

## **Web Usability and Accessibility of Central University Library Websites in North East India**

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### **Abstract:**

This study evaluates the library websites of selected Central Universities in Northeast India, focusing on three key dimensions: usability, accessibility, and content quality. Employing a structured evaluation framework, the research assesses how well these websites address users' informational and navigational needs, comply with established web accessibility standards, and maintain relevant, up-to-date content. The findings reveal considerable variation in the quality and consistency of the websites, with prominent shortcomings in accessibility and user-centered design. The study identifies best practices and proposes strategic recommendations to improve the digital infrastructure of academic libraries. By aligning website development with institutional goals and user expectations, this research seeks to support the enhancement of digital library services and promote equitable access to academic resources in the region.

**Keywords:** Content Perspective, Accessibility, Central Universities, Library Websites, North East India.

### **1. Introduction:**

In the contemporary academic landscape, the library website has evolved into a critical digital interface that connects users to a wide array of scholarly resources, services, and tools. With the ongoing digitization of educational services and the increasing reliance on remote access to information, university libraries are expected to maintain highly functional, user-friendly, and accessible websites that can effectively support teaching, learning, and research activities. This is particularly vital in developing regions, where physical access to resources may be limited, and the digital portal becomes the primary means of academic engagement.

Central universities in North East India occupy a unique position in the Indian higher education system. These institutions cater to a diverse student population, often spread across geographically remote and infrastructural underdeveloped areas. In this context, library websites serve not just as information hubs, but also as critical instruments for bridging the digital divide

and ensuring equitable access to academic knowledge. Given their significance, it becomes imperative to evaluate how well these websites are designed and maintained, and whether they truly meet the expectations of their intended users.

This study is driven by the recognition that an effective library website must balance several important factors—usability, accessibility, and content quality. Usability refers to the ease with which users can navigate and interact with the website, locate resources, and perform desired tasks without unnecessary effort or confusion. Accessibility, on the other hand, ensures that users with diverse physical, cognitive, and technological limitations can access the site's content equally. This is aligned with global standards such as the Web Content Accessibility Guidelines (WCAG), which promote inclusive web design. Content, as the third dimension of this study, encompasses the accuracy, relevance, comprehensiveness, and timeliness of the information presented on the website—ranging from e-resources and library services to policies, staff information, and contact details.

## **2. Review of Literature:**

Gupta, Saumya and Walia, Paramjeet K (2022) in their study reveals that library related information such as general library information, about collection, links to e-resources, library services; currency and authority of websites are presented on the university library websites but not to the full extent. The study suggested that libraries need to incorporate more information on their websites to promote the use of library resources and services. Libraries need to have a dedicated website and provide all the valuable and relevant information related to the library on their websites. The study depicts that most of the library websites under study are at the development stage. A lot more information could be incorporated to enhance the utilization of these websites. Library general information is the primary and most important information that should be available on all the websites.

Brahma, Krishna & Verma, Manoj & Sinha, Manoj (2019) in their paper studied the domain and page authority of library websites, top followed links to the site, spam score, internal followed links and external followed links, total links, total linking domains and followed linking domains, and the web impact factor (internal, external and simple) of top seven universities of North-East India ranked by National Institutional Ranking Framework selected (NIRF) in 2018. The author developed a checklist to assess the usability of the selected library websites and it visualized the different contents available to the users.

Verma, Manoj & Brahma, Krishna (2017) in their study highlighted the different library websites of north east central universities libraries and analyzed their content available on their webpage. The study also determines the library services and the existing facilities availability through their respective library websites. The authors studied seven central universities of the north east region

with a proper checklist designed for library websites based on the evaluation of previous study by different authors.

Laskar, Priyanka & Chakraborty, Susmita (2021) in their study reveals the role of library websites in preservation and conservation of resources provided through web based access to digital information. The study focus on the features of the libraries websites of three leading central universities (Tezpur University, North-East Hill University and Mizoram University) of North east India and with a descriptive analysis of knowledge management practices used in these three central libraries. The study also highlights on the libraries websites of these three universities which were used for knowledge discovery tools to provide quality information services. The data collected from the study are collected with a duration from 22<sup>nd</sup> June 2021- 25<sup>th</sup> June 2021 .

Mehta, Jaydeep & Trivedi, Mayank (2015) in their paper provides a preview of the contents and design of central university library websites of India. The study is confined to selected 45 central universities in India. The central university libraries have a web occurrence and various levels of services; there is huge scope for improving the websites. The study reveals that if a central university library website is more eye-catching and useful, it can easily capture the notice of library users. The data collected is prepared through a checklist for the study with different criteria like collection, links, services, application of web 2.0 tools and web 2.0 services.

### **3. Objectives of the Study:**

- To analyze the library websites of the central universities of north east India.
- To find out the services and facilities provided for the users on their websites.
- To analyze the domains of the central university library websites in North East India
- To calculate the Web impact factor of Central universities in North East India.

### **4. Methodology:**

The study examined the library websites of central universities in Northeast India, which comprise a total of 11 institutions. However, the scope of the study is limited to nine central universities, excluding the Central Agricultural University in Iroisemba, Imphal, and the National Sports University in Koutruk, both located in Manipur, as their academic disciplines differ from those of the other central universities.

### **5. Data Analysis and Interpretation**

In the context of evaluating library websites of central universities in Northeast India, data analysis and interpretation are essential for transforming observational and evaluative inputs into

structured insights. The data collected from structured criteria are analyzed to compare institutional performance, highlight strengths, and identify areas for improvement.

**Table 1: List of Central University Libraries in North East India**

Name of the Institute	Abbreviations of Institute	Establishment Year	URL(Institute	Library URL
North Eastern Hill University	NEHU	1973	<a href="https://www.nehu.ac.in/">https://www.nehu.ac.in/</a>	<a href="https://www.nehu.ac.in/library/">https://www.nehu.ac.in/library/</a>
Assam University	AU	1994	<a href="http://www.aus.ac.in/">http://www.aus.ac.in/</a>	<a href="https://ausopac.itsinformatics.com/">https://ausopac.itsinformatics.com/</a>
Manipur University	MU	1983(State) 2005(Central)	<a href="https://www.manipuruniv.ac.in/">https://www.manipuruniv.ac.in/</a>	<a href="http://mulibrary.manipuruniv.ac.in/">http://mulibrary.manipuruniv.ac.in/</a>
Mizoram University	MZU	2001	<a href="https://mzu.edu.in/">https://mzu.edu.in/</a>	<a href="https://lib.mzu.edu.in/">https://lib.mzu.edu.in/</a>
Tezpur University	TU	1994	<a href="http://www.tezu.ernet.in/">http://www.tezu.ernet.in/</a>	<a href="https://www.tezu.ernet.in/Library/">https://www.tezu.ernet.in/Library/</a>
Nagaland University	NU	1994	<a href="https://nagalanduniversity.ac.in/English/">https://nagalanduniversity.ac.in/English/</a>	<a href="https://library.nagalanduniversity.ac.in/">https://library.nagalanduniversity.ac.in/</a>
Ragiv Gandhi University	RGU	1984	<a href="https://rgu.ac.in/">https://rgu.ac.in/</a>	<a href="https://rgu.ac.in/library/">https://rgu.ac.in/library/</a>
Sikkim University	SU	2007	<a href="https://cus.ac.in/index.php/en/">https://cus.ac.in/index.php/en/</a>	<a href="https://library.cus.ac.in/">https://library.cus.ac.in/</a>
Tripura University	TRU	2007	<a href="https://tripurauniv.ac.in/site/index.php/en/our-university-en/about-tu-en#">https://tripurauniv.ac.in/site/index.php/en/our-university-en/about-tu-en#</a>	<a href="https://tripurauniv.ac.in/site/index.php/en/central-library-en">https://tripurauniv.ac.in/site/index.php/en/central-library-en</a>

Table 1 shows the various names of the central universities in north east depicting the different library websites along with their establishment year , the abbreviations of the institute and the Uniform resource locators (URL) of the selected library websites. Further, the study found out that the entire library has separate library websites.

**Table 2 : Library Resources and Services**

<b>Resources and services</b>	<b>NEH U</b>	<b>AU</b>	<b>MU</b>	<b>MZ U</b>	<b>TU</b>	<b>NU</b>	<b>RGU</b>	<b>SU</b>	<b>TR U</b>	<b>Total %</b>
OPAC/Web OPAC	✓	✗	✓	✓	✓	✓	✗	✓	✓	7(77)
e-journals	✓	✓	✓	✓	✓	✓	✓	✓	✓	9(100)
Database	✓	✓	✗	✓	✓	✗	✓	✓	✓	7(77)
Links to Other website	✓	✗	✗	✓	✓	✓	✗	✓	✗	5(55)
FAQ's	✓	✓	✓	✓	✓	✓	✗	✗	✓	7(77)
Location Guide	✓	✓	✓	✗	✗	✗	✗	✗	✗	3(33)
Photo Gallery	✗	✓	✗	✓	✗	✗	✗	✓	✗	3(33)
Ask a Librarian	✗	✓	✗	✓	✓	✓	✗	✓	✗	5(55)
E-Consortium	✓	✓	✓	✓	✓	✓	✓	✓	✓	9(100)
Remote Access	✓	✓	✓	✓	✓	✓	✓	✓	✓	9(100)
Institutional Repository	✓	✗	✓	✓	✓	✓	✗	✓	✓	7(77)
Plagiarism Software	✓	✓	✓	✓	✓	✓	✓	✓	✓	9(100)

<b>TOTAL SCORE</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>6</b>	<b>10</b>	<b>8</b>	
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Table 2 describes the various library resources and services and the services provided through their websites. Most of the library i.e., 7(77%) of the library have given the option of OPAC/Web OPAC and all of the libraries have provided e-journals with 100%. Out of 9 libraries 7 (77%) have revealed the database in their website. 5(55%) have provided links to other websites and almost all 7(77%) have provided Frequently Asked Questions option for easy troubleshooting for the users with 5(55%) providing the Ask the Librarian. Only 3(33%) have given their photo gallery and location guide on their website. The entire library under study has the features of e-consortium and remote access to the users and almost all i.e., 7 (77%) have institutional repositories for their access to their own publications. And the most important factor in providing plagiarism software is being carried out by the entire library under study.

### Web Impact Factor Analysis

The Web Impact Factor (WIF) is a crucial metric in evaluating a library website as it quantitatively measures the website's visibility, influence, and presence on the internet. Calculating the WIF helps determine how often a library website is referenced or linked by external sources, reflecting its authority and credibility in the digital environment. A higher WIF indicates that the website's content is widely accessed, trusted, and valued by other institutions, researchers, and users, thereby enhancing the library's reputation and outreach. The WIF is typically calculated by dividing the number of external inbound links by the total number of web pages on the site. This ratio provides insight into how well the website content is being utilized or acknowledged externally. For academic and research libraries, such as those belonging to central universities, WIF serves as a useful benchmarking tool for comparing the digital impact of different library websites. It also highlights areas for improvement, such as content quality, search engine optimization, and digital marketing strategies. Furthermore, WIF supports decision-making regarding the enhancement of web services, resource accessibility, and user engagement. While WIF does not assess qualitative aspects like usability or information accuracy, it complements other evaluation tools such as rubrics or checklists. However, reliance

solely on WIF can be misleading, as it may not account for user satisfaction or the practical usefulness of the content. Therefore, WIF should be considered as part of a broader framework for evaluating library websites, offering a valuable dimension in understanding their overall web performance and academic reach.

### **Data Collection by using Moz Link explorer**

In the evaluation of library websites, tools such as Moz's Link Explorer are utilized to assess domain authority and link metrics, which are closely related to the concept of Web Impact Factor (WIF). Moz's Domain Authority (DA) is a widely recognized metric that predicts how well a website will rank on search engine result pages based on its link profile, including the number and quality of inbound links. By using Moz's Link Explorer, researchers can retrieve detailed data on external links, linking domains, and DA scores, which serve as proxies for measuring the visibility, credibility, and overall web influence of a library's website. This approach complements traditional WIF analysis by integrating search engine optimization (SEO) principles and offering a broader perspective on web presence in both academic and public domains (Moz, n.d.). Consequently, the integration of Moz's SEO tools into library website evaluation frameworks enhances the accuracy and depth of web metric analysis. For accessing the data for the below table moz was used.

Domain authority is a quality score on a 100-point scale developed by Moz that predicts how well a website will rank on search engines. It predicts a root domain's ranking potential in search engines based on an algorithm of link metrics. Page Authority is a score developed by Moz on a 100-point scale that predicts the page ranking potential in search engines based on the algorithm of link metrics. Due to tool limitations, only the first 300 linking domains were analyzed. Academic backlinks were filtered manually.

**Table 3 : Domain Authority, Page Authority of the library websites**

<b>Name of the Library</b>	<b>Domain Authority (%)</b>	<b>Page Authority(%)</b>	<b>Linking Domain</b>
<b>NEHU</b>	46	35	2.4k
<b>AU</b>	40	34	2.3k
<b>MU</b>	37	27	14
<b>MZU</b>	36	31	29
<b>TU</b>	71	63	5.1k
<b>NU</b>	36	23	7
<b>RGU</b>	39	33	1.7k
<b>SU</b>	40	34	46
<b>TRU</b>	37	23	485

Table 3 analyses shows the Domain Authority and Page Authority of Central Universities in North East, in which Tezpur University is the highest with 71 among the websites, which is followed by NEHU with 46. The Page Authority is also given in this analysis where Tezpur is the highest followed by NEHU.

**Table 4: Total Number of Web pages, Total Inlink and Total Number of Academic Links**

<b>Name of the Library</b>	<b>Total No of Web pages</b>	<b>Total No of inlinks</b>	<b>Total No of Acad Links</b>
<b>NEHU</b>	54	532.8k	98



<b>AU</b>	273	2.6m	77
<b>MU</b>	81600	94	38
<b>MZU</b>	1050	69	1
<b>TU</b>	927	396.1k	55
<b>NU</b>	85	181	58
<b>RGU</b>	7	52.3k	41
<b>SU</b>	290	1.2k	7
<b>TRU</b>	1	163.3k	15

Table 4 analysis depicts the different websites on the basis of their total WebPages available and the total number of internal links. The result visualized the academic links of the library websites which shows that all the central universities in north east have library websites and leave rooms for improvements. NEHU has the highest number of academic links followed by Assam University.

### **Web Impact Factor of Central University Libraries in North East India**

Web impact factor is an important parameter to measure the popularity of a website. A popular website is a website which is viewed and used by many. WIF is directly related with the reputation of the website and if the WIF is high, it means the reputation is also high.

*Total No of Web Pages:* The total number of publicly accessible pages on the library website.

*Total No of Inlinks:* The number of links coming from other websites pointing to the library website. This includes both internal and external links.

*Total No of Academic Links:* The number of links from academic-related sources (e.g., educational institutions, journals, or scholarly databases) pointing to the library's website. These links typically signify credibility and academic importance.

*SWIF (Site Web Impact Factor):* This is a measure of how much external attention the library's website has received based on the inlinks. A higher SWIF indicates that each page of the library website is receiving significant attention.

Distribution of Data by SWIF has been calculated by the following formula:

$$\text{SWIF} = \frac{(\text{Total no of inlinks})}{(\text{Total no of webpages})}$$

*ISI-like WIF:* A variation of the Web Impact Factor similar to the ISI Web of Knowledge metrics, used to measure the academic impact or influence of a website. It may account for the academic links differently or adjust for the nature of the content.

Distribution of Data by ISI-Like WIF has been calculated by the following formula:

$$\text{ISI- Like WIF} = \frac{(\text{Total no of acad links})}{(\text{Total no of webpages})}$$

<b>Name of the Library</b>	<b>SWIF</b>	<b>ISI-like WIF</b>
<b>NEHU</b>	9806.67	1.8148
<b>AU</b>	9523.80	0.2820
<b>MU</b>	0.0011	0.00046

<b>MZU</b>	0.0657	0.00095
<b>TU</b>	427.29	0.0593
<b>NU</b>	2.1294	0.6823
<b>RGU</b>	7500	5.8571
<b>SU</b>	4.1379	0.0241
<b>TRU</b>	163300	15

The above Table shows that NEHU has a relatively high SWIF of 1.8148, suggesting it has significant external attention per page, especially with its high academic links (98).AU and TRU have high ISI-like WIF values of 9523.80 and 163300 respectively, but TRU only has one page, making it stand out, though this is an anomaly.MU has an extremely low SWIF and ISI-like WIF, despite having many web pages, indicating that while the website has many pages, it isn't receiving much external attention or academic recognition.RGU has a remarkably high SWIF (5.8571), indicating that its website, despite having only 7 pages, has a large number of inlinks, likely signaling high external visibility. The study helps in evaluating how well these library websites are performing in terms of their digital presence, the academic attention they receive, and their overall impact on the web. Websites with higher WIF values (like NEHU, RGU, and SU) tend to be better linked externally and may serve as more prominent online resources.

### Findings:

1. The present study is confined to 9 central university libraries. all the 9 library websites are functional at the time of data collection and during online survey.
2. The study found that all the selected library websites have their own library website with suitable and structural parameters.
3. Domain Authority of Tezpur University is the highest with 71 among the websites followed by NEHU with 46.
4. Tezpur University is also the highest for Page Authority with 63 followed by NEHU with 35 and Sikkim University with 34.

5. NEHU provided the highest academic links which is 98 followed by Assam University with 77.
6. NEHU has a relatively high SWIF of 1.8148, suggesting it has significant external attention per page, especially with its high academic links (98). AU and TRU have high ISI-like WIF values of 9523.80 and 163300 respectively, but TRU only has one page, making it stand out, though this is an anomaly.

## Conclusions:

With the advancement of the World Wide Web (WWW) and its sophisticated application, the world has become a much smaller place. There has been a significant change in our information and communication technology. WWW is now an inseparable feature in almost every aspect of our life. The library website under study finds that most of the libraries have static pages with poor layout and no update on its information.

The library websites under study and the subsequent analysis of the findings concluded that there is an urgent need for improvement to make the library more dynamic and interactive. The study is aimed to identify the status of these university library websites and rank them accordingly which will enable the readers and researchers to identify and compare the library websites in north east India. The study reveals that Tezpur University, NEHU and Assam University have the highest in their domain and page authority which indicates their high rank on search engines. The study reveals the need to improve the library websites of the entire domains or sub domains and enable the users to find relevant information in a short span of time.

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