

Evaluating Web Content and Design Trends: A Comprehensive Study of Forest Institute Library Websites of ICFRE

Mehtab Alam Ansari^{1*}, Naseem Eqbal²

Abstract

This study evaluates the website content and design features of forest institute libraries under the Indian Council of Forestry Research and Education (ICFRE). A comprehensive checklist comprising eight categories and 60 parameters was developed to assess nine regional forest institute websites systematically. The findings reveal that all websites (100%) feature visible and contrasted colour schemes with clear and easily readable text. Moreover, every institute's website includes webmail functionality, copyright information, and copyright authority on its main pages. The analysis highlights that most websites (88.88%) utilise social media platforms like Facebook, YouTube, and Twitter/X to enhance user engagement. Additionally, the websites commonly provide essential information, including circulars, job vacancies, and event advertisements. Notably, only the Forest Research Institute (FRI) maintains a dedicated library website, which scored the highest with 48 out of 60 parameters and ranked first, while the Institute of Forest Productivity (IFP) ranked last with 31 parameters. The study emphasises the need for all ICFRE institutes to update and upgrade their websites regularly and recommends developing separate library websites featuring advanced functionalities to better cater to user needs and improve accessibility. This review highlights the importance of digital platforms for fostering information dissemination and collaboration within the forestry research community.

Keywords: Content analysis, web content, web design, Web 2.0, navigation, library services, forest institute, forest library, India, ICFRE

INTRODUCTION

The present study explores the various features of the library websites associated with regional research forest institutes under the Indian Council of Forestry Research and Education (ICFRE) [1]. This study also provides a comprehensive analysis of the current status of these websites, with a

*Author for Correspondence

Mehtab Alam Ansari

E-mail: mehtabalamansari1@gmail.com

¹Senior Research Fellow (SRF), Department of Library and Information Science, Aligarh Muslim University, Aligarh, Uttar Pradesh, India

²Professor, Department of Library and Information Science, Aligarh Muslim University, Aligarh, Uttar Pradesh, India

Received Date: March 18, 2025

Accepted Date: May 01, 2025

Published Date: May 15, 2025

Citation: Mehtab Alam Ansari, Naseem Eqbal. Evaluating Web Content and Design Trends: A Comprehensive Study of Forest Institute Library Websites of ICFRE. Journal of Advancements in Library Sciences. 2025; 12(2): 1–11p.

particular focus on their usability, functionality, and effectiveness in meeting the needs of users. The research identifies key areas where these websites can be enhanced to improve user experience and accessibility. In addition to essential information such as institutional profiles, library operating hours, and contact details, the study investigates more advanced features available on these websites, such as digital resource access and web 2.0 tools. The analysis further highlights the extent to which these websites integrate modern technological tools and services, including online databases, digital repositories, and interactive platforms for communication between users and library staff. By examining foundational and advanced website

features, the study provides actionable understandings and recommendations to optimise the digital presence of ICFRE's regional forest institute libraries, enhancing their overall usefulness for researchers, students, and other stakeholders in the forestry and environmental sciences community.

Indian Council of Forestry Research and Education (ICFRE)

The Indian Council of Forestry Research and Education (ICFRE) traces its origins back to the late 19th century, which marked the beginning of scientific forestry in India. The journey began with establishing the Forest School in Dehradun in 1878, a pivotal moment in the country's forestry development. Building on this foundation, the Imperial Forest Research Institute was founded by the Government of India on 5th June 1906 to advance forestry research across the nation. In 1986, the ICFRE was formed as an umbrella organisation addressing forestry research, education, and extension needs. Subsequently, on 1st June 1991, the ICFRE was declared an autonomous body under the Ministry of Environment and Forests and registered as a Society under the Societies Registration Act 1860, solidifying its role in shaping the forestry landscape. The Council operates across India through its nine regional research institutes strategically located in various bio-geographical regions. These institutes are based in Jodhpur, Dehradun, Shimla, Hyderabad, Coimbatore, Ranchi, Bengaluru, Jorhat and Jabalpur and are reinforcing their comprehensive efforts in forestry research, education, and development across India [1].

REVIEW OF RELATED LITERATURE

Several studies have been conducted on content analysis and evaluation of library websites. However, it is not possible to review all the studies. In the following paragraphs, a couple of relevant studies will be reviewed.

Comeaux investigated the essential design components of 37 academic library websites [2]. This study represents the comprehensive analysis of the design features of many library websites over an extended period. Oguche and Chiranchi found that university websites in Nigeria included basic information about libraries, resources and social media links [3].

Aharony analysed the websites of 31 academic libraries, assessing various features, including feedback links, frequently asked questions and site maps [4]. Ganaee and Rafiq assessed Pakistan academic institutions and revealed that library websites have compelling features such as contrasting colour schemes, easily readable text and minimal use of horizontal scrolling [5].

Savitha discovered that most deemed university websites provided information about universities, libraries, copyrights, books and journals [6]. This study also determined that most websites provided information about working hours, library sections and the back volume of journals. Chow *et al.* analysed the websites of academic and public libraries. The study examined various design layouts and content elements across 203 library websites, using their evaluation tool to assess usability [7].

Jones and Thorpe conducted a content analysis of the home pages of 313 medium-sized academic institution libraries, revealing that 53% of these libraries utilised a university template for their design [8]. Madhusudhan evaluated the Indian Institutes of Technology (IIT) and revealed that websites provide broad information about library services and resources [9].

Sharib *et al.* investigated the library website content of Annamalai University of Tamil Nadu in India [10]. Johnson and Ramasamy evaluated that most IIT library websites have homepage links to the library name and logo, vision-friendly graphics, accessible layouts, links to resources and services, and academic research tools [11].

Wilson measured Alabama academic institutes and found that library websites have more usage and search guides [12]. Sahoo and Panda revealed that IIT libraries use graphics on their websites and link

them to library homepages, e-resources, and research support tools [13]. Most libraries have copyright details and general information on their websites.

Rafiq *et al.* investigated medical universities and found that library websites consider the currency of updating, navigation features, visual appearance and information on their websites [14]. Mohammed *et al.* investigated universities in Nigeria and found websites that provide general information about the library and library services [15].

Devi and Verma found that most IITs have separate library websites and the page title appears in the top window bar [16]. Furthermore, most libraries offer information in more than one language. Gulnaz and Fatima assessed the IIT Madras and Bombay and stated that portals provide general information regarding library activities [17]. Both libraries provide home links on every page, and the title page provides links to contents using library pictures on the title page.

Rahman and Batcha discovered that most college library websites of the colleges affiliated with the University of Delhi have information about the library, staff, library hours and membership on their websites [18].

Singh and Gautam scrutinised the central universities in Delhi and revealed that most library websites were well-developed and designed to enrich with e-resources [19]. Jones and Leonard found that 69.1% of these websites followed a university template, influencing navigation design, with 62.2% using a horizontal format for university navigation [20].

McConnaughy and Wilson examined homepage content and design elements for academic health sciences libraries [21]. The essential features identified on these library home pages comprised contact details, Ask-a-Librarian, feedback links, social media links and a copyright year or date of update.

OBJECTIVES OF THE STUDY

The objectives of this study are as follows:

- To investigate the status and features of library websites of regional institutes of ICFRE.
- To find out the types of general information available on library websites.
- To find out the facilities and services provided on the library websites.
- To know the appearance, accessibility and user-friendliness of the websites.
- To compare and rank the features and design trends of regional forest institutes of ICFRE.
- To identify and suggest measures for improving the regional forest institute library websites.

SCOPE AND LIMITATIONS

Websites are crucial digital interfaces for educational institutions, business enterprises, and social organisations. They act as comprehensive platforms, providing detailed and easily accessible information about services, products, educational infrastructure, and various other offerings, catering to the diverse needs of users. The Indian Council of Forestry Research and Education (ICFRE) websites are essential in disseminating information on their contributions to forestry research and education activities across India. ICFRE addresses forestry research and education needs, acting as a nodal agency for policy formulation, promotion, and dissemination of forestry-related information. The present study focuses on the websites of the nine regional research institutes of ICFRE, highlighting their content, usability, and features to evaluate their effectiveness in meeting users' information needs (Table 1). These institutes are deliberately located across India to cover diverse bio-geographical regions. The institutes are located in Jodhpur, Dehradun, Shimla, Hyderabad, Coimbatore, Ranchi, Bengaluru, Jorhat and Jabalpur, each contributing significantly to forestry research and extension activities within their respective regions. The study aims to provide insights for enhancing their functionality, accessibility, and alignment with organisational objectives by analysing these websites.

METHODOLOGY

The present study focuses on evaluating the websites of all nine regional forest institute libraries under the Indian Council of Forestry Research and Education (ICFRE) in India. It analyses the content, structure, and linking of resources and services provided through these websites. The evaluation criteria were developed with the primary aim of assessing the websites from the perspective of users' access and usability. A well-structured checklist was used as the primary tool for evaluating the websites. This checklist was prepared based on an extensive review of related literature and previous studies, including those by Madhusudhan [9], Ganaee and Rafiq [5], Mohammed *et al.* [15], and Rafiq *et al.* [14]. It comprises 60 parameters grouped under eight categories to ensure a comprehensive assessment of the websites' features. The data for the study was collected and analysed during July 2024. A binary coding system was employed for the evaluation: 'one' (1) and 'zero' (0). The binary code 'one' (1) indicates the presence of a feature, while a score of 'zero' (0) denotes the absence of a feature in the websites. The data were tabulated and processed using MS Excel to enable the ranking of websites based on the availability of the assessed content. This methodological framework ensures a systematic and objective analysis, providing an actionable understanding of the usability and effectiveness of the regional forest institute libraries' websites under ICFRE. Table 2 shows the URLs of forest institutes.

DATA ANALYSIS

The data were organised and presented in a tabular form using statistical techniques. The analysis and interpretation of the data collection through the checklist were followed for the present study.

General Information of Forest Institutes

The data shown in Table 3 reveals that most forest institutes (100%) have given information about the institution and provided a director's desk. Most institutes provide a staff directory (88.88%), show news and events on their websites (77.77%), and show the date of the website update (55.55%). However, some of them lack information on administration (44.44%) and location maps (33.33%) on

Table 1. ICFRE forest institutes.

S.N.	Forest institutes	Location	State	Year
1.	Forest Research Institute	Dehradun	Uttarakhand	1906
2.	Tropical Forest Research Institute	Jabalpur	Madhya Pradesh	1973
3.	Himalayan Forest Research Institute	Shimla	Himachal Pradesh	1977
4.	Arid Forest Research Institute	Jodhpur	Rajasthan	1988
5.	Institute of Forest Genetics and Tree Breeding	Coimbatore	Tamil Nadu	1988
6.	Rain Forest Research Institute	Jorhat	Assam	1988
7.	Institute of Wood Science and Technology	Bengaluru	Karnataka	1988
8.	Institute for Forest Productivity	Ranchi	Jharkhand	1993
9.	Institute of Forest Biodiversity	Hyderabad	Telangana	2012

Table 2. URLs of forest institutes.

S.N.	Forest institutes	Abbreviations	URL of Websites
1.	Forest Research Institute	FRI	https://fri.icfre.gov.in/
2.	Tropical Forest Research Institute	TFRI	https://tfri.icfre.gov.in/
3.	Himalayan Forest Research Institute	HFRI	https://hfri.icfre.gov.in/
4.	Arid Forest Research Institute	AFRI	https://afri.icfre.org/
5.	Institute of Forest Genetics and Tree Breeding	IFGTB	https://ifgtb.icfre.gov.in/
6.	Rain Forest Research Institute	RFRI	https://rfri.icfre.gov.in/
7.	Institute of Wood Science and Technology	IWST	https://iwst.icfre.gov.in/
8.	Institute for Forest Productivity	IFP	https://ifp.icfre.gov.in/
9.	Institute of Forest Biodiversity	IFB	https://ifb.icfre.gov.in/

Table 3. General information.

Items	FRI	TFRI	AFRI	HFRI	IFP	IFB	IFGTB	RFRI	IWST	Total (%)
About institute	1	1	1	1	1	1	1	1	1	100
Administration	1	0	0	0	1	0	0	1	1	44.44
Director desk	1	1	1	1	1	1	1	1	1	100
Staff directory	1	1	1	1	0	1	1	1	1	88.88
Working hours	1	0	0	0	0	0	1	0	0	22.22
Visitor count	0	0	0	0	0	0	1	0	0	11.11
Date of update	1	1	0	1	0	1	0	0	1	55.55
News and events	1	1	1	1	1	1	0	0	1	77.77
Location map	1	0	0	0	0	0	1	0	1	33.33
Max. score (9)	8	5	4	6	4	5	7	6	7	

Table 4. Navigations.

Items	FRI	TFRI	AFRI	HFRI	IFP	IFB	IFGTB	RFRI	IWST	Total (%)
Page title appears at top of window bar	1	1	1	1	1	1	1	1	1	100
Link to other ICFRE institutes	0	0	1	0	0	0	0	1	0	11.11
Direct link to homepage	1	1	1	1	1	1	1	1	1	100
Site map	0	1	0	0	0	1	1	1	1	55.55
Quick links	0	0	0	0	1	0	1	0	1	33.33
Max. score (5)	2	3	3	2	3	3	4	4	4	

their websites, so visitors can locate and reach them without problems. Moreover, this study also discovered that out of nine general information features, FRI (08), followed by IFGTB (07) and IWST (07) forest institutes have most of the general features on their web pages.

Navigational Features

Efficient navigation enables users to access necessary information more quickly. Navigational tools are used to accommodate the requirements of users. It ensures easy movement for visitors as they navigate from one webpage to another without encountering any hindrances. Table 4 of this study reveals that all the ICFRE forest institutes (100%) have page titles that appear at the top of the window bar and are directly linked to the home page. Furthermore, the majority of the forest institutes (55.55%) have shown site maps on their website main page. However, most institutes lack quick links (33.33%) and links to other ICFRE institutes (11.11%). However, the results also show that out of five navigational features, the IFGBT, RFRI, and IWST websites (04) utilise most of the navigation bar features.

Website Aid and Tools

Websites aids and tools assist users in navigating the webpages effectively. These features are designed to help users locate the information quickly and straightforwardly. Users can enhance their knowledge on the website and easily access the desired content by utilising these aids and tools. The data presented in Table 5 shows that most of the ICFRE forest institutes (100%) have webmails, copyright information and information about copyright authority. Moreover, the majority of the institutes provide contact details of web designers (88.88%), related links (77.77%), important links (66.66%) and current date and time on webpages (55.55%). However, only a few institutes (11.11%) provide web searches and links to web designers. The finding shows that out of nine website aids and tools, IFGTB (08), followed by TFRI (07), IFB (07) and RFRI (07) provide the most features of website aids and tools.

Table 5. Website aid and tools.

Items	FRI	TFRI	AFRI	HFRI	IFP	IFB	IFGTB	RFRI	IWST	Total (%)
Webmail	1	1	1	1	1	1	1	1	1	100
Date and time on webpage	0	1	0	0	0	1	1	1	1	55.55
Related links	1	1	0	0	1	1	1	1	1	77.77
Web search	0	0	0	0	0	0	1	0	0	11.11
Link to web designer	1	0	0	0	0	0	0	0	0	11.11
Contact details of web designer	1	1	1	1	1	1	1	1	0	88.88
Copyright info.	1	1	1	1	1	1	1	1	1	100
Info. about copyright authority	1	1	1	1	1	1	1	1	1	100
Important links	0	1	0	0	1	1	1	1	1	66.66
Max. score (9)	6	7	4	4	6	7	8	7	6	

Table 6. Appearance of websites.

Items	FRI	TFRI	AFRI	HFRI	IFP	IFB	IFGTB	RFRI	IWST	Total (%)
Visible colour window	1	1	1	1	1	1	1	1	1	100
Text easily readable	1	1	1	1	1	1	1	1	1	100
Page-scrolling	1	1	1	1	1	1	1	1	1	100
Use of graphics	1	1	1	1	1	1	1	1	1	100
Institute logo	1	1	1	1	1	1	1	1	1	100
Library logo	0	0	0	0	0	0	0	0	0	00
Gallery	1	1	1	1	0	1	1	1	1	88.88
Max. score (7)	6	6	6	6	5	6	6	6	6	

Appearance of Websites

A well-designed website with a clean layout, intuitive navigation, and visually appealing graphics can enhance the credibility and professionalism of the institution. Modern and user-friendly website design encourages visitors to stay longer and ultimately take desired actions, such as submitting an application or requesting more information. Table 6 describes the appearance of forest institute websites of ICFRE. The study shows that most of the institute's websites (100%) have visible colour windows, the text available on the web pages is readable, easy to scroll, and attractive graphics, and the institute logo is available on the websites. Moreover, most of them provide a gallery (88.88%) on their web pages showing pictures of different events and programmes organised by the institutes. However, there is a lack of library logos in most of the forest institutes, and no institutes have their library logo. Furthermore, this study highlights that all the institutes have photo galleries on their websites except for IFP. The findings of this study reveal that the majority of the selected forest institutes (06) provide most of the facilities available in the checklist (07) except for IFP (05).

Languages

Language is a communication system used to express thoughts, ideas, and emotions. Language can take any form, including spoken, written and signed, and can vary significantly from one culture to another. Analysis of Table 7 displays the languages used in the websites of different selected forest institutes. The analysis shows that all the selected institutes (100%) prefer English to visualise website content. Furthermore, most institute websites are accessible in Hindi (77.77%), except for AFRI and IFGTB. Hindi and English are the official languages of India. Nevertheless, Hindi is the most widely spoken language in the country. However, this study also shows that no other language and translation facilities are available on any institute's website.

Table 7. Language.

Items	FRI	TFRI	AFRI	HFRI	IFP	IFB	IFGTB	RFRI	IWST	Total (%)
English	1	1	1	1	1	1	1	1	1	100
Hindi	1	1	0	1	1	1	0	1	1	77.77
Other language	0	0	0	0	0	0	0	0	0	00
Translation facility	0	0	0	0	0	0	0	0	0	00
Max. score (4)	2	2	1	2	2	2	1	2	2	

Table 8. Library information.

Items	FRI	TFRI	AFRI	HFRI	IFP	IFB	IFGTB	RFRI	IWST	Total (%)
Library website	1	0	0	0	0	0	0	0	0	11.11
Domain name for library	1	0	1	1	0	0	1	0	1	55.55
About library	1	0	1	0	0	0	0	0	1	33.33
Photographs of library	1	0	1	0	0	0	1	0	1	44.44
Library name linked to home page	1	0	0	0	0	0	0	0	0	11.11
Library collection	1	0	1	1	0	0	1	0	1	55.55
Service offered	1	0	0	1	0	0	1	0	1	44.44
Library news	1	0	0	0	0	0	0	0	0	11.11
Newsletter	0	0	0	0	1	0	1	0	1	33.33
Ask a librarian	1	0	0	0	0	0	0	0	0	11.11
Max. score (10)	9	0	4	3	1	0	5	0	6	

Basic Information of Library

The library website of an academic institution provides various resources and services to its user communities. The presence of websites enhances the accessibility and convenience of the library and further ensures that users can quickly and efficiently access the resources and services needed to succeed in their academic pursuits. Table 8 of this study shows the general information of regional forest institute libraries of ICFRE. The study reveals that most institutes (55.55%) have the domain name for the library and shows the total statistics of library collection. Furthermore, there is a very inconsistency (44.44%) in photographs of the library and services offered by the library to its users. Moreover, very few forest institutes provide (33.33%) information about libraries and newsletters published by them. However, there is a lack (11.11%) of library names linked with the home page, library news, and Ask Librarian services. Significantly, it is important to note that only FRI has a separate library website; for instance, no other forest institutes have their library websites. Moreover, this study shows that only the FRI library (09) has most of the features of library websites, and it is the only institution with a separate library website.

Web 2.0 Tools

In this modern era, Web 2.0 tools have significantly enhanced user knowledge by promoting updated and latest information to the global communities through the internet. Web 2.0 tools help the global community connect and interact with themselves most efficiently within the shortest time. Table 9 of this study discovered that most of the forest institutes (88.88%) provided Facebook, Twitter/X, and YouTube to provide the latest updates and services. Furthermore, this study also determines that 77.77% of forest institutes provide Koo microblogging and Instagram social media platforms. Moreover, only 55.55% of forest institutes provide social media updates. However, only 11.11% of forest institutes provide LinkedIn, a professional social media platform and RSS feed. The study further stated that except for RFRI (00) and IFP (04), most forest institutes provide Web 2.0 tools such as FRI (07), followed by TFRI (06), AFRI (06), HFRI (06), and IWST (06).

Table 9. Web 2.0 tools.

Items	FRI	TFRI	AFRI	HFRI	IFP	IFB	IFGTB	RFRI	IWST	Total (%)
Facebook	1	1	1	1	1	1	1	0	1	88.88
Twitter/X	1	1	1	1	1	1	1	0	1	88.88
YouTube	1	1	1	1	1	1	1	0	1	88.88
LinkedIn	1	0	0	0	0	0	0	0	0	11.11
Koo	0	1	1	1	1	1	1	0	1	77.77
Instagram	1	1	1	1	0	1	1	0	1	77.77
RSS feed	1	0	0	0	0	0	0	0	0	11.11
Social media updates	1	1	1	1	0	0	0	0	1	55.55
Max. score (8)	7	6	6	6	4	5	5	0	6	

Table 10. Value added services.

Items	FRI	TFRI	AFRI	HFRI	IFP	IFB	IFGTB	RFRI	IWST	Total (%)
Publications	1	1	1	0	1	1	1	1	1	88.88
Circular and orders	1	1	1	1	1	1	1	1	1	100
Research divisions	1	1	1	1	1	1	1	1	1	100
Job vacancies	1	1	1	1	1	1	1	1	1	100
Advertisements	1	1	1	1	1	1	1	1	1	100
Contact us	1	1	1	1	1	1	1	1	1	100
RTI	1	1	1	1	0	1	1	1	1	88.88
Forthcoming events	1	1	0	0	0	1	1	1	1	66.66
Max. score (8)	8	8	7	6	6	8	8	8	8	

Value Added Services

Institutional websites provide value-added services that enhance the overall user experience. These services provide users with valuable information and tools to help them decide about their education and jobs. Table 10 of this study highlights significant value-added services provided by the selected ICFRE forest institutes. The study reveals that most forest institute websites (100%) provide circulars and orders, information about research divisions, job vacancies, and advertisements for various activities, and they also provide contact details of the institute. Moreover, this study reveals that most forest institutes (88.88%) have shown their publications and RTI information on web pages. Furthermore, 66.66% of the ICFRE institutes provide information on forthcoming events they organise. Moreover, this study also discovers that most forest institutes (08) provided all listed value-added services on their websites.

Ranking of Forest Institutes Websites

The rankings of the forest research institutes under the ICFRE are systematically presented in Table 11. These rankings are determined based on the total scores obtained by the websites, reflecting the availability and comprehensiveness of their web content as per the features listed in the checklist. The findings show significant variations in the quality and scope of website features across the institutes. The FRI emerged as the top performer, scoring 47 out of 60 features, showing its robust digital presence and the extensive information available on its website. The IWST secured the second rank with a score of 45, followed closely by the (IFGTB) as third with 44 points. These institutes demonstrated higher web content availability, emphasising their commitment to effective digital communication and stakeholder engagement. In contrast, the RFRI and IFP scored the lowest among them, with only 33 and 31 out of 60 features present on its website, resulting in eighth and ninth ranks. This indicates the need for significant improvements in its digital infrastructure and content accessibility. The study highlights the importance of enhancing website features across all institutes to ensure consistency in disseminating information and better serve the diverse needs of researchers, scientists, policymakers, and the general public. These findings provide a clear direction for targeted interventions to strengthen the digital presence of ICFRE's regional forest research institutes (Figure 1).

Table 11. Ranking of forest institutes websites.

Items	FRI	IWST	IFGTB	TFRI	IFB	AFRI	HFRI	RFRI	IFP
General information (09)	8	7	7	5	5	4	6	6	4
Navigation (05)	2	4	4	3	3	3	2	4	3
Website aid and tools (09)	6	6	8	7	7	4	4	7	6
Appearance (07)	6	6	6	6	6	6	6	6	5
Language (04)	2	2	1	2	2	1	2	2	2
Library information (10)	9	6	5	0	0	4	3	0	1
Web 2.0 tools (08)	7	6	5	6	5	6	6	0	4
Value added services (08)	8	8	8	8	8	7	6	8	6
Total max. score (60)	48	45	44	37	36	35	35	33	31
Rank	1	2	3	4	5	6	7	8	9

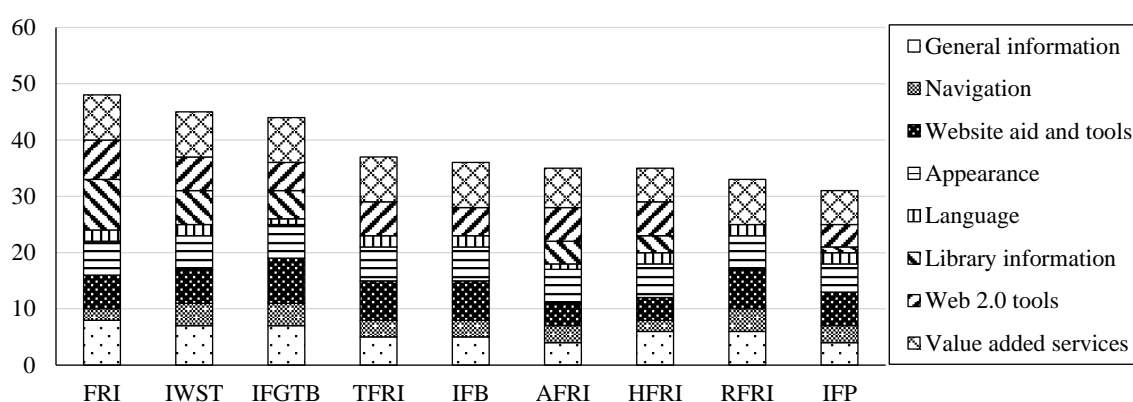


Figure 1. Ranking of forest institutes websites.

DISCUSSION

The current study critically evaluates the websites of forest institute libraries under the Indian Council of Forestry Research and Education (ICFRE), focusing on their content, design, and utility for users. A comprehensive checklist comprising 60 parameters grouped into eight categories was used to assess these websites. The study findings provide critical insights into the strengths and areas for improvement of these websites. Table 1 shows the locations and years of establishment of the nine regional forest institutes, while Table 2 provides their URLs. Table 3 of the study revealed that all the forest institutes (100%) provide institutional information and a director's message on their websites. Features such as staff directories (88.88%), news and events (77.77%), and website update dates (55.55%) are also prominently available. Among the institutes, FRI offers the most general features (08), followed by IFGTB (07) and IWST (07), as shown in Table 3. These findings align with prior studies by Rahman and Batcha [18]; and Devi and Verma highlighted similar trends in academic institution websites [16]. The study presented in Table 4 shows that all ICFRE forest institute websites (100%) feature page titles linked to their home pages, ensuring ease of navigation. IFGTB, RFRI, and IWST utilise the most navigation features (04). These findings are consistent with earlier research by Devi and Verma [22], and Gulnaz and Fatima [17], which emphasised the importance of intuitive navigation in institutional websites.

As shown in Table 5, all institutes provide essential features such as webmail, copyright information, and details about copyright authority. Contact information for web designers (88.88%) and related links (77.77%) are also commonly available, aiding users in accessing desired content. IFGTB leads in offering website aids and tools (08), followed by TFRI (07), IFB (07), and RFRI (07). These findings correspond with Madhusudhan and Ahmad's study on Indian Institute of Management (IIM) websites, highlighting the importance of webmail, contact details, copyright information, etc. [23]. The study found that all institute websites (100%) feature visible colour windows, readable text, attractive graphics, and institute logos. Most institutes also have photo galleries, except IFP (Table 6). These design

elements enhance user experience and align with the findings of Devi and Verma [24], who reported similar trends in National Institutes of Technology (NIT) websites. As presented in Table 7, English is the preferred language for website content across all forest institutes (100%), with most websites also offering Hindi (77.77%) [24]. However, AFRI and IFGTB do not provide content on their websites in Hindi. These findings are consistent with Ganaee and Rafiq's study, which highlighted the global utility of English for institutional websites [5].

The findings highlight significant inconsistencies in library-related features across the institutes. While 55.55% of the websites provide library domain names and library statistics, only FRI maintains a separate library website (Table 8). These findings are similar to previous research by Mohammed *et al.* [15], Madhusudhan [9], and Devi and Verma [16], which emphasised the importance of dedicated library websites for user engagement. The result discovered that most forest institutes (88.88%) provided Facebook, Twitter/X, and YouTube for updates and user engagement. Furthermore, this study also determines that 77.77% of forest institutes use Koo microblogging and Instagram social media platforms. The study further stated that all the ICFRE institutes provide most Web 2.0 tools except for RFRI (00), IFP (04), IFB (05) and IFGTB (05) (Table 9). These findings align with earlier studies by Gulnaz and Fatima [17], Devi and Verma [22], and Madhusudhan and Ahmad [23], which emphasised the transformative impact of Web 2.0 tools on library communication and outreach of the institutions.

This study emphasises significant value-added services and reveals that most websites (100%) provide circulars and orders, information about research divisions, job vacancies, and advertisements for various activities, and they also provide contact details of the forest institute (Table 10). This study is consistent with earlier studies by Ganaee and Rafiq [5] and Rafiq *et al.* [14], which found similar features on the websites to know the notifications of different activities of academic institutions. The institutes are ranked based on the score obtained by the websites on the availability of web content. The study reveals that FRI scored 48 out of 60 features and ranked first of the websites listed in the checklist, followed by IWST (45) and IFGTB (44), ranked second and third. However, RFRI (33) and IFP (31) scored very low and were listed as the eighth and ninth rank (Table 11). The findings highlight significant gaps and emphasise the need for improvement in web content and design across these ICFRE institutes. These results align with earlier studies by Rahman and Batcha [18], Devi and Verma [24], and Madhusudhan [9], that advocate enhanced website features to improve user experience.

CONCLUSION

Libraries play a crucial role in information dissemination within educational institutions, with library websites serving as essential platforms for accessing and sharing information with users. The web content analysis of the ICFRE regional forest institute libraries reveals erratic degrees of web manifestation, content organisation, and user-friendly features across the nine institutes. Most forest institute websites excel in essential web design elements such as readable text, attractive graphics, and visible colour windows to ensure user engagement. However, only a few institutes provide comprehensive features like quick links, location maps, and integration with other ICFRE institutes, indicating improved user navigation and accessibility. Furthermore, several institutes still lack user-centric services like "Ask a Librarian", newsletters, and dedicated library web pages, which are vital for improving user interaction and support. While social media integration, mainly through platforms like Facebook, Twitter/X, and YouTube, is prevalent across most institutes, there is a need for improvement, particularly in incorporating platforms such as LinkedIn and providing regular social media updates. Overall, the study highlights the need for ICFRE regional forest institutes to enhance their library websites by incorporating advanced features and improving user experience through greater integration and interactivity.

REFERENCES

1. Indian Council of Forestry Research and Education (ICFRE). [Online]. 2024 [cited 2024 Aug 1]. Available from: <https://www.icfre.org/>

2. Comeaux DJ. Web Design Trends in Academic Libraries—A Longitudinal Study. *J Web Librariansh.* 2016; 11(1): 1–15. doi:10.1080/19322909.2016.1230031
3. Oguche D, Chiranchi JM. Contents, services and visibility of university library websites in Nigeria. *Niger Libr.* 2021; 54(1): 46–57.
4. Aharony N. An analysis of American academic libraries' websites: 2000-2010. *Electron Libr.* 2012; 30(6): 764–76. doi:10.1108/02640471211282091
5. Ganee MA, Rafiq M. Pakistani University Library Web Sites: Features, Contents, and Maintenance Issues. *J Web Librariansh.* 2016; 10(4): 294–315. doi:10.1080/19322909.2016.1195308
6. Savitha KS. Content analysis of deemed university library websites of Karnataka state: A study. *Int J Digit Libr Serv.* 2016; 6(1): 87–93.
7. Chow AS, Bridges M, Commander P. The Website Design and Usability of US Academic and Public Libraries. *Ref User Serv Q.* 2014; 53(3): 253–65.
8. Jones SL, Thorpe A. Library Homepage Design at Medium-Sized Institutions. *J Web Librariansh.* 2014; 8(1): 1–22. doi:10.1080/19322909.2014.850315
9. Madhusudhan M. Content evaluation of Indian Institutes of Technology library websites in India. *World Digit Libr.* 2012; 5(2): 1–20.
10. Sharib M, Ansari MA, Eqbal N. Content Analysis of the Library Website of Annamalai University: An Evaluative Study. *J Adv Res Libr Inf Sci.* 2024; 11(2): 14–9.
11. Johnson S, Ramasamy K. Content analysis of homepages of library websites of the top 10 IITs in India. *Libr Philos Pract (e-journal).* 2021; 5237. Available from: <https://digitalcommons.unl.edu/libphilprac/5237>
12. Wilson DE. Web content and design trends of Alabama academic libraries. *Electron Libr.* 2015; 33(1): 88–102. doi:10.1108/EL-05-2013-0100
13. Sahoo S, Panda KC. Web content analysis of Indian Institute of Technology (IIT) library websites: An evaluative study. *Libr Philos Pract (e-journal).* 2019; 3949. Available from: <https://digitalcommons.unl.edu/libphilprac/3949>
14. Rafiq S, Ashiq M, Ur Rehman S, Yousaf F. A content analysis of the websites of the world's top 50 universities in medicine. *Sci Technol Libr.* 2021; 40(3): 260–81. doi:10.1080/0194262X.2021.1889446
15. Mohammed A, Garba A, Umar H. University library websites in Nigeria: An analysis of content. *World Digit Libr.* 2016; 9(2): 121–30. doi:10.18329/09757597/2016/9209
16. Devi KK, Verma MK. Web content and design trends of Indian Institute of Technology (IITs) libraries' website: An evaluation. *COLLNET J Scientometrics Inf Manag.* 2018; 12(2): 165–81. doi:10.1080/09737766.2018.1433100
17. Gulnaz, Fatima N. IIT Madras and IIT Bombay central library portal: Content analysis. In: 11th International CALIBER. Chennai: Anna University; 2017; 256–65.
18. Rahman A, Batcha MS. Content analysis of library websites of select colleges of Delhi University: A study. *DESIDOC J Libr Inf Technol.* 2020; 40(4): 247–252. doi:10.14429/djlit.40.4.15454
19. Singh MP, Gautam VK. Content analysis of websites of central university libraries in Delhi, India. *J Inf Manag.* 2016; 3(2): 1–14.
20. Jones SL, Leonard K. Library Homepage Design at Smaller Bachelor of Arts Institutions. *J Web Librariansh.* 2011; 5(1): 24–45. doi:10.1080/19322909.2011.546216
21. McConnaughy RP, Wilson SP. Content and Design Features of Academic Health Sciences Libraries' Home Pages. *Med Ref Serv Q.* 2018; 37(2): 153–67. doi:10.1080/02763869.2018.1439219
22. Devi KK, Verma MK. Content evaluation and the design trends of National Institutes of Technology (NITs) library websites of India: An evaluative study. *J Indian Libr Assoc.* 2017; 53(2&3): 135–47.
23. Madhusudhan M, Ahmad N. Evaluation of Indian Institute of Management Library Websites in India. *World Digit Libr.* 2012; 6(1): 49–72.
24. Devi KK, Verma MK. Web Content Evaluation of National Institutes of Technology (NITs) Libraries of North-Eastern States of India. *Libr Waves.* 2017; 3(1): 1–9.