HNBG	Yes	Yes	Yes	Yes	8
21	IGNOU	Yes	Yes	Yes	Yes	8
22	IGNTU	Yes	Yes	Yes	Yes	8
23	JMI	Yes	Yes	Yes	Yes	8
24	JNU	Yes	Yes	Yes	Yes	8
25	MGHV	Yes	Yes	Yes	Yes	8

26	MNU	Yes	Yes	Yes	Yes	8
27	MANU	Yes	Yes	Yes	Yes	8
28	MZU	Yes	Yes	Yes	Yes	8
29	NAU	Yes	Yes	Yes	Yes	8
30	NEHU	Yes	Yes	Yes	Yes	8
31	PCU	Yes	Yes	Yes	Yes	8
32	RGU	Yes	Yes	Yes	Yes	8
33	SKU	Yes	Yes	Yes	Yes	8
34	TZU	Yes	Yes	Yes	Yes	8
35	TFLU	Yes	Yes	Yes	Yes	8
36	TPU	Yes	Yes	Yes	Yes	8
37	UOA	Yes	Yes	Yes	Yes	8
38	UOD	Yes	Yes	Yes	Yes	8
39	UOH	Yes	Yes	Yes	Yes	8
40	VBH	Yes	Yes	Yes	Yes	8
41	MGCU	Yes	Yes	Yes	Yes	8
42	CSU	Yes	No	No	No	2
43	LNSU	Yes	Yes	Yes	Yes	8
44	NSU	Yes	No	No	No	2

ANX-17: Library Collections

Criteria	*a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	Total score
**1	y	y	y	y	y	-	-	-	-	-	-	-	-	-	y	-	-	y	5
2	y	y	y	y	y	y	y	y	-	y	y	-	-	-	-	-	-	-	6.5
3	y	y	y	y	y	y	y	y	y	-	-	-	-	-	-	-	-	-	6
4	y	y	y	y	-	y	y	y	-	y	-	-	-	-	y	-	-	-	6
5	y	y	y	y	-	y	y	y	-	y	-	-	-	-	-	-	-	-	5.5
6	y	y	y	y	-	y	v	-	y	-	-	-	-	-	-	-	-	-	5
7	y	y	y	y	-	y	y	y	-	-	-	-	-	-	-	-	-	-	5
8	y	y	y	y	-	y	v	y	-	-	y	-	-	-	-	-	-	-	5.5
9	y	y	y	y	-	y	y	-	-	-	y	-	-	-	-	-	-	-	5
10	y	y	y	y	-	y	v	-	-	y	-	-	-	-	-	-	-	-	5
11	y	y	y	y	y	y	y	-	y	y	-	y	-	-	y	-	-	-	7
12	y	y	y	y	y	y	v	-	-	-	-	-	-	-	y	-	-	-	5.5
13	y	y	y	y	y	y	v	y	-	-	-	-	-	-	-	-	-	-	5.5
14	y	y	y	y	-	y	v	v	-	-	-	y	-	-	-	-	-	-	5.5
15	y	y	y	y	y	y	v	y	y	-	-	y	-	-	y	-	-	-	7
16	y	y	y	y	y	v	y	v	-	-	-	y	-	-	y	-	-	-	6.5
17	y	y	y	y	y	y	y	-	-	-	-	y	-	-	-	y	-	-	6
18	y	y	y	y	-	y	y	y	y	-	-	-	-	-	-	-	-	-	5.5
19	y	y	y	y	y	y	y	y	-	-	-	-	-	-	-	-	-	-	5.5
20	y	y	y	y	-	y	y	y	y	-	-	-	-	-	-	-	-	-	5.5
21	y	y	y	y	y	y	y	-	-	-	-	-	-	-	-	-	-	-	5
22	y	y	y	y	-	y	y	-	-	-	-	-	-	-	-	-	-	-	4.5
23	y	y	y	y	y	y	y	y	-	-	-	-	-	-	y	-	-	-	6
24	y	y	y	y	y	y	v	y	-	y	y	y	-	-	y	-	-	-	7.5
25	y	y	y	y	-	y	y	y	-	-	-	-	-	-	-	-	-	-	5
26	y	y	y	y	-	y	y	-	-	-	-	-	-	-	-	-	-	-	4.5
27	y	y	y	y	-	v	y	-	-	-	-	-	-	-	-	-	-	-	4.5
28	y	y	y	y	y	y	y	-	y	y	-	-	-	-	-	-	-	-	6
29	y	y	y	y	y	y	y	-	y	y	-	-	-	-	-	-	-	-	6
30	y	y	y	y	-	y	-	y	-	-	-	-	-	-	-	-	-	-	4.5
31	y	y	y	y	-	v	y	y	-	-	-	-	-	-	-	-	-	-	5

32	y	y	y	y	-	y	y	v	-	-	-	-	-	-	-	-	-	-	5
33	y	y	y	y	-	y	y	v	y	-	-	-	-	-	-	y	-	-	6
34	y	y	y	y	y	v	y	-	-	-	y	y	-	-	y	-	-	-	6.5
35	y	y	y	y	-	v	y	-	-	-	-	-	-	-	-	-	-	-	4.5
36	y	y	y	y	-	v	y	-	y	-	-	-	-	-	-	-	-	-	5
37	y	y	y	y	y	-	y	y	-	-	-	-	-	-	y	-	-	-	5.5
38	y	y	y	y	y	-	y	-	y	-	y	y	-	-	y	-	-	-	6.5
39	y	y	y	y	y	-	y	-	y	-	-	-	-	-	-	-	-	-	5
40	y	y	y	y	-	-	y	-	-	-	-	-	-	-	-	-	-	-	4
41	y	y	y	y	-	-	y	-	-	-	-	-	-	-	y	-	-	-	4.5
42	y	y	y	y	-	-	y	-	-	-	-	-	-	-	-	-	-	-	4
43	y	y	y	y	-	-	y	-	-	-	-	-	-	-	-	-	-	-	4
44	y	y	y	y	-	-	y	-	-	-	-	-	-	-	-	-	-	-	4

Note-a) library collections, b) books, c) journals, d) reference sources, e) manuscripts, f) thesis/dissertations, g) newspaper/magazines, h) conference proceedings, i) monographs, j) archives, k) audio-visual material, l) CD/DVDs/CDROM, m) microforms, n) microfilms, o) newsletters, p) patents, q) standards, r) rare books

ANX-18: Library Services

Criteria	*a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	Total score
**1	y	y	y	-	-	y	y	-	y	y	-	y	y	-	y	y	y	-	-	-	y	-	-	8
2	y	y	y	-	-	y	-	-	y	y	y	-	-	-	y	y	-	-	-	-	y	y	-	7
3	y	Y	y	-	-	y	-	-	y	y	y	-	-	-	y	-	-	-	-	-	-	-	-	5.5
4	y	Y	v	-	-	y	y	-	y	v	y	-	-	-	y	y	-	-	-	-	-	-	-	6.5
5	y	Y	y	-	-	y	y	-	y	y	y	-	-	-	-	y	-	-	-	-	-	-	-	6
6	y	Y	y	-	-	y	y	-	y	y	y	-	-	-	-	-	-	-	-	-	-	-	-	5.5
7	y	Y	y	-	-	-	-	-	y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5
8	y	Y	y	-	-	y	-	-	y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
9	y	Y	y	-	-	y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5
10	y	Y	y	-	-	y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
11	y	Y	y	-	-	y	-	-	-	-	-	-	-	-	-	y	-	-	-	-	-	-	-	4
12	y	Y	y	-	-	y	-	-	-	-	-	-	-	-	-	y	-	-	-	-	-	-	y	4.5
13	y	Y	y	-	-	y	y	-	y	-	-	-	-	-	-	y	-	-	-	-	-	-	-	5

display, s) online book renewal, t) online book reservation, u) CCTV, v) QR-Code, w) SMS alert system.

ANX-19: E-Resources

Criteria	*a	b	c	d	e	f	g	h	i	j	k	l	Total score
**1	y	y	y	y	-	y	-	-	-	y	y	-	5
2	y	y	y	y	y	y	-	-	-	y	y	-	5.5
3	y	y	y	y	y	y	-	-	-	-	y	-	5
4	Y	y	y	y	-	y	-	-	-	-	-	-	4
5	y	y	y	-	-	-	-	-	-	-	-	-	3
6	Y	Y	y	-	-	-	-	-	-	-	-	-	3
7	y	y	y	y	y	y	-	-	-	-	-	-	4.5
8	y	y	y	y	y	y	-	-	-	-	-	-	4.5
9	y	y	y	y	y	y	-	-	-	-	-	-	4.5
10	y	y	y	-	-	-	-	-	-	-	-	-	2.5
11	y	y	y	y	y	y	-	-	-	-	y	-	5
12	y	y	y	y	y	y	-	-	-	-	y	-	5
13	y	y	y	y	y	y	y	-	-	-	y	-	5.5
14	y	y	-	-	-	-	-	-	-	-	-	-	2.5
15	y	y	y	y	-	-	-	-	-	-	-	-	3.5
16	y	y	y	y	-	-	-	-	y	-	-	-	4
17	y	y	y	y	y	y	-	y	-	-	-	-	5
18	y	y	y	y	y	-	-	-	-	-	y	-	4.5
19	y	y	y	y	y	y	-	-	-	-	y	-	5
20	y	y	y	y	y	y	-	-	-	-	y	-	5
21	y	y	y	y	y	-	-	-	-	-	-	-	4
22	y	y	y	y	-	-	-	-	-	-	-	-	3.5
23	y	y	y	y	-	-	-	y	-	-	y	-	4.5
24	y	y	y	y	y	y	-	-	-	-	-	-	4.5
25	y	y	y	y	y	-	-	-	-	-	-	-	4
26	y	y	y	y	-	-	-	-	-	-	y	-	4
27	y	y	y	y	y	-	-	-	-	-	-	-	4
28	y	y		y	-	-	-	-	-	-	y	-	3.5
29	y	y	y	y	-	-	-	-	-	-	y	-	4
30	y	y	y	y	y	-	-	-	-	-	y	-	4.5

31	y	y	y	y	y	-	-	-	-	-	y	-	4.5
32	y	y	y	y	y	-	-	-	-	-	y	y	5
33	y	y	y	-	-	-	-	-	-	-	-	-	3
34	y	y	y	y	y	-	-	-	-	-	-	-	4
35	y	y	y	y	y	-	-	-	-	-	-	-	4
36	y	y	y	y	y	y	-	-	-	-	y	-	5
37	y	y	y	y	y	y	-	-	-	-	y	y	5.5
38	y	y	y	y	y	y	-	-	-	-	y	-	5
39	y	y	y	y	y	y	y	-	-	-	y	-	5.5
40	y	y	y	y	y	y	-	y	-	-	y	-	5.5
41	y	y	y	y	-	-	-	y	-	-	-	-	4
42	y	y	y	y	-	-	-	y	-	-	-	y	4.5
43	y	y	y	y	-	y	-	y	-	-	y	-	5
44	-	-	-	-	-	-	-	-	-	-	-	-	0

Note- a) e-resource, b) e-journal, c) e-book, d) e-database, e) e-thesis & dissertations, f) institutional repository, g) e-question paper, h) online newspaper, i) MOOC, j) links to library networks, k) library consortium, l) e-newsletter

ANX-20: Library Sections

Criteria	*a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	Total score
**1	y	-	-	-	-	-	-	-	-	-	-	-	-	y	-	-	2.5
2	y	y	y	y	y	-	-	-	-	-	-	-	-	-	-	-	4
3	y	-	y	-	-	-	-	-	-	-	-	-	-	y	-	y	3.5
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
6	y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	y	2.5
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11	y	y	y	y	y	-	y	y	-	-	-	-	-	-	-	-	5
12	y		y	-	-	-	-	-	-	-	y	-	-	-	-	-	3
13	y	y	y	y	y	-	y	y	-	y	-	-	-	-	-	-	5.5
14	y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	y	2.5

15	y	-	-	-	-	-	-	-	-	-	y	-	-	-	-	-	y	3
16	y	y	y	y	y	-	-	-	-	-	y	-	-	-	-	-	-	4.5
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21	y	y	y	y	y	-	-	-	-	-	-	-	-	-	-	-	-	4
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
23	Y	-	Y	-	-	-	-	-	-	-	y	-	-	-	y	-	-	3.5
24	y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	y	2.5
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
27	y	-	y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5
28	y	y	y	y	y	-	-	-	-	-	y	-	-	-	-	-	-	4.5
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
31	y	y	y	y	y	-	-	-	-	y	-	-	-	-	y	y	y	6
32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
34	y	y	y	y	y	y	-	-	-	-	-	-	-	-	-	-	-	4.5
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
40	y	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	y	2.5
41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

Note- a) section information ,b) periodical section, c) circulation section, d) acquisition section, e) technical processing section, f) digital library section, g) book bank section, h) stack section, i) reprographic/photocopy section, j) reference & readers advisory section, k) automation section, l) administration, m) common room, n) study room, o) meeting room, p) braille section

ANX-21: Web2.0: Tools

Criteria	*a	b	c	d	e	f	g	h	i	j	k	l	m	n	Total score
**1	y	-	y	y	y	-	-	-	-	-	-	-	-	-	3.5
2	y	-	y	y	y	-	y	y	-	-	-	-	-	-	4.5
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
6	y	-	-	-	-	y	-	-	-	-	-	-	-	-	2.5
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13	y	-	-	-	-	y	-	-	-	-	-	-	-	-	0
14	y	-	y	-	y	-	-	-	-	-	-	-	-	-	3
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
34	y	-	y	y	y	-	-	y	-	-	-	-	-	-	4
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
39	y	-	-	-	-	y	-	-	-	-	-	-	-	-	2.5
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

Note- a) web 2.0, b) rss, c) facebook, d) youtube, e) twitter, f) blog, g) linkedin, h) google+ i) wiki, j) instagram, k) researchgate, l) pinterest, m) skype and n) other sections.

ANX-22: Events

Criteria	*a	b	c	d	e	f	g	Total score
**1	y	y	y	y	-	-	y	4
2	y	y	y	-	-	-	y	3.5
3	y	-	-	-	-	y	-	2.5
4	-	-	-	-	-	-	-	0
5	-	-	-	-	-	-	-	0
6	-	-	-	-	-	-	-	0
7	y	y	y	y	y	y	y	5
8	-	-	-	-	-	-	-	0
9	y	y	y	y	-	-	-	3.5
10	-	-	-	-	-	-	-	0
11	-	-	-	-	-	-	-	0
12	-	-	-	-	-	-	-	0
13	-	-	-	-	-	-	-	0
14	y	y	y	y	-	y	y	4.5
15	-	-	-	-	-	-	-	0
16	y	y	y	y	-	y	y	4.5

17	y	y	y	-	-	-	-	3
18	-	-	-	-	-	-	-	0
19	-	-	-	-	-	-	-	0
20	-	-	-	-	-	-	-	0
21	-	-	-	-	-	-	-	0
22	-	-	-	-	-	-	-	0
23	-	-	-	-	-	-	-	0
24	y	y	y	y	-	y	y	4.5
25	y	-	-	y	-	-	-	2.5
26	Y	-	-	-	-	-	Y	2.5
27	y	y	y	y	-	y	-	4
28	y	y	y	-	-	-	-	3
29	-	-	-	-	-	-	-	0
30	y	y	y	y	-	-	-	3.5
31	-	-	-	-	-	-	-	0
32	y	-	-	-	-	-	-	2
33	y	-	-	y	-	y	y	3.5
34	-	-	-	-	-	-	-	0
35	-	-	-	-	-	-	-	0
36	-	-	-	-	-	-	-	0
37	-	-	-	-	-	-	-	0
38	y	y	y	y	-	y	y	4.5
39	y	y	y	y	-	y	y	4.5
40	y	-	-	y	y	-	-	3
41	-	-	-	-	-	-	-	0
42	-	-	-	-	-	-	-	0
43	-	-	-	-	-	-	-	0
44	-	-	-	-	-	-	-	0

Note- a) events, b) conferences, c) workshops, d) seminars, e) book fairs, and f) training programme

ANX-23: Covid-19 Services

Criteria	*a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	Total score
**1	y	y	y	-	y	y	y	y	y	y	y	y	-	-	-	7
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
3	y	-	-	-	-	-	-	y	-	-	-	-	-	-	-	2.5
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
6	y	y	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
24	y	-	-	y	-	-	-	-	-	-	-	-	-	-	-	2.5
25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0

Note- a) information about covid-19, b) link to resources related to covid-19 c) types of services provided remote access d) covid– 19 scholarly resources/publications e)link of open access resources f)special services during covid-19g)share of notification of who/government of India h)display of sops for covid-19 i)restricted working hours j)news / order and guidelines,k)safety measures for library workforce l) adhoc services introduced in view of the situation m)easing of penalty rules n) organisation of virtual events o) display of ugc initiatives during covid-19 for online teaching & learning.

ANX-24: Score Point

Serial No. 1-9								
1	2	3	4	5	6	7	8	9
1	1	2	1	1	1	2	1	1
2	2	2	2	2	2	2	2	2
2	2	2	2	1	2	2	2	1
6	6	6	6	6	6	6	6	6
4	2	6	4	2	4	2	2	2
2	2	2	2	2	1	2	1	1
4	4	4	4	4	4	4	4	4
2.5	2	2	1	1	1	2.5	1	1
8	10	8	10	10	6	8	10	2
2	4	4	2	2	2	4	6	4
6	4	4	0	0	4	4	4	2
2	0	2	2	0	0	0	0	0
33	31	32.5	24.5	28.5	24.5	29	12	20.5
8	8	8	8	2	8	8	8	8

5	6.5	6	6	5.5	5	5	5.5	5
8	7	5.5	6.5	6	5.5	3.5	4	3.5
5	5.5	5	4	3	3	4.5	4.5	4.5
2.5	4	3.5	0	0	2.5	0	0	0
3.5	4.5	0	0	0	2.5	0	0	0
4	3.5	2.5	0	0	0	5	0	3.5
7	0	2.5	0	0	2.5	0	0	0
117.5	109	109.5	85	76	86.5	93.5	73	71

Serial No. 10-18								
10	11	12	13	14	15	16	17	18
1	2	1	1	2	1	1	1	1
2	2	2	2	2	2	2	2	2
2	2	2	1	1	2	1	1	1
6	6	6	4	6	6	6	6	6
2	4	2	2	4	2	2	2	4
1	2	1	1	1	1	2	2	2
4	4	4	4	4	4	4	4	4
1	2.5	2	2	2	2	2	2.5	2
4	8	10	8	8	2	2	8	4
0	4	4	2	4	2	2	2	2
2	2	2	4	2	2	2	2	4
0	0	0	0	0	0	0	0	2
22.5	33.5	23.5	30.5	22	20	26.5	32.5	18
8	8	8	8	8	8	8	8	8
5	7	5.5	5.5	5.5	7	6.5	6	5.5
4	4	4.5	5	6.5	5	4.5	5	4
2.5	5	5	5.5	2.5	3.5	4	5	4.5
0	5	3	5.5	2.5	3	4.5	0	0
0	0	0	0	3	0	0	0	0
0	0	0	0	4.5	0	4.5	3	0
0	0	0	0	0	0	0	0	0
67	101	85.5	91	90.5	72.5	84.5	92	74

Serial No. 19-27								
19	20	21	22	23	24	25	26	27
1	1	1	1	1	2	2	2	1
2	2	2	2	2	2	2	2	2
1	1	1	2	2	2	1	2	2
6	6	6	6	6	4	6	6	6
4	4	4	4	4	2	2	4	2
2	1	1	1	1	1	1	1	1
4	4	4	4	4	4	4	4	4
2	2	1	1	2.5	1	2	2.5	2.5
2	6	8	8	10	0	0	6	6
0	2	2	2	4	4	2	4	2
2	2	0	4	4	2	4	0	2
0	2	2	0	0	0	0	0	0
20	18	28	22	27	39	18	28.5	24
8	8	8	8	8	8	8	8	8
5.5	5.5	5	4.5	6	7.5	5	4.5	4.5
5.5	4.5	4.5	4.5	4.5	5	3.5	4.5	4
5	5	4	3.5	4.5	4.5	4	4	4
0	0	4	0	3.5	2.5	0	0	2.5
0	0	0	0	0	0	0	0	0
0	0	0	0	0	4.5	2.5	2.5	4
0	0	0	0	0	2.5	0	0	0
70	74	85.5	77.5	94	97.5	67	85.5	81.5

Serial No. 28-36								
28	29	30	31	32	33	34	35	36
2	1	1	2	1	2	1	1	1
2	2	2	2	2	2	2	2	2
2	2	2	2	2	1	1	2	2
6	6	4	4	6	6	6	6	6
2	2	2	4	2	2	4	4	4
1	1	2	2	1	2	2	2	1
4	4	4	4	4	4	4	4	4
1	1	1	1	1	1	2	2	2
8	6	6	8	0	6	8	6	10
2	2	4	0	2	2	6	4	6
2	2	4	2	2	4	2	2	4
0	0	0	2	2	2	0	0	0
32	26.5	24.5	30	20.5	30.5	28.5	24	28.5

8	8	8	8	8	8	8	8	8
6	6	4.5	5	5	6	6.5	4.5	5
5.5	3.5	5	4.5	3.5	5	5.5	4.5	5.5
3.5	4	4.5	4.5	5	3	4	4	5
4.5	0	0	6	0	0	4.5	0	0
0	0	0	0	0	0	4	0	0
3	0	3.5	0	2	3.5	0	0	0
0	0	0	0	0	0	0	0	0
94.5	77	82	91	69	90	99	80	94

Serial No. 37-44							
37	38	39	40	41	42	43	44
1	2	1	2	1	1	1	1
2	2	2	2	2	2	2	2
1	2	1	2	2	1	2	2
6	4	6	6	6	6	6	6
4	6	4	4	4	2	2	4
1	2	2	2	2	1	1	1
4	4	4	4	4	4	4	4
2	1	1	1	2	2.5	2.5	2
6	6	8	10	8	2	6	0
2	2	4	6	2	0	0	2
2	2	2	4	0	2	4	2
0	2	2	0	2	0	2	0
18.5	30.5	26.5	28	22	18	18.5	14
8	8	8	8	8	2	8	2
5.5	6.5	5	4	4.5	4	4	4
6	6	4	5.5	5	4	3.5	3.5
5.5	5	5.5	5.5	4	4.5	5	0
0	0	0	2.5	0	0	0	0
0	0	2.5	0	0	0	0	0
0	4.5	4.5	3	0	0	0	0
0	0	0	0	0	0	0	0
74.5	95.5	93	99.5	78.5	56	71.5	49.5

Note- Score points are given according to the checklist (**APPENDIX-III**)

APPENDIX-III

CONTENT ANALYSIS EVALUATION CRITERIA OF THE LIBRARY WEBSITE/WEB PAGE OF CENTRAL UNIVERSITY LIBRARIES

Availability of Library Website/Web Page (Sl. No. 1)

1. Does the library have a separate website for itself?

a) Yes () [2 Point]

b) No () [0 Point]

*If no then,

Does the library have a separate webpage?

a) Yes () [1 Point]

b) No () [0 Point]

Visited and Non-Visited Link (Sl. No. 2)

2. Does site distinguish between visited and non-visited link?

a) Yes () [2 Point]

b) No () [0 Point]

Accessibility of Webpage (Sl. No. 3)

3. Do the library website/ web page has direct link on parent's home page?

a) Yes () [2 Point]

b) No ()* [2 Point]

*If no then,

Does the library web page/website link under facilities, quick links, sections, resources, campus infrastructure, etc. with the title "Central Library" or "Library"?

a) Yes () [1 Point]

b) No () [0 Point]

Navigation (Sl.No. 4,5,6)

4. Does the page title appear in the top window bar?

a) Yes () [2 Point]

b) No () [0 Point]

5. Does the library web page/website have the home link to go back to their Home page?

a) Yes () [2 Point]

b) No () [0 Point]

6. Does the title describe content or location in site structure?

a) Yes () [2 Point]

b) No () [0 Point]

Design Factor (Sl. No. 7,8,9,10)

7. Whether the view resolution is suggested in the respective library website/web page?

a) Yes () [2 Point]

b) No () [0 Point]

8. Does the library website/web page provide information about the browser compatibility respectively?

a) Yes () [2 Point]

b) No () [0 Point]

9. Does the site's page format follow the same in all the web pages?

a) Yes () [2 Point]

b) No () [0 Point]

10. Whether the library website/web page gives information about the number of visitors of the page?

a) Yes () [2 Point]

b) No () [0 Point]

Site Description (Sl. No. 11)

11. Does the library web page/website use any graphics along with the text for communication with the users?

a) Yes () [2 point]*

b) No () [0 point]#

*If yes then,

Whether the graphics used in the library website/web page are animated?

a) Yes () [1 Point]

b) No () [0 Point]

#If no then,

Does the library web page/website use only text and not graphics for communicating with the users?

a) Yes () [1 point]

b) No () [0 Point]

Content Writing (Sl. No. 12,13)

12. Site has not-found/404 page

a) Yes () [2 Point]

b) No () [0 Point]

13. Is the site free from typographic errors and spelling errors and spelling mistakes?

a) Yes () [2 Point]

b) No () [0 Point]

Language (Sl. No. 14,15,16)

14.Does the library website/web page offer information only in one language?

a) Yes () [1 Point]*

b) No () [0 Point]#

15. Whether the library website/web page offers information in two languages?

a) Yes () [2 Point]

b) No () [0 Point]

16. If the library website/web page offers information in more than two languages?

a) Yes () [2 Point]

b) No () [0 Point]

If yes then please specify the language

*[½ point] for each extra language.

.....

Statement Of Responsibility Of Library Website/Web Pages (Sl. No. 17-21)

17.Does the library web page/website provide the postal address of the library?

a) Yes () [2 Point]

b) No () [0 Point]

18.Does the library web page/website provide phone no. of the library or a concerned person?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

19.Does the library web page/website provide the fax no. of the library?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

20.Whether the library web page/website provides the email address of the librarian/library?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

21.Whether the library web page/website provides any separate contact link?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

Webpage Aids And Tools (Sl. No. 22-25)

22.Does the library web page/website provide feedback form or email link?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

23.Does the library web page/website provide search option in any corner of their page?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

24.Whether the library web page/website provides the sitemap of the library?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

25.Does the library website/web page give information about the FAQs?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

Authority Details (Sl. No. 26-28)

26. Does the library web page/website provide information about the copyright of the site?

- a) Yes ☐ [2 Point]*
- b) No ☐ [0 Point]

*If yes then,

Whether the library web page/website provides any information about the maintenance of the site?

- a) Yes ☐ [1 Point]
- b) No ☐ [0 Point]

27. Does the library web page/website provide information about the design and development of the site?

- a) Yes ☐ [2 Point]
- b) No ☐ [0 Point]

28. Whether the library web page/website provides any information about the RTI act?

- a) Yes ☐ [2 Point]
- b) No ☐ [0 Point]

Currency (Sl. No.29-30)

29. Does the library web page/website provide the date of updation?

- a) Yes ☐ [2 Point]*
- b) No ☐ [0 Point]

*If yes then,

Whether the page has been updated in the past three months?

- a) Yes ☐ [1 Point]
- b) No ☐ [0 Point]

30. Does the library website/web page have given the present date respectively?

- a) Yes ☐ [2 Point]
- b) No ☐ [0 Point]

General Information of Library (Sl. No. 31-54)

31. Does the library website/web page provide information about the genesis of the library or an introduction of the library?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

32. Does the library website/web page provide information regarding the aims/objective/mission/statement of the library?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

33. Does the library web page/website have provided any information for working hours of the library?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

34. Does the library web page/website provide information about library rules in their site respectively?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

35. Does the library website/web page provide information regarding user membership details?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

36. Does the library web page/website provide information about the staff of the library?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

37. Does the library website/web page provide library brochures respectively?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

38. Does the library website/web page provide information about the infrastructure facilities of the library?

a) Yes ☐ [2 Point]*

b) No ☐ [0 Point]

*If yes then,

39. Does the library website/web page provide information about the IT infrastructure facilities of the library?

a) Yes ☐ [1 Point]

b) No ☐ [0 Point]

Does the library website/web page provide information about the physical facilities (floor space/sitting capacity/water coolers, etc) of the library?

a) Yes ☐ [1 Point]

b) No ☐ [0 Point]

40. Does the library website/web page provide any facility for help or help link to their clientele?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

41. Does the library website/web page provide any information regarding ask the librarian respectively?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

42. Does the library website/web page provide an academic calendar on their site?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

43. Whether the library website/web page provides information about the holidays of the library?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

44. Does the library website/ web page provide information about their future plans?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

45. Does the library website/web page provide information about the budget allocation of the library?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

46. Does the library website/web page provide information about the physical location of the library?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

47. Does the library website/web page provide information about the floor plan/location guide in the library?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

48. Does the library website/web page provide photo gallery in their respective site?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

49. Does the library website/web page provide the information of video lecture lab?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

50. Does the library website/web page provide the information of Library Management System/ software?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

51. Whether the library website/web page provides information about outreach programme: covid awareness, vocational awareness, Info literacy programme etc.

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

52. Whether the library website/web page provides information about registered vendors?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

53. Whether the library website/web page provides information about budget head?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

54. Does the library website/web page provide information about library related forms?

a) Yes () [2 Point]

b) No () [0 Point]

Note: If the library web page/website provides information of the following library collections then add half ($\frac{1}{2}$) mark for each of the following mentioned here:

i)Book donation form () [$\frac{1}{2}$ Point]

ii)Book recommendation form () [$\frac{1}{2}$ Point]

iii)Library feedback form () [$\frac{1}{2}$ Point]

iv)ILO request form () [$\frac{1}{2}$ Point]

v)Similarity report application form () [$\frac{1}{2}$ Point]

55. Whether the library website/web page provides information about the registered committee?

a) Yes () [2 Point]

b) No () [0 Point]

56. Whether the library website/web page provides information about library museum?

a) Yes () [2 Point]

b) No () [0 Point]

57. Does the library website/web page provide information about faculty profile?

a) Yes () [2 Point]

b) No () [0 Point]

Library Resources (Sl. No. 55-59)

55.Does the library website/web page provide information about the library resources in their site respectively?

a) Yes () [2 Point]

b) No () [0 Point]

56. Does the library web page/website have a separate web page/hyperlink for Web OPAC/Online Catalogue?

a) Yes () [2 Point]

b) No () [0 Point]

57. Does the library web page/website provide only information regarding Web OPAC/ Online Catalogue?

a) Yes () [2 Point]

b) No () [0 Point]

58. Does the library website/web page provide information about the bibliographical databases in their site?

a) Yes () [2 Point]

b) No () [0 Point]

Library Collections (Sl. No. 59)

59. Does the library website/web page provide information about their in the library?

a) Yes () [2 Point]

b) No () [0 Point]

Note: If the library web page/website provides information of the following library collections then add half ($\frac{1}{2}$) mark for each of the following mentioned here:

i. Books () [$\frac{1}{2}$ Point]

ii. Journals () [$\frac{1}{2}$ Point]

iii. References Sources () [$\frac{1}{2}$ Point]

iv. Manuscripts () [$\frac{1}{2}$ Point]

v. Theses/Dissertations () [$\frac{1}{2}$ Point]

vi. Newspaper/Magazines () [$\frac{1}{2}$ Point]

vii. Conference Proceedings () [$\frac{1}{2}$ Point]

viii. Monographs () [$\frac{1}{2}$ Point]

ix. Archives () [$\frac{1}{2}$ Point]

x. Audio-visual material () [$\frac{1}{2}$ Point]

xi. CD/DVDs / CD ROM () [$\frac{1}{2}$ Point]

xii. Microforms () [$\frac{1}{2}$ Point]

xiii. Microfilms () [$\frac{1}{2}$ Point]

xiv. Newsletters () [$\frac{1}{2}$ Point]

xv. Patents () [$\frac{1}{2}$ Point]

xvi. Standards () [$\frac{1}{2}$ Point]

xvii. Rare Books () [$\frac{1}{2}$ Point]

Library Services (Sl. No. 60)

60. Does the library web page/website provide any information regarding library services in their site respectively?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

Note: If the library web page/website provides information of the following library services then add half ($\frac{1}{2}$) mark for each of the following mentioned here:

- i. Circulation Service ☐ [$\frac{1}{2}$ Point]
- ii. Research & Reference Service ☐ [$\frac{1}{2}$ Point]
- iii. Referral Service ☐ [$\frac{1}{2}$ Point]
- iv. Binding Service ☐ [$\frac{1}{2}$ Point]
- v. User education/orientation/awareness ☐ [$\frac{1}{2}$ Point]
- vi. Inter-library loan ☐ [$\frac{1}{2}$ Point]
- vii. Document Delivery Service ☐ [$\frac{1}{2}$ Point]
- viii. Reprographic Service ☐ [$\frac{1}{2}$ Point]
- ix. CAS ☐ [$\frac{1}{2}$ Point]
- x. SDI ☐ [$\frac{1}{2}$ Point]
- xi. Newspaper Clippings ☐ [$\frac{1}{2}$ Point]
- xii. Resource/ Subject Guides ☐ [$\frac{1}{2}$ Point]
- xiii. Book Bank ☐ [$\frac{1}{2}$ Point]
- xiv. Video viewing facility ☐ [$\frac{1}{2}$ Point]
- xv. Bulletin Board Service ☐ [$\frac{1}{2}$ Point]
- xvi. Telephone directory ☐ [$\frac{1}{2}$ Point]
- xvii. New book display ☐ [$\frac{1}{2}$ Point]
- xviii. Online book renewal ☐ [$\frac{1}{2}$ Point]
- xix. Online book reservation ☐ [$\frac{1}{2}$ Point]
- xx. CCTV ☐ [$\frac{1}{2}$ Point]
- xxi. QR Code ☐ [$\frac{1}{2}$ Point]
- xxii. SMS Alert System ☐ [$\frac{1}{2}$ Point]

E-Resources (Sl. No. 61)

61. Does the library website/web page gives information regarding the e- resources provided in the library for their clientele?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

Note: If the library web page/website provides information regarding the e- resources mentioned in the following then add half ($\frac{1}{2}$) mark for each of the following mentioned here:

- i. E-Journal ☐ [$\frac{1}{2}$ Point]
- ii. E-Books ☐ [$\frac{1}{2}$ Point]
- iii. E-Databases ☐ [$\frac{1}{2}$ Point]
- iv. E-theses & dissertations ☐ [$\frac{1}{2}$ Point]
- v. Institutional Repository ☐ [$\frac{1}{2}$ Point]
- vi. E-Question Paper ☐ [$\frac{1}{2}$ Point]
- vii. Online Newspaper ☐ [$\frac{1}{2}$ Point]
- viii. MOOC ☐ [$\frac{1}{2}$ Point]
- ix. Links to Library Networks ☐ [$\frac{1}{2}$ Point]
- x. Library Consortium ☐ [$\frac{1}{2}$ Point]
- xi. E-Newsletter ☐ [$\frac{1}{2}$ Point]

Library Sections (Sl. No. 62)

62.Does the library website/web page provide information about the sections of the library respectively?

a) Yes ☐ [2 Point]

b) No ☐ [0 Point]

Note: If the library web page/website provides information about the sections mentioned below then add half ($\frac{1}{2}$) mark for each of the services mentioned here:

- i. Periodical Section ☐ [$\frac{1}{2}$ Point]
- ii. Circulation section ☐ [$\frac{1}{2}$ Point]
- iii. Acquisition section ☐ [$\frac{1}{2}$ Point]
- iv. Technical Processing Section ☐ [$\frac{1}{2}$ Point]

- v. Digital Library Section () [½ Point]
- vi. Book Bank Section () [½ Point]
- vii. Stack Section () [½ Point]
- viii. Reprographic/Photocopy section () [½ Point]
- ix. Reference & Readers Advisory Service () [½ Point]
- x. Automation Section () [½ Point]
- xi. Administration () [½ Point]
- xii. Common Room () [½ Point]
- xiii. Study Room () [½ Point]
- xiv. Meeting Room () [½ Point]
- xv. Braille Section () [½ x n Point]

Web 2.0 Tools (Sl. No. 63)

63. Does the library website/web page provide separate links for the web 2.0 tools?

- a) Yes () [2 Point]
- b) No () [0 Point]

Note: If the library web page/website provides information of the following Web 2.0 tools then add half (½) mark for each of the following mentioned below:

- i. RSS () [½ Point]
- ii. Facebook () [½ Point]
- iii. YouTube () [½ Point]
- iv. Twitter() [½ Point]
- v. Blog () [½ Point]
- vi. LinkedIn () [½ Point]
- vii. Google+ () [½ Point]
- viii. Wiki () [½ Point]
- ix. Instagram () [½ Point]
- x. ReseachGate () [½ Point]
- xi. Pinterest () [½ Point]
- xii. Skype () [½ Point]

xiii. Others x n () [½ x n Point]

Events (Sl. No. 64)

64. Does the library website/web page give information about the events held in the library or for the library?

a) Yes () [2 Point]

b) No () [0 Point]

Note: If the library web page/website provides information about following events then add (½) mark for each of the following mentioned below:

i. Conferences () [½ Point]

ii. Seminars () [½ Point]

iii. Workshops () [½ Point]

iv. Book Fair () [½ Point]

v. Training Programs () [½ Point]

Covid-19 Service (Sl. No. 65)

65. Does the library website/web page give information about the Initiatives taken in response to Covid-19 ?

a) Yes () [2 Point]

b) No () [0 Point]

Note: If the library web page/website provides information about Covid-19 initiatives mentioned below then add half (½) mark for each of the services mentioned here:

i) Link to Resources Related to Covid-19 () [½ Point]

ii) Types of services provided Remote access () [½ Point]

iii) COVID – 19 scholarly resources/Publications () [½ Point]

iv) Link of Open Access Resources () [½ Point]

v) Special services During Covid-19 () [½ Point]

vi) Share of Notification of WHO/Government of India () [½ Point]

vii) Display of SOPs for covid-19 () [½ Point]

viii) Restricted working hours () [½ Point]

ix) News / Order and Guidelines () [½ Point]

- x) Safety measures for library workforce() [½ Point]
- xi) Adhoc Services Introduced in View of the Situation() [½ Point]
- xii) Easing of Penalty Rules() [½ Point]
- xiii) Organisation of Virtual Events() [½ Point]
- xiv) Display of UGC Initiatives during COVID-19 for online teaching & learning () [½ Point]

Total Criteria- 65

Total Score Points: 200

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BIBLIOGRAPHY

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ABSTRACT
WEB PRESENCE OF CENTRAL UNIVERSITY LIBRARIES IN
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DEPARTMENT OF LIBRARY AND INFORMATION
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**WEB PRESENCE OF CENTRAL UNIVERSITY LIBRARIES IN INDIA:
CONTENT AND DESIGN TREND ANALYSIS**

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Submitted
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1. Introduction

In the present context, the internet and web technologies are one of the most widely used forms of communication that aid in the creation and publication of information about various library activities and services. With the help of ICT, a variety of opportunities are opened up that might help find solutions to some of the biggest problems in fields including acquisition, circulation, periodical, cataloging, and serial control. Rapid development in new technologies, such as QR Code, RFID, Web 3.0, ontology, and semantic web, has greatly improved the ability of library services to store, process, and retrieve information, repackage it for communication and sharing, and handle the exponential growth of information efficiently and cost-effectively. In an era of information explosion and the creation of a wide range of new technologies to meet the shifting complex information requirements of users, the use of ICT tools in libraries has become standard practice. Websites have turned into effective communication tools. No library can dispute the university library website's capacity for information distribution. In the digital world, library visitors often browse the institution's website before going in person. It elevates the significance of the data accessible through portals or websites for libraries. All e-resources and library services can be viewed on the library website, a single platform that is focused on providing services. Most libraries have created a library website because they recognise the fundamental benefit of having a consistent interface to inform visitors about library services and activities. The library's website serves as an online resource guide for its services and collections. They provide details on the many services offered by the library as well as its unique collection characteristics. The website for the library should be maintained properly and made appealing so that information seekers can easily and quickly find the information they need. A website must frequently be updated to make dynamic and current information accessible to information seekers. As a result, maintaining the real information on websites has become the creators' and developers' responsibility to make it accessible to everyone worldwide.

2. Website

A collection of interlinked web pages that is publicly accessible and share a single domain name is called a website. It can be created and maintained by a company, government, educational institution, group, organization, or individual to serve different kinds of purposes. It is also known as a web presence and all publicly accessible websites constitute the WWW (World Wide Web). Content analysis defines a set of procedures for collecting and organizing information in a standard format that permits analysis to make inferences about the characteristics and meaning of written and other recorded material. It is a phase of information processing in which communications content is transformed, through the objective and systematic application of categorization of rules into data that can be compared and summarized.

2.1. What is the Web?

The World Wide Web, commonly known as the Web, was invented by Sir Timothy John Berners-Lee in 1989. A website is a set of related web pages of information that are linked together, electronically on the internet. The web page consists of graphics, multimedia, and text. Hypertext Markup Language (HTML) is used for writing a web page and the pages or files can be accessed via HTTP- Hyper Text Transfer Protocol. This protocol transforms information from the website's server to display in the user's web browser. For example, when someone enters a URL (Universal Resource Locator), it sends an HTTP command to the server directing it to fetch and pass on the requested web page. URL is the generic term for all types of addresses and names that point to objects on the World Wide Web. For example, to visit the LIS links website, you need to go to the URL www.lislinks.com. All publically accessible websites are collectively called the WWW.

The World Wide Web has made a huge impact on the running of academic libraries. The functioning of libraries has shifted from traditional to the use of modern ICT (Information Communication Technology) and artificial intelligence. Researchers are relying on web-based resources for their academic and research activities.

2.2. Difference between Website and Web page

A web page is a single document on the web using a unique URL (Universal Resource Locator), while a website is a collection of multiple web pages in which information on a related topic or another subject is linked together under the same domain address.

A website is a combination or collection of web pages grouped, which can be accessed anytime and anywhere by anyone via the internet. Using the hyperlinks, all these pages are linked together. Websites can also be either static or interactive.

Web page, in the meanwhile, is a single page or document that is displayed in web browsers like google Chrome, Firefox, opera, and so on. A unique URL address is attached to the web pages and is used to access that particular page. Web pages can also be either static or dynamic.

3. Content

The definition of the term content differs from time to time in the context of the circumstances. However, in terms of Library and Information Science, the term “content” can be conceptualized from the following definitions:

The Britannica Dictionary defines the term "content" as the facts, ideas, or images that are in an article, book speech, movie, etc.

Example:

- a) In terms of content, the article is good, but it is written poorly.
- b) An abstract of the book's content
- c) The kids aren't allowed to watch films with violent content. [=films in which violent things happen]

The *Encyclopedia Dictionary of Library and Information Science* defines—content as the essential substance or matter of a written work or discourse, as opposed to its form or style. In a more general sense, all the facts, ideas, or statements are contained in a written work or book.

The *Harrod's Librarians' Glossary and Reference Book* (2005) further explains the meaning of content as "the intrinsic information and data stored in and

communicated by any document – printed or electronic – that make it useful and usable to end users. It is distinguished from the printed format, distribution channel, or network that carries it. Content can include all forms of textual material and manuscripts, sound, moving and still images, bibliographic datasets, and statistical and other forms of data. (Devi, 2017).

According to Free Dictionary, content refers to,

- a) To individual topics or items that are dealt with in a publication or document: a table of contents.
- b) The material which includes text and images, constitutes a document or publication.
- c) Information, such as text, sound, and video, is usually contrasted with its format of presentation: television.

4. Web Content

In the book Information Architecture for the WWW, Peter Morville and Lou Rosenfeld wrote, "We define content broadly as 'the stuff in your website.' Web content may include web page document pages, software data and applications, e-services, audio, images, and video files, personal web pages, archived e-mail messages stored on email servers, and so on. And we include future web content as well as present web content roadmap".

Web content can be described, the content as the animation, audio, and video textual, images, on any web page or website. Web Contents are available and distributed in digital format namely; PDF, texts, images, data, audio and video, archived e-mail messages, data, e-services animation, and more.

4.1. Content analysis

In simple terms, content analysis is a scientific study of the content of the communication. According to **Berelson (1952)**-content analysis is a research technique for the objective, systematic, and quantitative description of the manifest content of the communication.

Kerlinger (1986) defined-content analysis as a method of studying and analyzing communication in a systematic, objective, and quantitative manner to measure variables.

Krippendorff (2004) defined- content analysis as a research method for making replicable and valid inferences from data to their context.

Content analysis is a research tool used to determine the presence of certain words or concepts within texts or sets of texts. Researchers quantify and analyze the presence, meanings, and relationships of such words and concepts, then make inferences about the messages within the texts, the writer(s), the audience, and even the culture and time of which these are a part. Texts can be defined broadly as books, book chapters, essays, interviews, discussions, newspaper headlines and articles, historical documents, speeches, conversations, advertising, theater, informal conversation, or any occurrence of communicative language. Texts in a single study may also represent a variety of different types of occurrences, such as Palmquist's 1990 study of two composition classes, in which he analyzed student and teacher interviews, writing journals, classroom discussions and lectures, and out-of-class interaction sheets. To conduct a content analysis on any such text, the text is coded, or broken down, into manageable categories on a variety of levels--word, word sense, phrase, sentence, or theme--and then examined using one of content analysis' basic methods: conceptual analysis or relational analysis.

4.2. Types of Content Analysis

There are two types of content analysis- relational analysis and conceptual analysis. The relational analysis examines and explores the relationships among concepts in a text. It is also known as semantic analysis. The conceptual analysis represents the frequency and existence of concepts in a text. For examination, a concept is chosen and the analysis involves quantifying and counting its presence. The main aim of this type of study is to analyze the occurrence of terms in the data. Terms may be implicit or explicit.

4.3. Steps of content analysis

The steps, that are followed in the process of content analysis study are-

- a) Select the content for analysis- Based on the research question, the researcher chooses the materials or text (speeches, newspapers, and websites) to analyze.
- b) Select the units and categories of analysis- The researcher determines the units that will be coded and the categories that will be used for coding.
- c) Develop coding rules- It is necessary to define coding rules to make the content analysis methods more reliable and transparent.
- d) d) Code the material- The researcher arranges each text or material in the appropriate categories that can be done manually as well as automatically.
- e) Analyze and present results- After completing the coding, collected data are analyzed to interpret the results to respond to research questions.

4.4. Advantages of Content Analysis

Some of the advantages of content analysis are given below:

- i. Unobtrusive collection of data- Researchers can analyze social interaction and communication without the involvement of participants.
- ii. Replicable and transparent- It follows a systematic and transparent procedure that, other researchers can replicate to yield highly reliable or authentic results.
- iii. Flexibility- Content analysis research can be conducted at any location, at any time, and at a low cost. Researchers must focus only on access to the appropriate sources.

4.5. Disadvantages of Content Analysis

Some of the disadvantages of content analysis are given below:

- i. Time-consuming- coding a large volume of text is time-consuming as well as it is difficult to computerize effectively.
- ii. Subjectivity- Content analysis is a descriptive method that draws subjective interpretation. It may affect the validity and reliability of the results.
- iii. Increased error- Content analysis subjects to increased error when the relational analysis obtains a higher level of explanation.

5. Ministry of Education, Government of India

Education plays a significant and remedial role in balancing the socio-economic fabric of the Country. Since the citizens of India are its most valuable resource, our

billion-strong nation needs nurture and care in the form of basic education to achieve a better quality of life. This warrants an all-around development of our citizens, which can be achieved by building strong foundations in education. In pursuance of this mission, the Ministry of Education (MoE) was created on September 26, 1985, through the 174th amendment to the Government of India (Allocation of Business) Rules, 1961. Currently, the MoE works through two departments:

- Department of School Education & Literacy
- Department of Higher Education

While the Department of School Education & Literacy is responsible for the development of school education and literacy in the country, the Department of Higher Education takes care of what is one of the largest Higher Education systems in the world, just after the United States and China.

5.1. Department of Higher Education (MoE, Government of India)- Overview

The Department of Higher Education, MoE, is responsible for the overall development of the basic infrastructure of the Higher Education sector, both in terms of policy and planning. Under a planned development process, the department looks after the expansion of access and qualitative improvement in higher education, through world-class universities, colleges, and other institutions. Department of higher education consists of Apex Level Bodies, Boards of Apprenticeship Training, Book Promotion, Central Universities, IIMs, IISc, Bangalore & IISERs, IITs, Institutions of National Importance, Institutions related to Hindi and other Indian Language, Languages, NITs, NITTRs, Planning, PSU, Sanskrit & Vedic Institutions, UNESCO, Institute of Eminence, Others.

6. Central Universities

Central universities in India are a significant component of the country's higher education system. These institutions, established by the Government of India, play a crucial role in providing quality education and promoting research in various disciplines. Central universities are prestigious institutions of higher education directly funded and administered by the Government of India through the Ministry of Education (MOE) formally known as the Ministry of Higher Education under the umbrella of the University Grant Commission (UGC). These universities were

established by the act of parliament with specific objectives and missions as stated in that particular act.

Presently, there are 44 central universities under the Ministry of Education in India (source: <https://www.education.gov.in/central-universities>), excluding Agriculture Universities and Sports Universities, which offer a wide range of courses and programs and are situated across the country. These universities are known for their academic excellence, research facilities, and commitment to fostering an environment conducive to learning and innovation.

Central universities often have well-established research facilities, centers of excellence, and collaborations with national and international academic institutions. They contribute significantly to scientific research, academic foreign exchange, social sciences, humanities, technology, and other areas of study.

Furthermore, central universities often provide scholarships and financial aid to deserving students, making quality education affordable for more people. Additionally, they encourage students to participate in extracurricular activities, sports, cultural events, and community engagements. The institutions serve as pillars of higher education, nurturing the intellectual development of students and advancing knowledge across a wide range of fields.

7. Significance and Scope of the Study

Content analysis is a very significant part of the field of library and information science in which we analyze the content of documents. This is a part of a qualitative study and one established branch of bibliometrics. In the digital era, the web became the main source of information and plays an important role in information dissemination because users became more web savvy to find their information. It means the information must be available in the web domain so that users can access it in 24X7 modes. Therefore, most of the good institutions designed and developed their website to provide related information through the web. It initiates the research in the area of website content analysis, which was originally developed from bibliometrics. There are many studies on content analysis and design trends of the website have been conducted in the field of library and information science in India

as well as over the globe to measure and evaluate website content and design trends but no depth study has been conducted to evaluate the contents, structures, and services of the library websites/web pages of Central Universities in India. Therefore, the present study is an attempt to fulfill the gap by examining the contents available on all central university library websites/web pages. The present study is an effort to reveal, how many support their patron to give information of fruitful their information needs through their website content. Apart from this, the findings of the present study may help professionals and webmasters in reshaping the institute's website in a dynamic and informative way. The ranking of the central university based on their web content may help to list the best institute website among all Central Universities and it will be used as a road model to design & develop the library website in other institutions. The finest library website amongst the central universities in India is ranked by rating their libraries depending on the quality and content of their websites, and it is considered a model for how other institutions' libraries should plan and build their websites.

The scope of the present study is limited to examining the library websites of Central Universities in India which are the apex educational institutions of the higher education system in India. Presently there are a total of 44 Central Universities in India as listed on the MoE, Government of India website (<https://www.education.gov.in/central-universities>) as of 10th March 2020, situated in a different part of the country. Thus the scope of the present study is limited to these 44 central university libraries' websites.

8. Statement of the Problem

The changing information-seeking behavior of users has led the libraries to use advanced information technology i.e., a library website. A website is a collection of web pages, and its home page is known as the website's homepage. So, the websites are the most crucial component of any institution. The library's websites or web pages serve as the organization's main information hub, disseminating and making information available to users. To keep users informed of new information about the institute or organisation, library websites must be updated with the most recent information and relevant hyperlinks. The central university library is an essential

component of all learning, teaching, and research processes. As a result, the quality of library services provided by each institution has an impact on the output and quality of research at central universities. To provide library-related information online, central university libraries develop their library websites. Hence, the websites of libraries should be attractive and educational to quickly get the attention of web surfers and library users. In the subject of library and information science in India, several research on website content analysis and design trends have been carried out, but no comprehensive study has been carried out to analyse the websites of all central university libraries in India under one umbrella.

This study aims to identify the central university library websites in India and rank them according to a set of evaluation standards. The study's conclusions will be useful to librarians and webmasters as they remodel their library websites to make them more informative and interactive way.

9. Objectives of the Study

The present study focused on systematically evaluating the web content analysis of the websites/web pages of central universities' libraries in India. Specific objectives of the present study are mentioned below:

1. To develop the evaluation criteria for web content analysis of selected central universities libraries' websites based on existing criteria.
2. To examine the content, structure, collections, and services in the library website of central universities.
3. To determine the currency, accessibility, size, download speed, and user friendliness of the website.
4. To find out the domain extension, and interlinking pattern of library websites under the study.
5. To rank the central university library websites based on parameter scale points.
6. To give suggestions for content improvement of library websites of central universities based on observation and findings.

10. Research Methodology

Research methodology is the way of explaining how a researcher intends to conduct their research. It's a logical, systematic plan to resolve a research problem. A research methodology details a researcher's approach to the research to ensure reliable, valid results that address their aims and purposes. It includes what data they're going to collect and where from, along with how it's being collected and analysed.

To draw the findings for the research objectives, the researcher has adopted an established website content analysis process to examine the library websites/web pages of central universities of India in this study. Thus, a survey method of research has been undertaken for the present study. There are a total of 44 Central Universities in India as listed on the MoE, Government of India website (<https://www.education.gov.in/central-universities>) as of 10th March 2020, situated in a different part of the country. The primary data were collected from the respective central university libraries' websites by checklist and observation method. For the collection of primary data, a checklist was designed and developed with a total of 65 criteria/parameters and 200 evaluation points based on the prior study that was conducted by Madhusudhan (2012), Jayasundari & Jeyshankar (2014), Verma & Devi (2016), and Verma & Singha (2022). And the data were collected 3 times at different time intervals of 3 years.

The primary data collection process for the libraries' websites of the selected central universities happened in a three-phase period i.e., (i) between 01st July – 31st July 2020; (ii) between 15th July-30th July 2021; and lastly (iii) between 01st July- 15th July 2022.

11. Data Collection Method

For the present study on the content analysis of the central universities library websites/web pages of Indian, observation and survey method was used to collect the primary data from the respective library websites/web pages.

(i) Survey Method

A survey method is a tool or technique that researchers can use to gather information in research by making or asking questions to predefined websites/web pages or groups of people. It is the exchange of information between the research participants and the person/ organization doing the research. For the present study, the researcher has surveyed 44 library websites/web pages of central universities, in India to collect the primary data.

(ii) Observation Method

The observation method of research is a way of gathering data by watching behavior, and events, or noting physical characteristics in their natural setting. The researcher used this method to determine the present state of the information provided on the libraries' websites/web pages of central universities.

(iii) Data Collection Tools

For the collection of primary data for analysis, the following tools have been used.

(a) Checklist: For the collection of primary data a checklist was designed and developed with 65 parameters based on the previous studies by Madhusudhan (2012), Jeyshankar (2014), Devi (2017), and Singha (2020). Based on these 65 parameters mentioned in the checklist, the library websites/web pages were checked and evaluated to collect primary data for the study.

(b) Web Page Analyzer Tool: The researcher used a web page analyzer tool i.e.; Site24x7, which is an all-in-one monitoring solution for cloud-scale applications that keeps track of websites, servers, applications, networks, cloud, and more. (<https://www.site24x7.com/help/getting-started.html>).

(c) Mobile-Friendly Tool: Google Mobile-Friendly Test, (i.e.; <https://search.google.com/test/mobile-friendly>) was used to check web page mobile friendly of selected central universities libraries' Websites/Web Pages.

(d) Alexa Analytics: (<https://www.alexa.com/siteinfo/>) was used to check the current position of central universities libraries' websites/web pages on the Alexa ranking system of global and Indian. Now, this site is not accessible on the web which discontinued Alexa ranking services from May 1, 2022.

(e) **Search Engine:** Google (i.e.; <https://www.google.co.in/>) was used for the evaluation of selected central universities' libraries' websites/web pages and for collecting the data of the universities. Further, for calculating and assigning the ranks of the central universities libraries' websites/web pages based on their web content, a five-point rating scale was used. Under the present study, primary data were collected from the observation method by using a checklist method, and collected data were scrutinized, tabulated, and analysed for interference with the help of MS Excel Office 2019.

12. Designing the Evaluation Criteria and Score Points of Web Content Analysis

To evaluate the web contents of selected central universities, a checklist of 65 criteria was designed before data collection as mentioned in the methodology section. The criteria have developed with two variables "Yes" and "No" while conditional and additional scenarios were added as per the requirement. Score points have been developed to assess the content analysis of the library websites' of central universities in India. The parameter point was formulated based on the scoring points. The content analysis evaluation criteria of the 44 libraries websites of central university, India are provided in APPENDIX –III.

The five-point rating scale was prepared based on the maximum score of 200 evaluation points and the scale of ratings to rank institutions is based on the point below:

- 161-200: Excellent
- 121 –160: Very Good
- 81 –120: Good
- 41 –80: Average
- 1 –40: Needs Improvement

13. Literature Review

A total of 65 reviews on a variety of research-related topics of which 13 are analyzed under webometrics analysis, 38 are studied based on web content analysis, 3 reviews are related to web accessibility, 4 are closely linked with web usability, and 7 are on website design.

14. Findings of the Study

The investigation was started to analyse and evaluate the central university libraries' websites/web pages accordingly objectives of the study was designed. Based on the data analysis and inferences of the study, the following findings are drawn:

1) The findings based on the first objective of the study

- a) In the first chapter, the researcher has designed and developed a checklist approach to evaluating the website contents of selected central universities libraries' websites/web pages with 65 criteria and 200 score points based on previous research i.e.; Madhusudhan (2012), Jayasundari and Jeyshankar (2014), Verma & Devi (2016) .

2) The findings based on the second objective of the study

- a) Under the heading of the availability of library websites/web pages, it was visible from the analysis that out of that all 44 central university libraries' websites are having either websites or web-pages to extend the library services. Among the selected central universities, 11(25%) are having library websites. However, left out 33(75%) university libraries are having only library web pages.
- b) The analyzed data showed that out of selected 44 universities of India, view resolution was only available for 3(6.81%) university libraries' websites/web pages, namely Babasaheb Bhimrao Ambedkar University & Central University of Odisha, and the University of Delhi. It was distinct from the collected data that none of the library websites/web pages had browse compatibility. It was visible from the collected data that 22(50%) universities out of 44 had visible information for the number of visitors to their websites/web pages.

- c) Under the heading site description of central university libraries' websites/web pages, three criteria have been developed. 24(54.54%) central university libraries' websites/web pages used text-only versions and 20(45.45%) libraries' websites/web pages used graphics with text. None of the selected central university libraries' websites/web pages have any animation features.
- d) It was evident, all the university libraries' websites/web pages provided information about library collections (books, journals, reference sources). The information on manuscripts was available on 19(43.18%) library websites/web pages of central universities. It was visible that out of 44 universities, theses/dissertations were available on 35(79.54%) libraries' websites/web pages. In the case of newspapers/magazines, 42(95.45%) university libraries' websites/web pages provided the information and 21(47.67%) universities provided information on conference proceedings on their libraries' websites/web pages. Out of 44 universities, 12(27.27%) universities offered the information of newsletter on their libraries' websites/web pages.
- e) It was evident that, out of the 44 universities information about e-resources was provided on 43(97.72%) universities except 1 university- National Sanskrit University for their clientele in the library websites/web pages. E-journals and e-books were not available at the same mentioned university. E-database was available for 38 universities and it was visible that e-theses and dissertations were available on 26(59.09%) university libraries' websites/web pages. Institutional repositories were found for 20(45.45%) out of 44 universities. Considerably low visibility of MOOC (Massive Open Online Course) was found which was only in one university i.e. Central University of Rajasthan. Only 2(4.54%) universities were found with links to the library network i.e. Aligarh Muslim University and Assam University on their library websites/web pages.
- f) Out of 44, half of the library websites/web pages 22(50%) were found with library consortium which is a very significant instrument in sharing or coordinating resources. In terms of the newsletter, it was found for 3

universities(6.81%) libraries websites/web pages only. Those are Rajiv Gandhi University, University of Allahabad, and Central Sanskrit University.

- g) Based on analysis of the data from the given sample, it appeared that all the universities in India (i.e., 44 universities) provided information about the library service, circulation service, and reference service of their library on their website/web page. No information was available for referral service, binding service, DDS (Document Delivery Service), new book display, online book renewal, and online book reservation on any library websites/web pages. 34(77.27%) universities provided information on user education/orientation/awareness through their library websites/web pages. Information of inter-library loan service was provided by 15(34.09%) university libraries' websites/web pages. Out of 44 universities, 12(27.27%) universities offered information on manuscripts on their library websites/web pages. Only 2(4.54%) universities offered resource/ subject guide information through their library websites/web pages while only the Central University of Odisha library website/web page was for book bank service.
- h) The information on the telephone directory of staff was provided on only the Aligarh Muslim University library website/web page. The information on CCTV and QR codes was provided on the libraries' websites/web pages of Aligarh Muslim University, Assam University, and Assam University, University of Hyderabad. Only 3(6.81%) universities- Mizoram University, Central University of Kashmir, and Pondicherry University provided information on SMS alert system on their libraries' websites/web pages.

3. The findings based on the third objective of the study

- a) The navigational structure of the selected 44 central university libraries' websites/web pages. It was also visible that out of 44 universities, the number of universities where the Institute home link on the libraries' web site/ web page was found was 39(88.63%). The home link was available on the libraries' websites/web pages of 5(11.36%) no. of the universities; they

are namely Central University of Kerala, Jawaharlal Nehru University, North-Eastern Hill University, Pondicherry University, and the University of Delhi. Also, data represented that the university libraries' websites/web pages where the title describes content or location in site structure were 44(100%).

- b) Under the heading currency, It was found from the analysis that updated status was available for 13(29.54%) universities libraries' websites/web pages. Those are Banaras Hindu University, Indira Gandhi National Open University, Shri Lal Bahadur Shastri National Sanskrit University, Hemvati Nandan Bahuguna Garhwal University, Aligarh Muslim University, Babasaheb Bhimrao Ambedkar University, Dr. Harisingh Gaur Vishwavidyalaya, Rajiv Gandhi University, Sikkim University, University of Delhi, University of Hyderabad, Shri Lal Bahadur Shastri National Sanskrit University.
- c) None of the university library websites or web pages has been updated in the past three months. Similarly, none of the universities mentioned the present date on their websites. Under the heading, accessibility of central university libraries' websites/web pages, 27(61.36%) universities have the accessibility of libraries' websites/web pages to the direct link on the parent homepage. However, 12(27.27%) universities' library websites/web pages are listed under the facilities heading, and for the other 5(11.36%) central university libraries' websites/web pages, one is listed under the heading of administration (Central Sanskrit University), one under infrastructure (Central University of Bihar), two are under amenities (Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya) and one under the heading Division (Indira Gandhi National Open University).
- d) It is observed from the analysis, Central University of Kashmir takes the lowest time- 2170 ms to load the page followed by Nagaland University which takes 2174 ms. The Central University of Kerala is placed in 3rd place with a 2699ms page load time. Aligarh Muslim University takes the highest time for page loading- 45039. The Central University of Bihar and

the Central University of Odisha are at the 2nd and 3rd lowest rank by taking 42035ms & 27556 ms for page loading.

- e) It is observed from the analysis Banaras Hindu University (109.87KB) was placed in the first position having the lowest minimum size of the library website/web page, whereas the total size of the image is 98.83 KB. It is clear from the analysis that Central University of Karnataka (26081.62KB) is placed in the last position having the highest maximum size of the library website/web page, whereas the total size of the image was 25574.55 KB. which is followed by Dr. Harisingh Gaur Vishwavidyalaya (Total size of the website/web page: 8876.42KB, total size of the image: 7228.54KB).

4. The findings based on the fourth objective of the study

- a) Under the heading Domain Extension, all the central universities libraries' websites/web pages used different domain extensions. The data were collected from the selected 44 university libraries' websites/web pages; among which the number of universities that own .ac. in is 35(9.09%). Apart from this the number of universities that own .edu.in and .in are 4(9.09%) (i.e., Central University of Punjab, Dr. Harisingh Gaur Vishwavidyalaya, Mizoram University, and Pondicherry University) and 3(6.81%) (i.e. Central University of Kerala, Tezpur University and Visva Bharati) respectively. The two universities own .org, i.e., Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya and .nic.in i.e., Central Sanskrit University each.

5. The findings based on the fifth objective of the study

- a) In the quantitative five-point rating scale, none of the central university library websites/web page found excellent (161-200), or very good(121-160) ranking but on a ranking scale Aligarh Muslim University library website/web page holding secured 1st position with 117.5 score; followed by Babasaheb Bhimrao Ambedkar University library website/web page with 109.5 score point; Assam University with 109 scored point; Central University of Karnataka with 101 scored a point, Visva Bharati with 99.5 scored point; Jawaharlal Nehru University scored 97.5 points. i.18 central

university libraries taken for the study have been placed under the average (41-80) grading system. Those are- Central University of Bihar (76), Central University of Himachal Pradesh (73), Central University of Jammu (71), Central University of Jharkhand (67), Central University of Punjab (72.5), Dr. Harisingh Gaur Vishwavidyalaya (74), Guru Ghasidas Viswavidyalaya (70), Hemvati Nandan Bahuguna Garhwal University (74), Indira Gandhi National Tribal University (77.5), Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya (67), Nagaland University (77), Rajiv Gandhi University (69), The English and Foreign Languages University (80), University of Allahabad (74.5), Central Sanskrit University (56), Mahatma Gandhi Central University (78.5), Shri Lal Bahadur Shastri National Sanskrit University (71.5), National Sanskrit University (49.5).

B. General findings of the study

The collected data was analysed, and the following general findings were made -

- a) Under the heading statement of the responsibility 28(63.63%) of the central university libraries' websites/web pages have provided information about their physical address/postal address. 31(70.45%) central university libraries' websites/web pages gave e-mail information. 29(65.90%) central university libraries' websites/web pages provide phone information no. and 27(61.36%) were found providing separate contact links.
- b) Under the heading general information about the library, all 44 of the central university libraries' websites/web pages provide information about the library. 44 central university libraries' websites/web pages provided information about the mission/vision/aims/objectives statement. 27(61.36%) central university libraries' websites/web pages mentioned information about the library committee. 43(97.72%) central university libraries' websites/web pages revealed information about library rules and library staff. 44 central university libraries' websites/web pages stated information about library hours. 42(95.45%) of central university libraries' websites/web pages revealed information about library membership details. Only 7(15.90%) out of 44 university libraries' websites/web pages were found

updating information about outreach programs: vocational awareness, info literacy program, etc. on their libraries' websites/web pages. Also, no library website/web page provided information about the budget allocation of the library which may reflect a lack of transparency between administrator and user.

- c) 29(65.90%) out of 44 university libraries' websites/web pages were found updating information about library-related forms, out of which 2(4.54%) were found updating book donation forms, 27(61.36%) were found updating book recommendation forms, 5(11.36%) were found updating library feedback forms and 4(9.09%) were found updating ILO request form.
- d) All the central university libraries' websites/web pages are used in the English language. 17(38.63%) of central university libraries' websites/web pages have been used in both English & Hindi language. 9(20.45%) central university libraries' websites/web pages have been used multilingual (other languages). The researcher has divided the events into six categories: events, conferences, workshops, seminars, book fairs, and training programs under the event heading. It was visible from the collected data that the central university libraries' websites/web pages that provided event information for the library were found for 20(45.45%) universities. Information on conferences and seminars was available for 14(31.81%) university libraries' websites/web pages while information on workshops was available for 13(29.54%) university libraries' websites/web pages. Information about the book fair was available for only 2(4.54%) out of 44 universities and the training program was available for only 9(20.45%) library websites/web pages.
- e) It was evident from the collected data from 44 universities that the libraries' websites/web pages provided information about web tools available for only 7(15.90%) universities while no information was found for RSS in the websites of any of the universities. Information tool- facebook was found for only 4(9.09%) i.e. Aligarh Muslim University, Assam University, Central University of Odisha, Tezpur University; Youtube in 3(6.81%) i.e. Aligarh Muslim University, Assam University, Tezpur University; Twitter

in 4(9.09%) i.e. Aligarh Muslim University, Assam University, Central University of Odisha, Tezpur university; blog in 3(6.81%) i.e. the Central University of Gujarat, Central University of Kerala, University of Hyderabad; LinkedIn in 1(2.27%) i.e. Assam University; google+ in 1(2.27%) i.e. Assam University only on their library web pages/websites only.

- f) According to the analysis, it is very clear that the Central University of Karnataka secured the top position with 3984252 ranks, which is followed by the Central University of Kerala with 3224776 ranks at second and Visva Bharati with 2508642 ranks occupied third places globally. While, National Sanskrit University (1519961 ranks), Rajiv Gandhi University (535330 ranks), Banaras Hindu University (475222 ranks), Shri Lal Bahadur Shastri National Sanskrit University (444998 ranks), Central University of Jammu (420274 ranks), Nagaland University (401043 ranks), and Sikkim University (385309 ranks) obtained 4th, 5th, 6th, 7th, 8th, 9th, and 10th rank respectively.
- g) The analysis shows that out of a total of 44 central university libraries' websites/web pages, only 24(54.54%) Central Universities Libraries' websites/web pages were mobile-friendly (Aligarh Muslim University, Assam University, Central University of Bihar, Central University of Gujarat, Central University of Haryana, Central University of Karnataka, Central University of Odisha, Central University of Punjab, Central University of Rajasthan, Dr. Harisingh Gaur Vishwavidyalaya, Guru Ghasidas Viswavidyalaya, Hemvati Nandan Bahuguna Garhwal University, Indira Gandhi National Open University, Indira Gandhi National Tribal University, Jawaharlal Nehru University, Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, Manipur University, Nagaland University, North-Eastern Hill University, Sikkim University, Central Sanskrit University, Mahatma Gandhi Central University, Shri Lal Bahadur Shastri National Sanskrit University, National Sanskrit University). Whereas, rests 20(45.45%) Central University Libraries' Websites/Web Pages (Babasaheb Bhimrao Ambedkar University, Banaras Hindu University, Central

University of Himachal Pradesh, Central University of Jammu, Central University of Jharkhand, Central University of Kashmir, Central University of Kerala, Central University of Tamil Nadu, Jamia Millia Islamia, Maulana Azad National Urdu University, Mizoram University, Pondicherry University, Rajiv Gandhi University, Tezpur University, The English and Foreign Languages University, Tripura University, University of Allahabad, University of Delhi, University of Hyderabad, Visva Bharati) were not compatible with mobile devices as of now.

- h) The platform of Silktide is used by organizations around the world to review millions of websites every year. The four sections of the Silktide report—content, accessibility, user Experience, and marketing scores range from 0 – 100. With higher numbers being better. The library website of Jawaharlal Nehru University scored the highest 68 in the content module. The accessibility module can impact everyone working on a website, including content editors, designers, developers, and managers. The Central University of Rajasthan was ranked first. User experience finds design, speed, and technical issues of a website. Central University of Karnataka library website scored the highest at 76. More generally, marketing helps websites to gain more business online, by (a) gaining more relevant visitors and (b) converting those visitors more effectively. In the case of marketing, both Nagaland University libraries' websites/web pages stood first by scoring 87.
- i) A low spam score is between 1% and 30%. A score between 31% and 60% is regarded as a "medium spam score." A high spam score is between 61% and 100%. It is observed that the average value of spam score of central university libraries' websites/webpages and the analysis observed that the Hemvati Nandan Bahuguna Garhwal University library has got maximum spam score i.e., 48% which indicates a medium level of risk and should continue its maintenance, followed by Central University of Kerala with 44% showing medium level of risk, Mahatma Gandhi Central University with 43% and Central University of Odisha, with 32% which are also showing medium level of risk.

15. Conclusion

In the present era of Information and Communication Technology (ICT), the World Wide Web (WWW) has become an indispensable tool for accessing and sharing information online. With a big amount of information being generated worldwide, the World Wide Web has emerged as a significant source of information for both academic and research purposes. It plays a pivotal role in connecting users to a vast array of online information, facilitating efficient and effective dissemination. A website serves as a collection of interconnected web pages that contain various multimedia elements like photographs, videos, etc. These web pages are published on at least one web server and share a common domain name (URL). The accessibility of a website can extend to the general public over the internet or be limited to a smaller group of individuals through a private network, often referred to as an intranet.

In the context of an academic institution, the library's website or web page serves as a crucial information hub. It acts as a gateway to intellectual resources, providing relevant and high-quality information to cater to the diverse needs of students and scholars. In the ICT era, the existence of a library website has become increasingly essential to meet the demands of users effectively. These websites offer a wide range of electronic resources such as e-books, e-journals, and open-access materials. Additionally, they provide various library services like Online Public Access Catalog (OPAC), online reference resources, and email alert systems.

Web content analysis, derived from fields like webometrics, bibliometrics, scientometrics, and informetrics, plays a vital role in evaluating the reliability and quality of information available online. It involves a scientific examination of the content communicated through the internet. As a discipline, content analysis focuses on studying web documents to gain insights into their characteristics and assess their credibility.

In the current digital age, the internet has emerged as the primary source of information transmission. Its pervasive influence highlights the importance of web content analysis in ensuring the integrity and trustworthiness of online information. And the study of content analysis of web documents is known as web content analysis, which is prevalent in the web domain for determining the veracity and quality of information accessible via the internet. In the current digital era, the Internet has become the most important information source for disseminating information. Therefore, the evaluation of library websites must be performed frequently to assess the website's structure, web content, and available information.

After analyzing selected 44 central university libraries' websites/web pages, it was found that only 11 have a separate library website which is not convincing at all. The majority of central universities libraries' website/web pages (27) have a direct link to the main websites while other universities libraries' websites have given the library link under some submenu: such as-link under facilities, link under administration, amenities, infrastructure and division. As per the information on their respective website, it was found that all the central universities' websites are using different domain extensions but the majority of central universities' websites/web pages used ac. in i.e.; 35. Today, it is important to have a website that is mobile-friendly so that users can access the same functions on their mobile device as they do on their desktop but only 24 central university libraries' websites/web pages were mobile-friendly.

According to the analysis, it is very clear that the Central University of Karnataka secured the top position with 3984252 ranks, which is followed by the Central University of Kerala with 3224776 ranks in second, and the Indira Gandhi National Open University library website/web page is having the least global rank (i.e.; 4907) among the central university libraries' websites/web pages. By using multimedia applications, the website can be made more user's friendly, attractive, and interactive but that is lacking in central university libraries' websites/web pages, and, 20 central university libraries' websites/web pages were using text-only versions and use graphics. None of the central university library website/web page used animation.

A developer should have provided the option to alter the website's language based on the needs of the site's visitors, most likely using the google translator service or a multilingual plugin. A total of 18 no. of university libraries were found updating in only one language on their websites/web pages while other 17 library websites/web pages were found in two languages. 9 universities were found updating more than two languages. Social media has emerged as one of the most popular platforms for disseminating information in the modern knowledge-based society, however; only 7 central university libraries' websites/web pages are adopting Web 2.0 Tools. It is observed from the analysis that not a single library website/web page is interlinked with any other library website/web page. By including relevant hyperlinks to other libraries' websites/web pages, library websites/web pages can help users to move quickly different pages or sections of other libraries' websites/web pages. It makes it easier for them to find the information they need from other libraries. Thus it is needed to link all the central university libraries' websites/web pages to each other. Further, it was also observed that none of the central universities was ranked under the excellent and very good category in the five-point rating scale. Only 26 university libraries are listed under the good category and 18 are categorized under the average group. Thus, this result indicates that there is a need to change and improvement in the content and design of central university library websites/web pages.

16. Suggestions

The present study comprehensively analyzed the contents of central university libraries' web pages/websites in India. As per the analysis of detailed collected data, the following suggestions and recommendations were made for the future improvement of the web pages/websites of central universities libraries:

1. Based on the web content available on the website, the performance of all the central universities libraries' websites/web pages is not up to the mark and does not come with the expectation of the user's points of view. The majority of them are unsatisfactory performance to be improved the web content of central universities libraries' websites/web pages .

2. Most university libraries do not have separate library websites. All central university libraries should have a dynamic library website instead of using a responsive tab plug-in for creating a library web page, mobile friendly/mobile compatible, and multilingual library website to draw users' attention.
3. The majority of central university libraries' websites/web pages are bulky in size and take a lot of time for downloading which should be redesigned and make lighter in size so that users can download and browse easily.
4. Website developers should provide regular statistical reports using (Visitor Counter Tools) detailing which files and pages are being accessed most frequently so that administrators may recognize and understand which page is most frequently visited by users.
5. All central university libraries should provide a library mobile app facility for multiple operating systems, which is one of the important tools to enhance library services. In addition, the Quick Response (QR) codes are a popular and widely used technology but only two university libraries' websites/web pages have implemented this technology. The concerned university libraries should facilitate this system which could be useful for quick access to library resources.
6. The availability of the link of library websites of central university libraries must be present on their institutes' home pages which will help the clientele in removing the barriers to accessing the website. Because the website must be easily accessible by anyone without any hindrance.
7. Central university libraries' websites/web pages should use more Web 2.0 tools because it helps in communicating and spreading the news easily. Further, the library can develop different mobile apps and link the library collections and services through the mobile app so that the users/clientele can enjoy the services from anywhere.
8. All central university libraries' websites/web pages must have good interlinking with one another so that their clientele can easily access the collections and services they offer.
9. The number of visitors to their library websites/web pages must be available to keep track of visitors. This will help the web developer to keep a record on the

website crawlers because the higher the number of visitors, the more website impression will be achieved.

10. The availability of the feedback option allows users to share their views and opinions regarding the website. This will help the website designer to enhance it in a way better than before. As the study found that the majority of the central university libraries have not been provided. Thus, providing of feedback facility on the respective website is suggested.
11. The date of the update must be present on the respective library website/web page, to give the visitors the latest information and to assure that the website is dynamic. The currency of the website needs to be maintained to avoid obsolete content. The factor language is very important when the website developer builds the website. It is always mandatory to provide parallel language i.e., English along with other languages. It is suggested to provide online software i.e., a web translator to enable users to read the website in multilingual options.

17. Areas for Further Research

The following areas have been identified as prospective research topics for library and information science professionals based on the findings of this study. On the following aspects of content analysis, additional research may be conducted.

1. To enhance the use of Web 2.0 technologies in libraries, it was necessary to examine librarians' opinions and perceptions of Web 2.0 tools about university library services, whether positive or negative. In addition, these tools are becoming increasingly popular among the younger generation because they facilitate the dissemination of information quickly and efficiently.
2. It is essential to consider user and librarian feedback when assessing the extent to which the library website has improved library services.
3. The usability and quality of library websites must take into account requirements for attaining international standards.
4. Further research could be conducted to determine of mobile app technology implementation procedure, its obstacles, and how they can be overcome.