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## Content Analysis of Homepages of Library Websites of the top 10 IITs in India

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# **Content Analysis of Homepages of Library Websites of the top 10 IITs in India**

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## **Abstract**

The **Indian Institutes of Technology (IITs)** are the premier autonomous public technical and research universities located across India, created to be Centres of Excellence for training, research and development in science, engineering and technology in India. Every IITs being centres of Excellence with predefined goals objectives, each one has its own exclusive achievements to boast of. Part of every successful IIT is its well developed library and its very supportive website to assist academics in their training and research endeavour. The Homepages of the websites being the firsthand view of the quality of the website, it is imperative that the Homepage contain a capsule view of the entire website. The study evaluates the content of the Homepages of select library websites of IITs analysing both qualitative and quantitative aspects using a checklist prepared on the basis of previous studies performed. The study compares the content and usability of the various Homepages of the top 10 IIT libraries as ranked by NIRF. A web survey is conducted using a checklist prepared with 60 questions grouped under 9 criteria based on qualitative and quantitative content features offered by IIT library websites in India. The data collected is tabularized and total score per Homepage derived to identify the best among the 10. Most homepages have ignored some important basic components needed in a website homepage. The homepages have not exploited the use of Web 2.0 tools. A platform for co-ordination and development of every website is the need of the hour to devise well developed websites to meet the objectives of the institution and the needs and expectations of its users.

**Keywords:** Library Websites, IITs, Homepages, content analysis, NIRF ranking, Accessibility, Navigation, Currency, User interface, Web 2.0 tools

## **Introduction**

The fast flourishing World Wide Web has facilitated even libraries to adopt their own exclusive websites to float its resources and services for access to its users providing easy access with no barrier of time or distance. It is imminent that the users get what they look for in the websites of libraries. Library web-portals not only provide access to the institution's resources but also lists useful external links to useful resources. Library websites are a mirror of the actual library and the Homepage the Entrance or front room of the Website. The Homepage of a website defines the quality of the website. It presents a capsular view of the entire website. The qualitative and quantitative aspects of the Homepage presents an image of the whole website. In previous content analysis studies, the quality of the Homepage has been a defining factor of the quality of the whole website. The website represents the library across the globe, Analysis of the contents of the Homepage gives a brief idea to the quality of the website itself. The presence of quality web content and links to all resources make the library website more informative and serve the purpose of the wider audience. Hence, there is a need for analysis of web contents of library websites from time to time to provide updated information to the users (Sahoo & Panda, 2019). The IITs were created with an objective to train scientists and engineers, with the aim of developing a skilled workforce for the economic and social development of the country. IITs being chief institutes of technical, higher education as well as research in India, users expect the web contents also to be advanced in qualitative and quantitative content. IITs have frequently updated dynamically created websites with well set design and layout and provide access to valuable e-resources for technical education and research purpose. There should be a standard guideline for library website development, which may be prepared by the IITs by following the rules of W3C and in consultation with the web developers and librarians. Evaluation is a worthy judgement of its utility with several of the component elements of a website that facilitates browsing, navigation, and searching and locating of the desired information. (Margam Madhusudhan, 2012)

The evaluation of the content of Homepages of select IITs is attempted here through a web survey of the contents using a checklist based on previous analysis studies. Every homepage is different in content and design.

## **Content Analysis**

Content analysis is defined as "the systematic reading of a body of texts, images, and symbolic matter, not necessarily from an author's or user's perspective" (Krippendorff, 2004).

Content analysis is distinguished from other kinds of social science research in that it does not require the collection of data from people. Like documentary research, content analysis is the study of recorded information, or information which has been recorded in texts, media, or physical items.

## **Indian Institute of Technology (IIT)**

The **Indian Institutes of Technology (IITs)** are the premier autonomous public technical and research universities located across India, created to be Centres of Excellence for training, research and development in science, engineering and technology in India. They are governed by the Institutes of Technology Act, 1961, which has declared them as Institutes of National Importance and lays down their powers, duties, and framework for governance. The Institutes of Technology Act, 1961 lists twenty-three institutes. Each IIT is autonomous, linked to the others through a common council (IIT Council), which oversees their administration. The Minister of Education is the ex officio Chairperson of the IIT Council.

**Table 1**

*Top 10 IITs ranked by NIRF in 2020*

<b>S. No.</b>	<b>Name of IIT</b>	<b>Location</b>	<b>NIRF 2020 Ranking</b>	<b>Central Library website address</b>
1	IIT, Madras	Tamil Nadu	1	<a href="https://cenlib.iitm.ac.in/">https://cenlib.iitm.ac.in/</a>
2	IIT, Delhi	New Delhi	2	<a href="https://library.iitd.ac.in/">https://library.iitd.ac.in/</a>

3	IIT, Bombay	Maharashtra	3	<a href="https://www.library.iitb.ac.in/">https://www.library.iitb.ac.in/</a>
4	IIT, Kanpur	Uttar Pradesh	4	<a href="http://pkklib.iitk.ac.in/">http://pkklib.iitk.ac.in/</a>
5	IIT, Kharagpur	West Bengal	5	<a href="https://library.iitkgp.ac.in/">https://library.iitkgp.ac.in/</a>
6	IIT, Roorkee	Uttarakhand	6	<a href="http://mgcl.iitr.ac.in/">http://mgcl.iitr.ac.in/</a>
7	IIT, Guwahati	Assam	7	<a href="https://www.iitg.ac.in/lib/">https://www.iitg.ac.in/lib/</a>
8	IIT, Hyderabad	Telangana	8	<a href="https://library.iiit.ac.in/">https://library.iiit.ac.in/</a>
9	IIT, Indore	Madhya Pradesh	10	<a href="http://library.iiti.ac.in/">http://library.iiti.ac.in/</a>
10	IIT, Varanasi	Uttar Pradesh	11	<a href="https://www.iitbhu.ac.in/cf/lib">https://www.iitbhu.ac.in/cf/lib</a>

A **library website** provides a library with a website to offer its services and to tell its story to its community. Library websites can offer:

- Interaction with the library catalog. An Online Public Access Catalog (OPAC) provides the ability log into a library account to renew or request items.
- Gateway to electronic resources. Libraries may organize the various periodical indexes, electronic reference collections, and other databases they subscribe to. Resources may be organized alphabetically, by subject and by media.
- Library tutorials. Interactive tutorials can help users choose and use electronic resources, how to renew a book, and other library functions.
- Virtual reference. Virtual reference allows remote patrons to connect with library staff and have their questions answered, including via email and texting.
- Library blogs. Blogs can announce new resources or services at the library and to give patrons another venue to communicate with staff and provide feedback.

## **Need for the study**

IITs are prestigious centres of technology and research providing the best in Technical education with hundreds of the best passing out every year . They have well advanced libraries to support the academics and faculty for best quality education. Users look to the

library for their information seeking and library websites play a very important role. Due to the ease of use and availability even out of the library working hours and breaking the barrier of distance users prefer to look to the websites. IITs being the best ranked institutions have some of the best libraries and supporting websites. 10 of the 2020 NIRF top ranked IITs are selected here for the study.

## **Review of related literature**

Content analyses of library websites have been conducted by many over the years. Most of them are related to academic libraries.

Rupesh Kumar and Rekha (2020) in their study observed that IIT websites fare very poorly in terms of visibility. This means that IIT websites have very limited number of external links even though the number of web pages indexed by Google is considerably high.

Sahoo and Panda (2019) in their Survey of 18 IIT library websites in India found that all the 18 IIT library websites do not fulfill all the criteria developed for the study, where 3 IIT library websites scored less than 50 items out of 100-items checklist. Two features, namely, “Library Website accessible in both English and Hindi language” and “Library organizational chart” was not found on any IIT library websites. The study included all IITs in India that had a separate library website.

Gulnaz and Fatima (2017) in their evaluation of the two highest ranked IITs in India, IIT Madras and IIT Bombay the first and second rank according to the MHRD, National Institutional Ranking Framework (NIRF) 2017, using e-survey method, observed that the library portals of the two highest ranked IITs have all features to achieve the needs of their users and are very informative and attractive.

Panday (2016) in his study of Library websites of seven selected IITs observed that each of the library websites different from each other even in quantitative features with some not having even the basic information.

Asharam Pal (2016) observed that the Indian Institute of Technology (IIT) library have embraced the Internet fairly recently, and therefore are still struggling to overcome

Internet related challenges such as the construction and development of IIT library websites, subscription to online resources (journals, database, e-books etc.), the implementation of OPAC (On-Line Public Access Catalogue).

Manjunath Lamani (2015) in their analysis of Homepages of Library websites of 27 universities of South India by floating questionnaires among students, researchers and faculty observed that very few universities have standard library websites and that the majority of the universities did not have a separate library website but one within the institutional website.

Margam Madhusudhan (2012) analysed the content features of 12 select IITs using a mixed method approach combining both qualitative and quantitative analysis. The qualitative part of the checklist had 11 features pertaining to homepage while the quantitative part of checklist had 90 dichotomous questions relating to content features. Meaningful rating was given for each feature and ranking was done based on the features. It was observed that the websites are not exploiting the full potential of web/ library 2.0 features.

Vijayakumar, Kannappanavar and Mamata Mestri (2009) analysed the library websites of seven IITs of that time. They observed that the library portals of all the IITs were different from each other. Some had shortcomings compared to the others. They differed even in the basic requirements in a library website.

## **Objectives of the study**

1. To evaluate the contents of the homepage of library websites of the top 10 IITs.
2. To compare the features available in the Homepages of the different library websites of IITs.
3. To assess the design, reliability, accuracy and currency and user friendliness of the homepages.
4. To determine the best Homepage by identifying the various features provided and the ease of use.
5. To suggest measures for improvement of library portal

## **Scope and Limitations of the study**







Virtual Tour	X	X	X	X	√	X	X	X	X	X
Total Score (out of 4)	3	3	3	2	2	3	1	2	3	3

Table 3 shows the simplicity of the Navigational features. 6 out of the 10 IITs (60%) have the Homepage link on the Library Name and Logo. IIT Kanpur, Kharagpur, Guwahati and Hyderabad did not have the feature. 8 of the 10 (80%) IITs have the link to the Parent Institution website in the Library Homepage. The Kharagpur and Guwahati Homepages did not have this feature. All Homepages have made good use of graphics that did not affect access speed. Only IIT Kharagpur Homepage had a Virtual Tour in the Library Homepage. IIT Madras, Delhi, Bombay, Roorkee, Indore and Varanasi acquired total score of 3 (75%) while Kanpur and Kharagpur acquired 2 (50%). Guwahati acquired only a score of 1 (25%).

**Table 4**

*Design, Structure, layout*

<b>Table 3 - Design, Structure, layout</b>										
Items	IIT Madras	IIT Delhi	IIT Bombay	IIT Kanpur	IIT Kharagpur	IIT Roorkee	IIT Guwahati	IIT Hyderabad	IIT Indore	IIT Varanasi
Vision friendly colour & graphics	√	√	√	√	√	√	√	√	√	√
Easily accessible layout	√	√	√	√	√	√	√	√	√	√
Simple design	√	√	√	√	√	√	√	√	√	√
Total Score (out of 3)	3	3	3	3	3	3	3	3	3	3

Tables 4 deals with the Design, Structure and layout criteria and all 10 IIT websites have Vision friendly colour and graphics, and Easily accessible layout. All Homepages acquire the full score of 3 (100%).

**Table 5**

*Links to Resources and services*

<b>Table 4 - Links to Resources and services</b>										
<b>Items</b>	<b>IIT Madras</b>	<b>IIT Delhi</b>	<b>IIT Bombay</b>	<b>IIT Kanpur</b>	<b>IIT Kharagpur</b>	<b>IIT Roorkee</b>	<b>IIT Guwahati</b>	<b>IIT Hyderabad</b>	<b>IIT Indore</b>	<b>IIT Varanasi</b>
Links to other IIT websites	X	X	X	√	X	√	X	X	X	X
Link to Web OPAC	√	√	√	√	√	√	√	√	√	√
Links to e-databases	√	√	√	√	√	√	√	√	√	√
Links to Institutional Repository	√	√	√	√	√	√	√	√	√	√
Links to Open Access Resources	√	√	√	√	√	√	√	√	√	√
Links to e-books and e-journals	√	√	√	√	√	√	√	√	√	√
About Membership	√	√	√	√	√	√	X	X	√	√
Email alerts	X	X	X	√	X	√	X	X	X	√
Previous Question Papers	X	√	X	X	√	X	X	X	X	X
Interlibrary loan	√	√	√	√	X	√	X	X	√	X
Total Score (out of 10)	<b>7</b>	<b>8</b>	<b>7</b>	<b>9</b>	<b>7</b>	<b>9</b>	<b>5</b>	<b>5</b>	<b>6</b>	<b>7</b>

The study implies that almost all IITs lack co-operation among themselves. This is due to the fact that only two of the ten IIT websites show links to other IITs in their websites. Every IIT selected for the study has Links to WebOPAC, e-databases, Institutional Repository, Open Access Resources, e-books & e-journals. All except IIT Guwahati and Hyderabad show details about Membership. Only Kanpur, Roorkee and Varanasi have e-mail alerts. IIT Kanpur and Roorkee fare well with 9 scores (90%) followed by Delhi with 8 (80%) scores and Madras, Bombay, Kharagpur and Varanasi with 7 (70%) scores each out of 10 in providing Links to resources and services in the Library Homepage.

**Table 6**

*Authority, Currency, Readability*

<b>Table 5 - Authority, Currency, Readability</b>										
<b>Items</b>	<b>IIT Madras</b>	<b>IIT Delhi</b>	<b>IIT Bombay</b>	<b>IIT Kanpur</b>	<b>IIT Kharagpur</b>	<b>IIT Roorkee</b>	<b>IIT Guwahati</b>	<b>IIT Hyderabad</b>	<b>IIT Indore</b>	<b>IIT Varanasi</b>



Library Team	X	√	√	√	√	√	√	X	√	√
Library Floor plan & Layout	√	√	√	√	√	√	X	X	X	X
Library location or Site map	X	√	√	X	X	X	X	X	X	X
Useful links	√	√	√	√	√	√	√	√	√	√
Contact Us	√	√	√	√	X	√	√	√	√	√
Total Score (out of 12)	<b>8</b>	<b>11</b>	<b>10</b>	<b>9</b>	<b>8</b>	<b>9</b>	<b>8</b>	<b>7</b>	<b>8</b>	<b>9</b>

Table 7 depicts the General Information content in the Homepages of IIT websites. All the Homepages have the Library name and logo. IIT Kanpur and Guwahati do not have the ‘About the Library’ in the Homepage. Surprisingly none of the Homepages have the Vision or Mission statement in it. IIT Madras and Bombay do not have the ‘Library rules’ in the Homepage. All ten Homepages mention the ‘Working hours’. IIT Kharagpur, Roorkee, Hyderabad and Indore do not mention the ‘Library sections’. All IIT library websites mention ‘Library news & Latest updates’ in the homepage. IIT Madras and Hyderabad do not mention the ‘Library Team’ in the Library website homepage. IIT Guwahati, Hyderabad, Indore and Varanasi do not mention ‘Library floor plan & Layout in the Library website homepage. Only IIT Delhi and Bombay provide ‘Library location of Site map’ in the website homepage. All website homepages of the library provide ‘Useful links’. IIT Kharagpur library website does not provide the ‘Contact us’ field in the library website homepage. IIT Delhi tops the list with 11 scores (92%) followed by Bombay with 10 scores (83%) and IIT Kanpur, Roorkee and Varanasi with 9 (75%) scores.

**Table 8**

*User Support interface*

<b>Table 7 - User support interface</b>										
<b>Items</b>	<b>IIT Madras</b>	<b>IIT Delhi</b>	<b>IIT Bombay</b>	<b>IIT Kanpur</b>	<b>IIT Kharagpur</b>	<b>IIT Roorkee</b>	<b>IIT Guwahati</b>	<b>IIT Hyderabad</b>	<b>IIT Indore</b>	<b>IIT Varanasi</b>
Ask A Librarian	√	√	X	√	X	√	X	X	√	√
FAQ	X	X	√	√	X	√	X	√	X	√

Library User guide / Handbook	X	√	X	X	√	√	X	X	√	X
Book Recommendation form	√	√	√	√	X	√	X	√	√	√
Downloads section	X	√	√	√	√	√	√	X	√	√
Bulletin Board	X	√	X	X	X	X	X	X	X	X
New Arrivals	X	√	√	√	√	√	√	√	√	√
Online Feedback	X	X	X	X	X	√	√	√	X	√
Gallery	√	√	X	X	√	X	X	X	√	√
Academic Research Tools	√	√	√	√	√	X	X	X	√	√
Total Score (out of 10)	<b>4</b>	<b>8</b>	<b>5</b>	<b>6</b>	<b>5</b>	<b>7</b>	<b>3</b>	<b>4</b>	<b>7</b>	<b>8</b>

Table 8 depicting the User Support interface features show that 4 website homepages; IIT Bombay, Kharagpur, Guwahati and Hyderabad do not have the ‘Ask a Librarian’ section. 5 of the 10, Madras, Delhi, Kharagpur, Guwahati and Hyderabad do not have the FAQ section in the library homepage. Only 4 website homepages have the Library User guide / Handbook provided in the homepage. The homepages of IIT Kharagpur and Guwahati do not provided the ‘Book Recommendation form’ section. IIT Madras and Hyderabad do not have the Downloads section in the Library website homepage. None of the homepages provided the Bulletin section except IIT Delhi. All except the IIT Madras homepage provides the ‘New Arrivals’ in the library website homepage. Only Roorkee, Guwahati, Hyderabad and Varanasi have the Online Feedback facility in the website homepage. IIT Bombay, Kanpur, Roorkee, Guwahati and Hyderabad do not have the ‘Gallery’ section in the Library website homepage. Only three of the ten do not provide ‘Academic Research Tools’; IIT Roorkee, Guwahati and Hyderabad do not provide this feature in the library homepage. The homepages of IIT Delhi and Varanasi tops the score with 8 (80%), followed by Roorkee and Indore with 7 (70%) and Kanpur with 6 (60%) scores.

## Table 9

### *Web 2.0 tools*

<b>Table 8 - Web 2.0 tools</b>
--------------------------------

Items	IIT Madras	IIT Delhi	IIT Bombay	IIT Kanpur	IIT Kharagpur	IIT Roorkee	IIT Guwahati	IIT Hyderabad	IIT Indore	IIT Varanasi
Facebook	X	√	√	X	X	X	X	X	X	X
Twitter	X	√	√	X	X	X	X	X	X	X
Youtube	X	√	√	X	X	X	X	X	X	X
Blog	X	X	X	X	X	X	X	X	X	X
RSS	X	X	√	X	√	X	√	X	X	X
Total Score (out of 5)	<b>0</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>

Table 9 shows how poorly the IIT library websites fare in the Web 2.0 tools features. Only Delhi and Bombay have Facebook, Twitter and Youtube in the website homepage. None of the websites have Blogs. Only IIT Bombay, Kharagpur and Guwahati have RSS feeds in the homepage. IIT Bombay has four Web 2.0 tools (80%) followed by Delhi with 3 (60%) and Kharagpur with 1 tool (20%) each.

## Tale 10

### *Search & Retrieval interface*

Table 9 - Search & Retrieval interface										
Items	IIT Madras	IIT Delhi	IIT Bombay	IIT Kanpur	IIT Kharagpur	IIT Roorkee	IIT Guwahati	IIT Hyderabad	IIT Indore	IIT Varanasi
Site search	X	√	√	√	√	X	X	X	√	√
Single Window search	X	X	X	X	X	X	√	X	X	X
Google custom search	X	X	√	X	X	X	X	X	X	X
Other search engine search	X	X	X	X	X	X	X	X	X	X
Total Score (out of 4)	<b>0</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>

Table 10 provides the observation of Search & Retrieval interface feature in the IIT library website homepages. Most websites limit the feature to just Site search facility. IIT Madras, Roorkee, Guwahati and Hyderabad do not provide this facility. Only IIT Guwahati have the Single window search option and only IIT Bombay provides the

Google custom search feature. None of the website homepages feature ‘Other search engine search’ option. IIT Bombay scores 2 (50%) followed by Delhi, Kanpur, Kharagpur, Guwahati, Indore and Varanasi with 1 score (25%) each.

**Table 11**

*Total score acquired by the IIT Library Homepages*

	Criteria	Max Score	IIT Madras	IIT Delhi	IIT Bombay	IIT Kanpur	IIT Kharagpur	IIT Roorkee	IIT Guwahati	IIT Hyderabad	IIT Indore	IIT Varanasi
1	Accessibility	6	5	5	5	5	5	5	5	5	5	5
2	Navigation simplicity	4	3	3	3	2	2	3	1	2	3	3
3	Design, Readability & Structure	3	3	3	3	3	3	3	3	3	3	3
4	Links to resources & Services	8	8	7	9	7	9	5	5	6	7	7
5	Authority, Accuracy & Currency	6	3	5	2	3	3	3	4	3	3	3
6	General information	12	8	11	10	9	8	9	8	7	8	9
7	User support interface	10	4	8	5	6	5	7	3	4	7	8
8	Web 2.0 tools & two way interaction	5	0	3	4	0	1	0	1	0	0	0
9	Search and retrieval interface	4	0	1	2	1	1	0	1	0	1	1
	<b>Total</b>	<b>60</b>	<b>33</b>	<b>47</b>	<b>41</b>	<b>38</b>	<b>35</b>	<b>39</b>	<b>31</b>	<b>29</b>	<b>36</b>	<b>39</b>

Criteria-wise, IIT Delhi tops the scores with 47 out of 60 (78%) followed by Bombay with 41 (68%) and Roorkee and Varanasi with 39 (65%) each. IIT Hyderabad library website homepage ranks the least among the 10.

**Table 12**

*Criteria-wise ranking of IIT Library Website Homepages*

IIT Libraries	Criteria-wise website homepage scores	Criteria-wise Homepage ranking
IIT Delhi	47	1
IIT Bombay	41	2



IIT Roorkee	39	3
IIT Varanasi	39	3
IIT Kanpur	38	4
IIT Indore	36	5
IIT Kharagpur	35	6
IIT Madras	33	7
IIT Guwahati	31	8
IIT Hyderabad	29	9

## **Recommendations**

In the light of the above observations of the study it is recommended that;

1. A common point of co-ordination may be devised in order to create uniformity in the contents of websites and homepages.
2. The library authority may be given the responsibility to study websites in order. The important features to be found in a website may not be ignored when building the website.
3. More importance may be given to implement Web 2.0 tools that most users look to as a common platform for communication.
4. Features of currency may be made compulsory in websites.
5. Vision and mission may be made part of every homepage.

## **Conclusion**

IITs being centres of Excellence with predefined goals objectives, each one has its own exclusive achievements to boast of. Part of every successful IIT is its well developed library and its very supportive website to assist academics in their training and research endeavour. It is observed that the websites and the homepages of every IIT Library is different from each other. A platform for co-ordination and development of every website is the need of the hour to devise well developed websites to meet the objectives of the institution and the needs and expectations of its users. Most homepages have ignored some important basic information. The homepages have not exploited the use of Web 2.0 tools. Web 2.0 tools have become part of every website and therefore commonly looked to by website users. Web 2.0 tools need to be exploited to full potential. Several studies

have been conducted on the evaluation of Content of Library websites of IITs with no intention to discredit them but these studies pave the way for improvement and development of websites and homepages.

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