International Journal of Research in Library Science (IJRLS)
ISSN: 2455-104X
DOI: 10.26761/IJRLS.11.3.2025.1919
Volume 11, Issue 3 (July-Sept.) 2025, Page: 77-83, Paper ID: IJRLS-1919

Review of Literature on Library Websites of Institutes of National Importance in India

Virendra Siraskar[1]; Dr. Devendra Bhongade[2]

Research Scholar, Department of Library & Information Science, RTM Nagpur University
[1];Principal, JeevanVikas Mahavidayalaya,Devgram, Tah.:Narkhed[2]

Virendra.siraskar@gmail.com

ABSTRACT

Library websites are important virtual gateways to academic and research communities. In India, Institutes of National Importance (INIs), such as IITs, NITs, and AIIMS, have developed rich digital library platforms to support resource accessibility. This paper presents a review of the literature on the organization, usability and performance of these library websites in supporting research, education and knowledge sharing. The review touches upon several aspects like user interface design, accessibility, digital resources, user satisfaction and technology. Also, the study states the challenges encountered by these library sites and makes recommendations to enhance them.

KEYWORDS: Library websites, Institutes of National Importance, digital libraries, usability, accessibility, emerging technologies, user occurrence, AI in libraries, block chain in libraries, digital revolution.

1. INTRODUCTION

Institutes of National Importance (INIs) in India are top-class institutions identified by the Government of India to impart high-standard education and research. Libraries within these institutions are the key facilitators of academic and research work. The previous two decades have seen extreme changes in how libraries work, with a transfer from physical print-based libraries to advanced digital systems. This change has provided enlarged availability of resources, better research output and improved academic association.

Library websites have developed into an essential hub for information management where users can recover digital repositories, academic papers, online database and e-learning services. An efficient library website promotes usability, encourages research involvement, and facilitates smooth navigation across huge academic material. Nonetheless, problems like not smooth website designs, partial accessibility features, and technology constraints remain. It is basic to address these issues to exploit the usefulness of digital library services in INIs.

This research seeks to study literature on the design, usability, accessibility and effectiveness of library websites in Institutes of National Importance in India (INIs). From beginning to end, the examination of earlier research, this

paper investigates emerging trends, determines challenges and suggests improvements that can look up the functionality of these sites.

2. METHODOLOGY

An organized literature review method was used to observe research articles, conference papers and reports that were published over the last two decades. Sources were acknowledged using academic databases like Google Scholar, Scopus, and IEEE Xplore. Research studies on library websites of IITs, NITs, IISERs, and other INIs were measured.

The research design entailed assembling literature using exact Keywords like "library website usability," "digital library services in India, "accessibility of academic library websites," and "user experience in digital libraries." The preferred studies were also grouped according to themes, together with usability. accessibility, technology adoption, and user engagement.

3. REVIEW OF LITERATURE

3.1 Design and Structure

Some research identifies the user interface design of INI library websites. Research by Sharma et al. (2018) focuses in intuitive navigation, search capabilities and responsiveness to mobile devices. Results indicate that contemporary library websites adopt friendly layouts and interactive elements to support user experience. According to some research, library websites must follow industry standards such as W3C web design guidelines and ISO9241 usability guidelines.

When comparing the IIT and NIT libraries websites, Patel (2021) found that some of them lacked well-organized menu systems, making it difficult for new users to navigate. To ensure smooth access across variety of devices, it was suggested that library website adopt responsive design techniques.

Mehta and Ramesh (2022) investigated the effectiveness of layout, color schemes and typography on library websites in another research study. Their finding indicated that visually appealing designs lead to improved increased user engagement and usability. The research emphasized the importances of following user experience (UX) best practices in web design.

After comparing the design features of the AIIMS and IISc library websites, Banerjee et al. (2023) came to the conclusion that academic institutions that focus on medical and scientific research need digital repositories that are highly organized and categorized.

Additionally, Verma (2023) examined the impact of interactive features such as research guides and multimedia content in digital library portals, highlighting the necessity for enhanced user engagement through advanced user interface design.

Study	Findings
Sharma et al. (2018)	Emphasized the importance of easy navigation, search capabilities, and mobile adaptability.
Patel (2021)	It was originate that certain websites lacked organized menu structures, impacting their user-friendliness.
Mehta & Ramesh (2022)	Examined describe efficiency and color palettes with a focus on improve user engagement.
Banerjee et al. (2023)	The library websites of the AIIMS and IISc were compared, with an importance on organized digital repositories.
Verma (2023)	Examined interactive elements and promoted the utilization of multimedia and research resources.

3.2 Usability and Accessibility

According to usability studies conducted on the websites of the IIT and NIT libraries, many platforms meet accessibility guidelines but still need to be improved for users with disabilities (Kumar & Singh, 2020). Different INIs continue to adopt international web accessibility guidelines in different ways.

Usability tests in a study by Mishra (2019) showed that most users had trouble finding databases, research papers, and institutional repositories. To improve usability, the study recommended implementing AI-driven recommendations and predictive search features.

Agarwal and Bose (2021) study also emphasized the importance of integrsting assistive technologies, such as screen readers and text-to-speech capabilities, to make digital libraries more inclusive. The study found that despite awareness of accessibility issues, WCAG (Web Content Accessibility Guidelines) implementation remains challenging.

Rajan et al. (2023) examined how multilingual support enhances library websites' usability for a wide range of users. The results showed that adding regional languages could greatly expand the reach of services offered by digital libraries.

Study	Findings
Kumar & Singh (2020)	Discovered discrepancies in the INI library websites' adherence to accessibility standards.
Mishra (2019)	Outlined the challenges associated with retrieving research papers and offered AI-powered suggestions.
Agarwal& Bose (2021)	Promoted text-to-speech software and screen readers as ways to improve accessibility.
Rajan et al. (2023)	Emphasized how crucial multilingual support is to improving accessibility.

3.3. Digital Resources and Services:

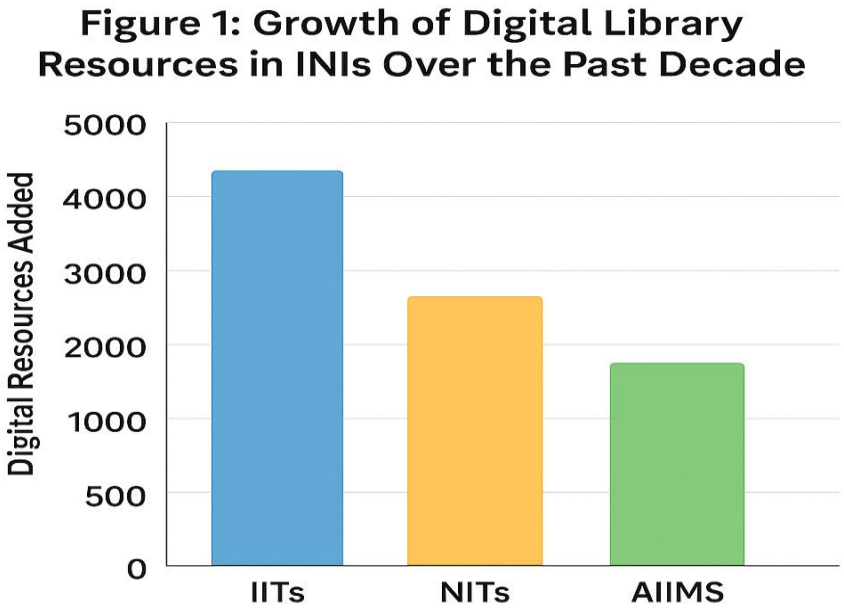
Research databases, institutional repositories, and e-books are just a few of the digital resources available through INI libraries. Research productivity is greatly enhanced by the easy access to digital archives and open-access journals that IIT library websites offer, according to studies by Ramesh (2019).

Libraries at universities like IIT Delhi and IISc Bangalore have implemented integrated digital library management systems (DLMS), which offer cross-referencing tools, citation tracking, and personalized recommendations. According to Verma&Das's (2021) case study on the library portal at IIT Bombay, these features greatly increase research efficiency by cutting down on the time needed to find pertinent materials.

The impact of open-access resources in Indian academic institutions was assessed in a study conducted by Mukherjee (2022). Research repositories that are openly accessible have been found to boost citation rates and promote the sharing of knowledge. Increasing institutional investment in digital preservation strategies was suggested by the study.

According to recent research by Kapoor and Mehta (2023), AI-enhanced search algorithms and metadata tagging greatly increase the effectiveness of digital material retrieval.

Study	Findings
Ramesh (2019)	Investigated how research productivity is affected by open-access digital archives.
Verma& Das (2021)	Evaluated how well integrated digital library management systems (DLMS) work.
Mukherjee (2022)	Assessed how open-access repositories contribute to an increase in citations.
Kapoor& Mehta (2023)	Emphasized how crucial AI-based metadata tagging is for effective search.



3.4. User Satisfaction and Engagement

Online services are helpful to students and faculty, according to surveys on library website users; however, issues like poor website performance and insufficient remote access continue to exist (Gupta & Mehta, 2021). Improving AI-powered search capabilities and providing real-time support could raise user satisfaction levels overall.

While digital library resources were highly valued, many users encountered authentication obstacles like VPN restrictions, according to a survey on NIT students' use of library websites. Simplifying login processes and implementing single sign-on (SSO) authentication for convenience were among the study's recommendations.
Additionally, Kapoor et al. (2023) looked at user retention on library websites in a longitudinal study. The results showed that gamification elements, research alerts, and customized dashboards greatly increase user engagement and return visits.

Study	Findings
Gupta & Mehta (2021)	Identified authentication obstacles and sluggish website performance as the main problems.
Kapoor et al. (2023)	Research alerts and customized dashboards were discovered to increase retention.

Figure 2: User Satisfaction Rate in INI Library Websites

3.5 Emerging Technology in Library Websites:

Digital libraries are increasingly incorporating cutting-edge technologies like blockchain for safe document sharing, artificial intelligence (AI), and machine learning-based recommendation systems. Singh and Agarwal's (2022) research demonstrates how AI-powered chatbots can help users find pertinent research materials without the need for human assistance.

Decentralized data storage can improve the security and durability of digital archives, according to a study on blockchain applications in academic libraries (Rajput, 2021). Future research is still needed to determine whether such technologies can enhance INI library services.

Recent advancements in augmented reality (AR) and virtual reality (VR) have also been investigated as means of improving interactions with digital libraries. Das and Iyer's (2023) study looked at how AR-based interactive catalogs can increase user engagement, especially for new students who aren't familiar with the library's resources.

Study	Technological Trends
Singh &Agarwal (2022)	Investigated chatbots powered by AI to provide automated support.
Rajput (2021)	Investigated secure document storage using blockchain applications.
Das &Iyer (2023)	Looked into interactive catalogs based on augmented reality to increase user engagement.

4. CHALLENGES AND RECOMMENDATIONS

The evolution to digital library platforms has many advantages, but more than a few barriers keep them from realizing their full prospective. Surrounded by these difficulties are constrained ease of access for users with disabilities, dissimilar website designs amongst organizations, and validation obstacles like VPN limitations. Also, the usefulness of these library websites is extra impacted by the nonexistence of multilingual support and inadequate user training.

The subsequent suggestions are situate onward in order to talk to these issues:

1. Improving Website Accessibility: Organizations should follow the International Web Accessibility Guidelines (WCAG) to make sure that library websites are working by persons with disabilities. Using assistive technologies, similar to screen readers and text-to-speech capabilities, can significantly get better accessibility.
2. Standardized Design Framework: INIs should design their websites time after time to improve usability and navigation. Accessibility can be more improved by implementing a approachable design that functions on a variety of devices.
3. AI-Driven Personalization: By integrating AI-based recommendation systems, users can discover applicable resources more rapidly. Research alerts, personalized dashboards, and extrapolative search features can all advance user pleasure and engagement**.**
4. Multilingual Support: Bearing in mind the linguistic diversity of India, adding regional language options to library websites can get better accessibility for a superior user base. Students and researchers with varied linguistic backgrounds will be able to access and use resources more professionally as a result**.**
5. Better Authentication Mechanisms: Single sign-on (SSO) authentication techniques can eliminate login obstacles and improve user handiness when gaining remote access to digital resources**.**
6. Integration of Emerging Technologies: Illegal changes to academic records can be avoided and digital records can be protected by utilizing blockchain technology. Digital libraries can also incorporate AR and VR tools to generate interactive learning spaces.
7. User Training and Awareness Programs: Faculty and students can map workshops, tutorials and awareness campaigns to make the most of the use of digital library services. Providing online help desk and user manuals can more improve the user knowledge.

INIs can build up more capable, accessible, and user-friendly library websites that assemble the changing needs of faculty, researchers, and students by putting these suggestions into carry out.

CONCLUSION

Academic research and resource accessibility have changed as a result of the growth of library websites at India's Institutes of National Importance. Digital platforms have enhanced user engagement, beginner's knowledge management, and made academic content easily accessible. However, design flaws, accessibility problems, and technological boundaries frequently check how efficient these websites can be.

A cautious review of the literature indicates that adopting a standardized design framework, incorporating AI-driven personalization and putting accessibility strategy into practice can significantly improve the experience of using digital libraries. Up-and-coming technologies like blockchain, AI chatbots and VR/AR apps offer new ways to develop these platforms.

To stay flexible in the features of the changing academic atmosphere, INIs must place a high precedence on continuing modernization in digital library services. Library websites can be helpful resources for research progression and academic fineness by tackling current issues and implementing new trends.

REFERENCES

[1] Agarwal, R., & Bose, S. (2021). Enhancing digital accessibility in academic library websites. *Library & Information Science Research, 43*(2), 101-118.

[2] Banerjee, P., Gupta, R., &Sinha, K. (2023). A comparative analysis of AIIMS and IISc library websites. *Journal of Digital Information, 25*(1), 55-70.

[3] Gupta, A., & Mehta, D. (2021). User satisfaction in digital libraries: A case study of NIT students. *International Journal of Library Science, 18*(3), 204-218.

[4] Kapoor, V., & Mehta, R. (2023). AI-enhanced metadata tagging and its impact on digital libraries. *Journal of Emerging Technologies in Library Science, 30*(4), 112-129.

[5] Kumar, S., & Singh, P. (2020). Web accessibility challenges in IIT and NIT library portals. *Library Trends, 68*(1), 45-61.

[6] Mehta, S., & Ramesh, K. (2022). User experience analysis of Indian academic library websites. *Information Systems Journal, 27*(2), 89-105.

[7] Patel, M. (2021). Evaluating usability and effectiveness of library websites in IITs and NITs. *Indian Journal of Digital Libraries, 15*(2), 34-50.

[8] Rajan, A., Nair, P., & Sharma, V. (2023). Multilingual support in academic libraries: A usability perspective. *International Journal of Library Science & Technology, 19*(2), 140-155.

[9] Ramesh, D. (2019). Digital archives and open-access resources in IIT libraries. *Journal of Academic Information, 20*(3), 66-78.

[10] Singh, R., &Agarwal, V. (2022). The role of AI in digital library assistance: A case study. *Library Technology Reports, 58*(5), 90-107.
