CONTENT ANALYSIS OF UNIVERSITY LIBRARY WEBSITES IN THE UNION TERRITORIES OF NORTHERN INDIA: INNOVATING THE DIGITAL INTERFACE

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Abstract

This study explores the digital interfaces of university library websites across four Union Territories in Northern India through a comprehensive content analysis. A total of nine websites were examined to assess their effectiveness and comprehensiveness in delivering digital library services. The evaluation focused on four critical dimensions: descriptive features, accessibility provisions, website design, and the implementation of information dissemination tools. The findings reveal a mixed landscape—while several libraries have adopted multilingual support, interactive elements, and responsive layouts, others lack standardized accessibility features and inclusive design practices. The use of social media platforms such as Facebook and YouTube was prevalent, yet collaborative tools remained significantly underutilized. These observations underscore the urgent need for a more unified, user-centric approach to digital interface design that ensures equitable and seamless access to information for all users.

Keywords: Library Websites, State Universities, Checklists, Contents Analysis.

1. INTRODUCTION

As the principal digital gateway to academic resources, university library websites play a critical role in supporting the research, learning, and informational needs of students, faculty, and scholars. Their effectiveness is shaped by multiple factors, including the clarity and depth of descriptive content, the inclusivity and ease of access for users of varying abilities, the visual appeal and navigational structure of the website, and the extent to which interactive and information dissemination tools are integrated. These components not only signify a library's level of digital maturity but also mirror its commitment to transparency, accessibility, and adaptability in an increasingly digital academic environment. In the Indian higher education landscape, there is a growing push towards the digitization of educational infrastructure, aligned with national goals for digital inclusion. However, universities in Union Territories often operate within unique administrative frameworks and face distinct challenges related to funding, staffing, and technological capacity. Despite these circumstances, few studies have systematically explored the digital presence and functionality of library websites in such regions. This research seeks to fill that gap by conducting a detailed content analysis of

university library websites from four Union Territories in Northern India. The objective is to assess their current digital interface capabilities and identify key areas for innovation and improvement, ultimately contributing to more equitable and user-centered access to academic resources.The content evaluation methodology, using checklists as a tool, is used (Kumar and Bhardwaj, 2023). In the Institutional context libraries have become central for accessing scholarly content and facilitating research. The Indian state universities have changed their ways of information processing (Krishnan, 2021). The increasing expectations of users, coupled with the expanding relevance of digital resources, underscore the need for a thorough evaluation of the user experience offered by university library websites (Kim, 2011). As library websites serve as the primary digital gateways to a university's academic resources, they must support fluid navigation (Ullah et al., 2023), user-friendly search capabilities, and a well-organized content structure (Okhovati et al., 2017). The present study specifically investigates library websites of state universities in Northern India, with an emphasis on institutions located in the Union Territories, including Punjab. It seeks to uncover both the strengths and limitations of these platforms by analyzing key elements that shape user experience. By examining general website features (Al-Qallaf & Ridha, 2019), homepage structures (Soorya et al., 2022), and the integration of social media tools the research intends to build a comprehensive understanding of how these websites perform in real academic contexts. Ultimately, the goal is to inform strategic improvements that promote better usability, enhance access to information, and facilitate more effective communication within the academic community. This study views the assessment of library websites not just as a theoretical exercise, but as a practical initiative that has meaningful implications for the inclusivity and efficiency of digital learning environments (Huber et al., 2021). It aligns with the shifting priorities of academic institutions and aims to contribute actionable insights that can shape the future development of digital library services in the region.

2. RESEARCH METHODOLOGY

This study adopts a structured and methodologically sound research design to evaluate the user experience of library websites belonging to state universities in the Union Territories of northern India. The design integrates multiple components to ensure a well-rounded and in-depth investigation aligned with the research objectives. The selection of universities has been purposefully undertaken to represent the academic environment of the four Union Territories, making the study both regionally relevant and contextually meaningful. Only state universities established before 2018 have been included, ensuring a focus on institutions with sufficiently mature digital infrastructures and operational experience. To maintain both relevance and inclusivity, clearly defined sampling criteria guide the selection process. Emphasis is placed on multidisciplinary state public universities that have been functioning for a minimum of five years. This approach ensures a representative mix of institutions based on their academic roles, disciplinary coverage, and levels of digital maturity, balancing the need for analytical feasibility with comprehensive representation. The data collection process employs a detailed checklist, inspired by established frameworks (Verma & Devi, 2015), (Bhardwaj et al., 2023), to evaluate aspects such as general website features, accessibility of homepage URLs, and the presence and use of social media tools. The study focuses on key indicators such as URL structures, design elements, and integration of communication tools. Each website is assessed through a scoring system designed to ensure objectivity and consistency in evaluation.

3. DATA ANALYSIS
3.1. Descriptive Features

The figure 1, shows that the "About Library" section is the most commonly available feature, present on nearly 90% of the websites. This suggests that most institutions prioritize offering a general overview of their library services and facilities.
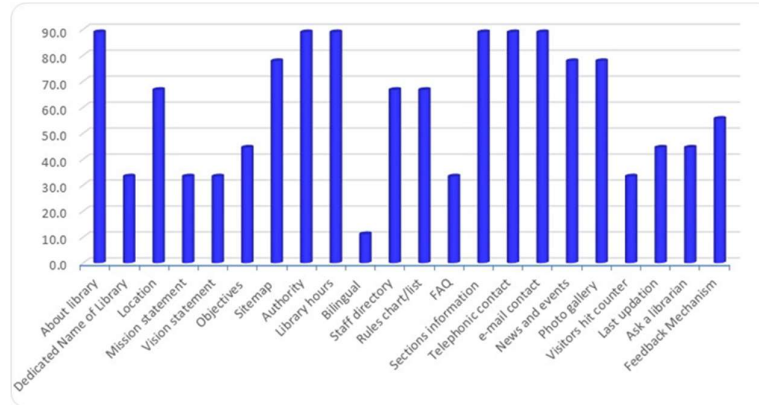

Figure 1: Descriptive Features of Library Websites

The "Dedicated Name of Library" is also present on over 70% of websites, reinforcing the idea of institutional identity and branding. However, features like "Mission Statement," "Vision Statement," and "Objectives" are much less frequently observed, each appearing on less than 40% of the websites. This indicates a lack of focus on communicating strategic direction, goals, and values of the library, which could help users understand the broader purpose and priorities of the service. Mid-range adoption is seen for features such as "Sitemap" (above 50%) and "Authority" (about 80%), which provide organizational clarity and lend credibility to the website. "Library Hours" and "Bilingual Support" are each included in around 80–90% of the websites, reflecting a commendable effort toward transparency and inclusiveness, especially in linguistically diverse regions."Staff Directory" and "Rules/Chart/List" are moderately present (approximately 60%), providing users with some administrative clarity and guidelines. However, "FAQ" and "Sections Information" are less commonly available, suggesting that fewer libraries anticipate and answer common user queries in a structured format. High inclusion rates are observed for "Telephonic Contact," "Email Contact," "News and Events," and "Photo Gallery", all nearing or above 80–90%. This indicates strong support for direct communication and content that helps users stay informed and visually engaged. The "Visitors Hit Counter" also appears on a large number of websites, signifying efforts to measure user interaction or web traffic. On the other hand, features like "Last Updation" and "Ask a Librarian" are visible on only about 30–40% of the sites, which suggests that timely updates and real-time user support are not consistently prioritized. Lastly, the "Feedback Mechanism" is present on just over 50% of websites, showing that while some institutions value user input, many still lack structured feedback channels.

3.2. Accessibility Features

The figure 2, illustrates a varied implementation of accessibility features, indicating that while some libraries are attentive to user convenience and inclusivity, others have significant gaps. The most prominent feature is the "Link under other menu", which appears on around 90% of the websites. This suggests that although library pages are accessible, they are often nested

under broader categories, which may affect visibility and ease of navigation for users seeking direct access. By contrast, only about 30% of websites provide a "Direct link on the parent's homepage", which is generally considered a best practice for visibility and intuitive access. This low figure points to a design oversight where library services are not prioritized on the main institutional web interfaces.
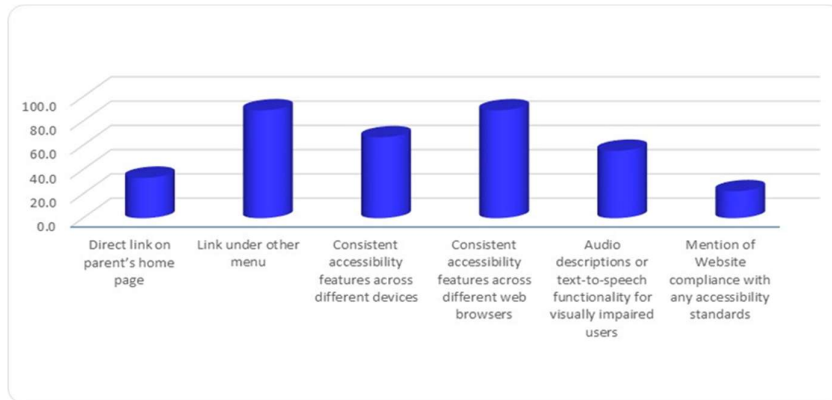

Figure 2: Accessibility Features of Library Websites

Encouragingly, around 70%–80% of websites maintain "Consistent accessibility features across different devices" and "across web browsers", which is vital in today's multi-platform digital environment. This suggests a moderate level of technical adaptability, ensuring that users accessing library content through smartphones, tablets, or various browsers encounter a stable and reliable experience. However, more specialized accessibility provisions—such as "Audio descriptions or text-to-speech functionality"—are found on only about 60% of the websites. This reveals that support for visually impaired users is still not universal, potentially excluding a segment of the user population. The most concerning observation is that less than 30% of the websites explicitly mention "Compliance with any accessibility standards". This reflects a general lack of formal adherence to or awareness of global web accessibility guidelines (such as WCAG), which are essential for ensuring equal access to digital resources for users with disabilities.

3.3. Design Features

The figure 3, highlights a selective incorporation of user-friendly and accessibility-oriented interface features. The most consistently implemented feature is "Vertical scrolling", found on nearly all (100%) of the websites. This is an expected and standard design choice, suggesting that content on these pages is arranged in a linear, easy-to-navigate manner that supports continuous reading. Conversely, the presence of "Official logos" is strikingly absent, with 0% inclusion, indicating a lack of clear visual branding for the library sections. This omission could lead to confusion or diminished institutional identity, especially for first-time users. More than 70% of websites offer a "Skip to main content" link, an important feature that enhances usability for screen readers and keyboard users by allowing them to bypass repetitive navigation menus. Similarly, the "Skip to navigation" option is present on about 60% of the sites, further improving accessibility for users who depend on keyboard-based browsing or assistive technologies. Other critical accessibility enhancements such as "Screen reader apps" and "Colour change options" are available on around 50% of the sites. These tools are particularly important for users with visual impairments, color blindness, or dyslexia, but the

moderate adoption indicates room for improvement. Unfortunately, only around 20% of the websites include "Font size adjustment" tools, which are essential for users with low vision. The limited presence of "Horizontal scrolling" (about 30%) reflects either minimal use of side-scroll content or a preference for vertical navigation, the latter being more intuitive and accessible.
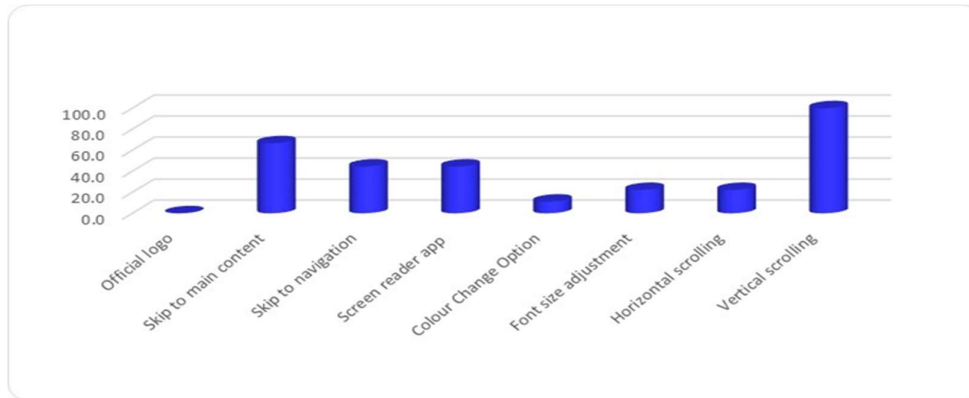

Figure 3: Design Feature of Library Websites

3.4. Information Dissemination Tools

The figure 4 presents the integration of various social media tools across the library websites of state universities in Union Territories of northern India. A diverse but uneven usage pattern is observed in the adoption of these platforms to enhance digital outreach and communication. Facebook emerges as the most widely adopted platform, present on over 80% of the websites, indicating its popularity and perceived value in connecting with the academic community. This is closely followed by Google Meet and similar tools, which also appear on more than 80% of the websites, reflecting their increased use for online meetings, webinars, and virtual information literacy sessions, especially in the post-pandemic digital environment. X (formerly Twitter), Instagram, and YouTube also show strong presence, with inclusion rates ranging between 65% to 75%.
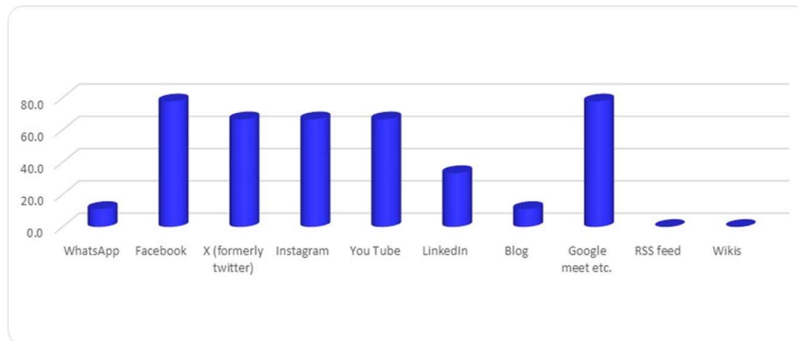

Figure 4: Information Dissemination Tools

These platforms likely serve multiple purposes—from sharing announcements and events to uploading instructional or promotional video content. Their combined use signifies an awareness among libraries to maintain active communication channels with students and faculty. In contrast, platforms like LinkedIn (around 40%) and Blogging tools (under 30%) are less commonly featured, suggesting limited efforts to reach professional audiences or to disseminate long-form academic content. The usage of WhatsApp for library communication remains relatively low, appearing on less than 20% of the websites. Given its ubiquity in

informal and mobile communication, this indicates an untapped potential for personalized support or group messaging features. RSS feeds and Wikis, however, are nearly absent, signaling a neglect of decentralized content updates and collaborative knowledge sharing tools. This may reflect either a lack of user demand or insufficient technical support for implementing such features.

3.5. Overall University-wise Performance

The evaluation of library websites across state universities located in the Union Territories of Northern India reveals significant variation in terms of digital content and user-oriented features, see table 1. Among the nine universities assessed, Panjab University and the University of Jammu stand out with the highest website scores of 33 out of 46, reflecting a percentage score of 71.7%. These institutions demonstrate strong digital presence and adherence to user experience standards, particularly in terms of accessibility, information dissemination, and overall website design. Following closely is the University of Kashmir, which achieved a score of 30 (65.2%), suggesting that it, too, provides a relatively well-rounded and functional online interface for users. Guru Gobind Singh Indraprastha Vishwavidyalaya shows promising performance with a score of 27; however, the percentage score is missing in the table and should be calculated for more precise interpretation (approximately 58.7%).

Table 1: List of Universities of Northern UTs of India

Name of University	Web-link	Website Score (Max=46)	Percentage Score
University of Ladakh	https://uol.ac.in/	17	37.0
University of Kashmir	https://www.kashmiruniversity.net/	30	65.2
University of Jammu	https://www.jammuuniversity.ac.in/	33	71.7
Baba Ghulam Shah Badshah University	https://www.bgsbu.ac.in/	17	37.0
Cluster University of Jammu	https://clujammu.ac.in	16	34.8
Cluster University of Srinagar	https://www.cusrinagar.edu.in/	8	17.4
Panjab University	https://puchd.ac.in/	33	71.7
Guru Gobind Singh Indraprastha Vishwavidyalaya	http://www.ipu.ac.in/	27	58.7
Dr. B.R. Ambedkar University	https://aud.delhi.gov.in/	36	78.3

In contrast, a considerable performance gap is evident in the case of Cluster University of Srinagar, which recorded the lowest score of 8, amounting to 17.4%, indicating minimal content presence and potentially limited user engagement through the library website. Similarly, Cluster University of Jammu, University of Ladakh, and Baba Ghulam Shah Badshah University all scored below 40%, pointing to underdeveloped or less optimized web

interfaces that may hinder information access and user satisfaction. It is noteworthy that two entries, Dr. B.R. Ambedkar University and Guru Gobind Singh Indraprastha University, have incomplete data, which limits the comparative potential of the analysis. Their inclusion in future revisions, with complete scoring, would provide a more holistic view.

4. RESEARCH FINDINGS

The content analysis of library websites of universities in Union Territories of northern India reveals a moderately structured presentation of descriptive features. The main research findings are as follows:

- Most websites include basic information such as library hours, contact details, and news/events, showing an intent to inform users effectively.
- Features like vision or mission statements, FAQs, and bilingual support are inconsistently presented across websites, indicating a lack of uniform standards or best practices in content development.
- In terms of accessibility, some positive efforts are evident—particularly in ensuring consistent interface performance across devices and browsers.
- A few libraries provide links from the parent university homepage, and certain websites show efforts to implement screen reader support or text-to-speech features.
- Nonetheless, the absence of formal statements on compliance with accessibility standards, along with limited options for font adjustments, color contrast, or "skip to content" features, highlights an underdeveloped commitment to inclusive web design.
- The presence of design elements such as vertical scrolling, screen reader compatibility, and keyboard navigation suggests technical attention to usability, but these are often implemented in isolation.
- Critical accessibility practices such as providing alternate text for images, including skip links, and ensuring color contrast sensitivity are not comprehensively addressed.
- Regarding the use of social media tools, platforms like Facebook, YouTube, and Twitter are reasonably well integrated into library websites, enabling timely dissemination of information and public engagement.
- The presence of platforms like Instagram and Google Meet further supports digital communication efforts.
- However, the minimal use of LinkedIn, WhatsApp, blogging platforms, or collaborative tools like wikis and RSS feeds implies missed opportunities for outreach, professional networking, and community-driven contributions.

5. LIMITATIONS OF STUDY

Though this study offers valuable insights, it does have a few limitations worth noting.

- It focuses only on the library websites of state public universities in Northern India, leaving out other types of universities, viz. private and specialized universities.
- The findings don't capture the full diversity of library websites across the region.
- The universities established after 2018, many of which might have more advanced libraries, were not included in current research study.
- This study didn't collect feedback from the people who actually use these websites.
- Feedback directly from users would have provided a clearer picture of how well these websites serve their needs.

Looking ahead, future research could build on these findings by exploring several key areas. One promising direction would be to gather direct feedback from visitors to these library websites. Understanding user experiences and expectations would add depth to the analysis and offer a more user-centered perspective on how to improve these platforms.

6. CONCLUSION

The study highlights that while state university library websites in in Union Territories of northern India, have taken steps toward offering essential descriptive content and basic accessibility, there is a noticeable variation and lack of standardization in implementation. Libraries are gradually embracing social media platforms for engagement, but full-scale integration and content richness are yet to be achieved. This study reveals considerable variation in the development of library websites across universities of the Union Territories. This uneven progress underscores the urgent need for standardization and targeted investment in digital library infrastructure. To move forward, libraries should adopt a user-centered approach to website design by aligning with national and international accessibility standards. Institutional policies must mandate the inclusion of uniform content descriptors, multilingual support, and accessibility features to ensure inclusivity. Furthermore, library administrators should enhance the digital visibility of their services through a balanced mix of professional and social platforms, incorporating tools that foster community interaction, feedback, and collaborative learning.

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