

THE WEBSITES OF IIT LIBRARIES: AN ANALYSIS

Shabana Maseeh *

Habibur Rahman Khan **

* **Professional Assistant,**
Dr. Zakir Husain Library,
Jamia Millia Islamia,
New Delhi, India

** **Deputy Librarian**
Maulana Azad Library,
Aligarh Muslim University,
Aligarh, India

QR Code



Abstract: *The aim of academic libraries is to facilitate the learning and research processes of its patrons. Academic library website represents what that library and its parent institution offer to their users. The objective of this study was to identify and compare the content and design of 7 old IIT library websites. It was also intended to analyze the information, services, facilities and Web 2.0 tools available to them. All the websites were evaluated and analyzed on the basis of the checklist developed for the mentioned objectives. The method used for this study is an online survey method wherein each website was accessed online individually to collect data about different features on various aspects of the websites covered in the checklist. Overall study shows that most library websites are doing well and continuously using interactive web tools to connect to their users. Based on the findings, an attempt has been made to suggest some recommendations, which will help to create and design more useful, attractive and interactive library websites.*

Key words: Library, Websites, Web Pages, IIT, Content, Design, Academic Libraries

1. Introduction

Today with the advancement of technology, the Web has become an integral part of human life. The Web is a vast collection of documents that are called webpages which may contain links (pointers) to other related web pages available anywhere in the world (Tanenbaum, 2002). A group of related and interlinked web pages installed on a web server is called a website that can be accessed 24/7 by internet users via a browser (Reitz, 2004). Nowadays, library websites are regarded as a powerful tool that can provide reliable information and the best of the

information services to its remote users by saving their time, if they are created and organized properly by information professionals. (Ward & Mervar 2003). A library website is administered and maintained by a library to signify its web presence and provide services to its current and potential users. All the web pages (i.e. documents) on the website are linked together for fast access to required information. It acts as a tool for information, reference, and research (Cohen & Still, 1999).

Presently websites are very essential for providing and selling products, services and

information, and where virtual world is becoming more and more dominating day by day. It has become imperative for institutions, groups, companies, and profit and non-profit organizations to have a website for various purposes e.g. informing people about their existence, their web presence, their functions and goals, and for providing different online and offline services, etc. Libraries are not an exception to this. Many individuals too maintain their own websites. For a library, having an effective library website is a must for optimizing its potential.

2. Need of Library Websites

Some of the important factors that support the need for library websites are as follows:

- To promote and maintain the image of the library.
- To provide 24x7 information about the library, its products, services, and important events.
- To ensure information is provided in an accessible and user-friendly manner whenever needed.
- To promote achievements of the library as a whole and get suggestions for further improvement.
- To provide relevant and current information to a wide range of users.
- To save time on physical access
- Distance is no bar to access resources
- Supports active online research

3. Objectives of the Study

The primary objective of the study is to identify the content and design of 7 old IIT library websites. In addition, the study also aims at the following objectives:

1. To analyze the information, services, and facilities available on the websites of 7 old IIT libraries.
2. To find out the authority and currency, and identify the domain system of these websites.
3. To compare and rank 7 old IIT library websites based on the features available on them.
4. To find out Web 2.0 features applied on these websites.
5. To check whether these libraries are providing basic information and links on their homepages on the basis of a checklist developed for this purpose

4. Scope and Limitation of the Study

The study examines and explores the websites of 7 old IIT libraries on the basis of a checklist developed for the purpose of evaluation. An attempt has been made to identify the content, design and features of IIT library websites as well as the information, services and facilities they are providing to their users online. While developing the checklist, Web 2.0 features have also been taken into account. This study covers the evaluation of websites of 7 old IIT libraries viz, Kharagpur (1951), Bombay (1958), Madras

(1959), Kanpur (1959), Delhi (1961), Guwahati (1994), Roorkee (1847), by focusing on the website contents and the services offered by them. The limitation of the study is it excludes new IIT libraries and this study is based only on the websites of the libraries and other aspects like budget, staff and management, etc. excluded.

5. Methodology

The websites of IIT libraries have been examined and explored on the basis of a checklist developed by including the most common features available on national and international academic library websites. Based on the availability of these features, these websites have been evaluated and ranked accordingly. The method used for this study was an online survey method, wherein the website was accessed online individually to collect data about 96 different features on various aspects of the websites covered in the checklist. Thorough and repetitive scanning and analysis of all the

webpages and links on all the websites were carried out to fill in the data about respective IIT library websites in the checklist.

6. Data Collection

A systematic plan was prepared to collect the data for the study. The data was collected twice. At the last, the findings were tallied again. The whole process of gathering data was repeated in both the two times; which means the second time was the repeat of the first time in order to get more validity and reliability of results and avoid any discrepancy. On this basis, the fourth and final checklist in the MS Excel worksheet was prepared.

6.1 Population of the Study

The population studied in this study is the websites of 7 old IIT libraries' websites. The code name was assigned to them so that their names fit in smaller spaces in the worksheet by doing this the whole matrix was viewable on the screen without scrolling again and again; moreover, in hardcopy, it was also more understandable and clearer. For this with IIT, the first two consonants of the name of that IIT e.g. Kharagpur, Bombay etc., in English spelling have been used for coding them (e.g. IITKH, IITBM). After them L (for library) with the numeric value serial-wise has been added to that e.g. for coding IIT Bombay library website has been coded as IITBML2. The names of the libraries, their website addresses, and codes used for the analysis of the websites in the checklist are given in the following Table:

Table 1: Codes Used for Analyses of IITs Library Websites

S. No.	Library and its website	Code
1.	Central Library, IIT Kharagpur www.library.iitkgp.ernet.in/	IIT KH L1
2.	Central Library, IIT Bombay www.library.iitb.ac.in/	IIT BM L2
3.	Central Library, IIT Madras www.cenlib.iitm.ac.in/	IIT MD L3
4.	P. K. Kelkar Library (Formerly Central Library), IIT Kanpur www.pklib.iitk.ac.in/	IIT KN L4
5.	Central Library, IIT Delhi www.library.iitd.ac.in/	IIT DL L5
6.	Lakshminath Bezbaroa Central Library, IIT Guwahati www.iitg.ernet.in/lib/	IIT GW L6
7.	Mahatma Gandhi Central Library, IIT Roorkee www.mgcl.iitr.ac.in/	IIT RR L7

7. ANALYSIS OF LIBRARY WEBSITES

The websites were analysed on the basis of 91 features which are usually available in a standard academic library website. These 91 features were grouped into 10 subgroups, which are as follows:

- i. General information about the library
- ii. Information about the different sections of the library
- iii. Information about the library administration and staff
- iv. Information about authority, structure and up-to-dateness
- v. Links, search and retrieval interface
- vi. Information about library collection
- vii. Information about library services
- viii. Information about e-resources
- ix. Essential features on libraries' home pages
- x. Use of "web 2.0" tools

7.1 General Information about the Library

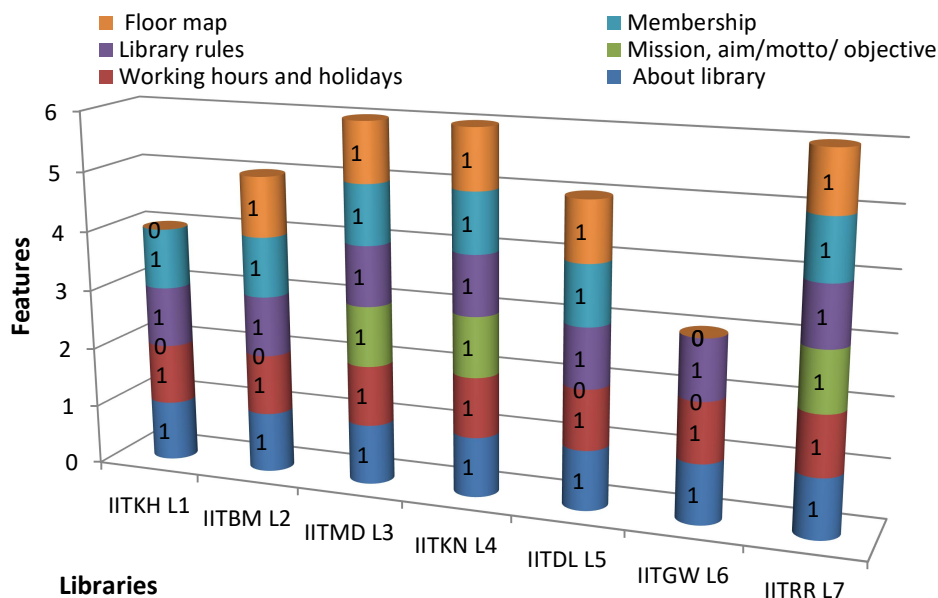
The websites must have information about the library, its mission/aim/objectives/motto, operational timings, rules, membership and the floor map, etc. A total of 6 features were used for this purpose. All these features were included in the checklist for collecting the data for availability on all these aspects. Each feature has been evaluated in terms of 1 and 0 i.e. 1 for Yes and 0 for No.

Table 2: General Information about the Library

N o.	Features	IITKH L1	IITBM L2	IITMD L3	IITKN L4	IITDL L5	IITGW L6	IITRR L7
1	About library	1	1	1	1	1	1	1
2	Working hours and holidays	1	1	1	1	1	1	1
3	Mission, aim/objective/ motto	0	0	1	1	0	0	1
4	Library rules	1	1	1	1	1	1	1
5	Membership	1	1	1	1	1	0	1
6	Floor map	0	1	1	1	1	0	1
	Total features	4	5	6	6	5	3	6

Note: 1=Yes, 0=No

The analysis shows that all the libraries give information about themselves, their working times, and library rules on their websites. But only 43% of libraries (IIT Madras, Kanpur, and Roorkee) provide information about the library's mission/aim/objective/motto. The same libraries give information about all 6 features on their websites. 29 % of libraries (IIT Bombay and Delhi) include 5 out of 6 features on their websites. They do not define their mission/aim/objective/motto. 6 out of 7 websites have provided information about membership (IIT Kharagpur, Bombay, Madras, Kanpur, Delhi, Roorkee except IIT Guwahati). 14% library i.e. IIT Kharagpur includes 4 features (excluding Mission/aim/objective/motto and floor map), while the other 14% library which is IIT Guwahati gives information about only 3 features i.e. about the library, working hours and holidays, and library rules. Figure 1 shows the graphical representation of the above table.

**Figure 1: General Information about the Library**

7.2 Information about different Sections

In this section, general information about various sections that are usually functional in the libraries of higher education institutions was collected. The information about different sections is important about library websites because it enables the users to know where to contact and go for which purpose. The total value of this table is 8. So, under this group, the information regarding the different sections of the library has been given in Table 3.

Table 3: Information about the Different Sections

N o.	Features	IITKH L1	IITBM L2	IITMD L3	IITKN L4	IITDL L5	IITGW L6	IITRR L7
1	Acquisition	1	0	1	1	1	1	0
2	Processing/Technical	1	1	1	1	1	1	0
3	Circulation	1	1	1	1	0	1	1
4	Periodical	1	1	1	1	1	1	0
5	Reference	0	1	0	1	0	0	0
6	Reading Room/Hall	1	1	0	0	1	0	1
7	Computer Unit/WiFi/Digital Library	1	0	1	1	1	0	1
8	Other sections	1	1	1	1	1	0	0
	Total features	7	6	6	7	6	4	3

Note: 1=Yes, 0=No

Analysis on this aspect reveals that 29% of libraries (IIT Kharagpur and Kanpur) have given information about 7 features out of 8 features. 43% of websites (IIT Bombay, Madras and Delhi) have provided information about 6 features. While IIT Guwahati and Roorkee shows information about 4 and 3 features respectively. 71% of libraries (IIT Kharagpur, Bombay, Madras, Kanpur and Delhi) have given information about other sections like IIT Kharagpur - Console Room (for servers), IIT Bombay-Bindery Section and Pamphlet Section, IIT Madras-Stack Maintenance, Library Automation, Inter Library Loan, Bindery and Preservation, Library Administrations and Maintenance and Book Bank, IIT Kanpur-Automation Division, Digitization Division, Reserve Section (Text Books), IIT Delhi-Text Book Section, Book Bank Section, and Store Purchase Section.

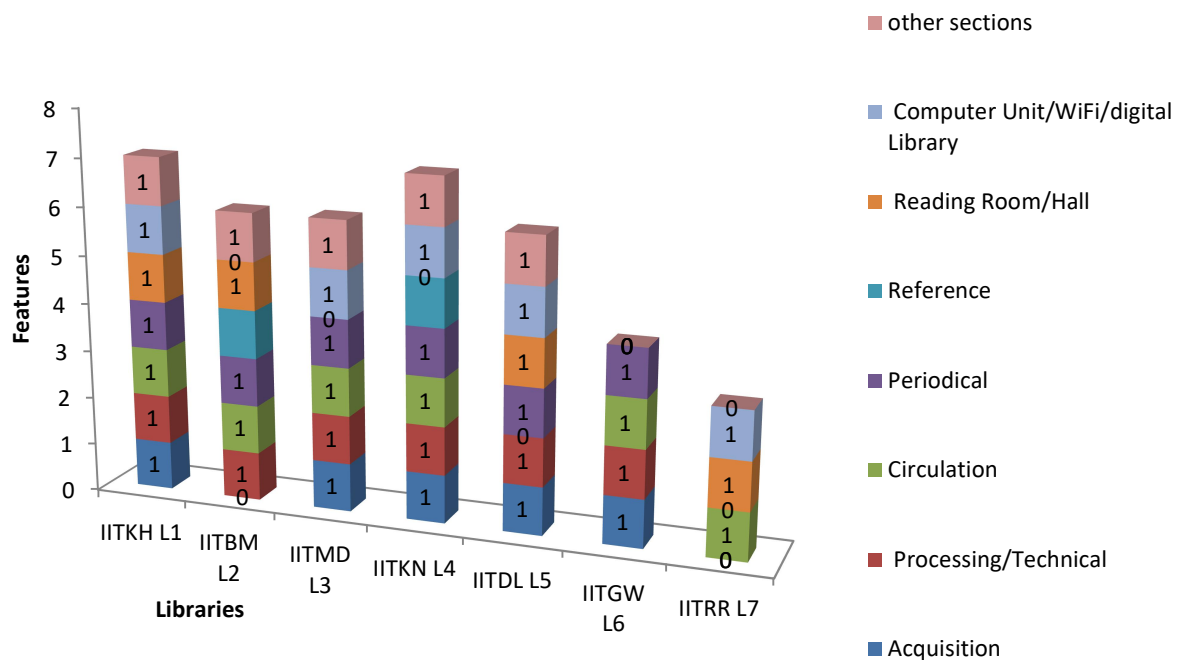


Figure 2: Information about different sections

7.3 Information about the Library Administration and Staff

This section provides information about administration and staff of the libraries available on the websites.

Table 4 provides information on 3 related features on which responses were sought in terms of 1 and 0.

Table 4: Information about the Library Administration and Staff

No .	Features	IITKH L1	IITBM L2	IITMD L3	IITKN L4	IITDL L5	IITGW L6	IITRR L7
1	Library committee	0	0	1	1	1	1	0
2	Library staff	1	1	0	1	1	1	1
3	Contacts addresses	1	1	1	1	1	1	1
	Total features	2	2	2	3	3	3	2

Note: 1=Yes, 0=No

The above Table shows that the websites of 43 % libraries i.e. IIT Kanpur, Delhi and Guwahati give information on all the 3 aspects i.e. library committee, library staff and contact addresses. While remaining 57% libraries give information of 2 features. IIT Kharagpur, Bombay and Roorkee have details of library staff and contacts addresses on their websites. IIT Madras also has given information about library committee and contact addresses. Figure 3 shows the graphical representation of the Table 4.

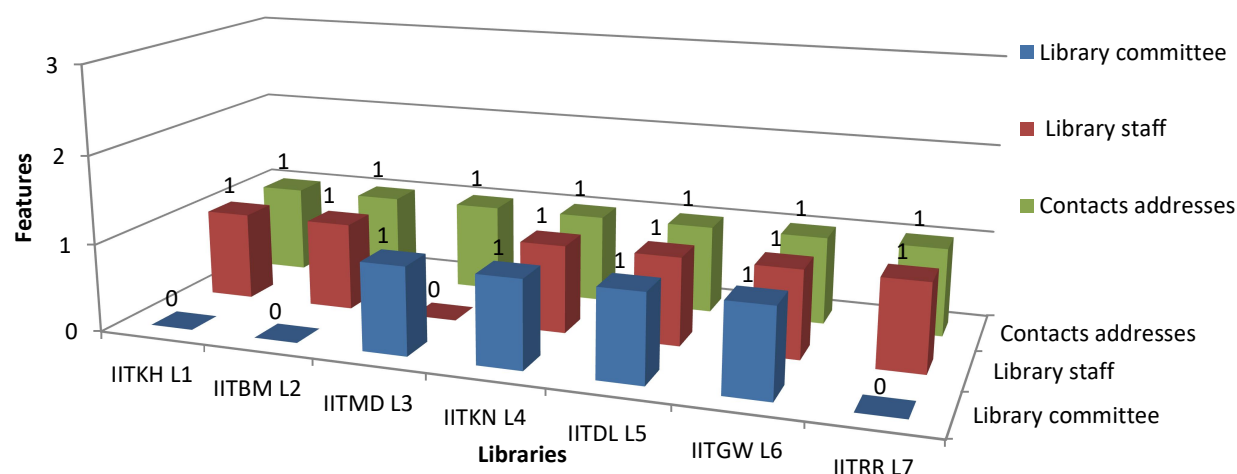


Figure 3: Information about the Library Administration and Staff

7.4 Information about Authority, Structure and Up-to-Dateness

Authority, structure and up-to-dateness are among the most important features for determining a website's efficiency and reliability. Total 12 features have been included in this group to analyse the authority, structure and up-to-dateness of the websites. Among these 12 features, 7 were evaluated on scale of 1 (Yes) and 0 (No), 4 features were evaluated on a 3-point scale i.e. 3 (Very good), 2 (Good), 1 (Average) and 0 (Below average). These features are back ground colour, organization of information, scan-ability of the matter on website and up-to-dateness.

One feature was analysed to identify the domain name of these websites and to find out whether these websites have their own domain on the web or not. This feature was not evaluated on the numerical scale.

Table 5: Information about Authority, Structure and Up-To-Dateness of the Websites

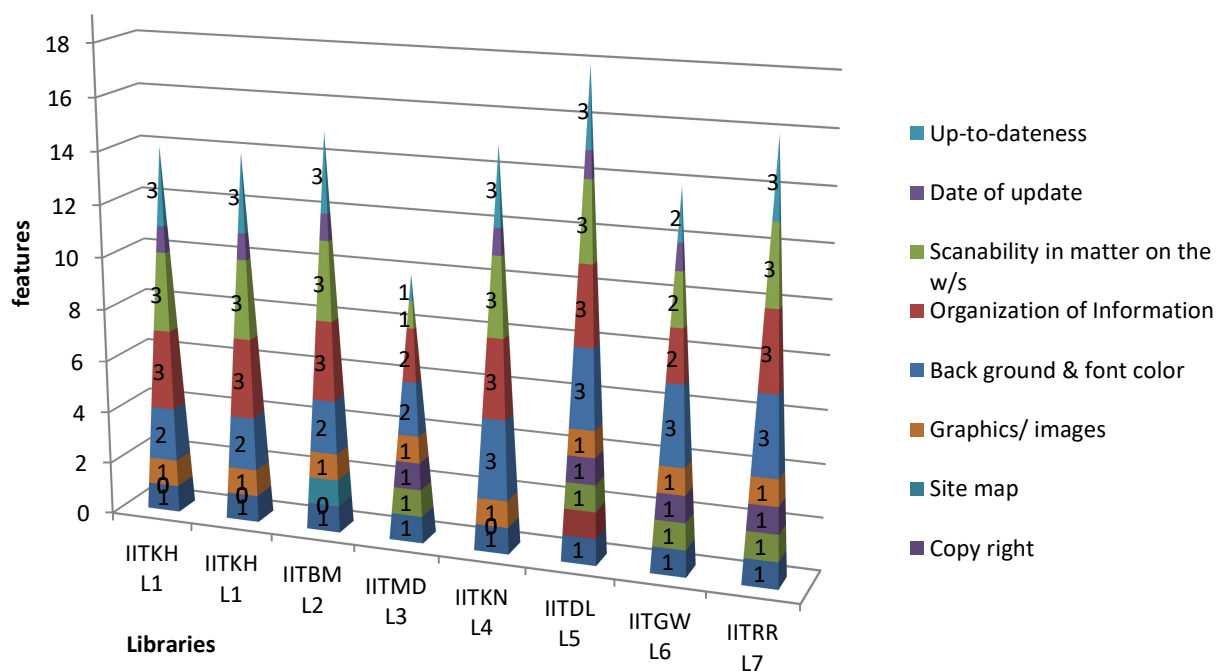
N o.	Features	IITKH L1	IITBM L2	IITMD L3	IITKN L4	IITDL L5	IITGW L6	IITRR L7
1	Authority	1	1	1	1	1	1	1
2	Webmaster	0	0	0	0	1	0	0
3	Copy right holder	0	0	1	0	1	1	1
4	Copy right	0	0	1	0	1	1	1
5	Site map	0	1	0	0	0	0	0
6	Domain name	ac.in	ac.in	ac.in	ac.in	ac.in	ac.in/lib	ac.in
7	Graphics/ images	1	1	1	1	1	1	1
8	Back ground & Font color	2	2	2	3	3	3	3
9	Organization of Information	3	3	2	3	3	2	3
10	Scanability in matter on the website	3	3	1	3	3	2	3
11	Date of update	1	1	0	1	1	1	0
12	Up-to-dateness	3	3	1	3	3	2	3
	Total features	14	15	10	15	18	14	16

Note: 1=Yes, 0=No;

- Below average =0 Average =1, Good= 2, Very good =3
- Up-to-dateness: if updated daily to weekly basis=3, if updated monthly to five monthly basis=2, if updated six to eleven monthly basis=1, if updated yearly basis=0

The library website of IIT Delhi has maximum value score of this table i.e. 18. Following website are from IIT Roorkee (16), and IIT Bombay and Kanpur (15 each). IIT Kharagpur and Guwahati have value 14 by each. The least values were found on the website of IIT Madras i.e.10.

The analysis shows that 86% websites (Kharagpur, Bombay, Kanpur, Delhi, Guwahati and Roorkee) are doing well on these criteria. These libraries are having more than 70% value on Table 5 (14 to 18). 14 (IIT Madras) have about 53% value on the Table (10) for their website.



7.5 Link, Search and Retrieval Interface

Availability of links, search and retrieval interface in a website makes them dynamic, user friendly, time saving and efficient. If the search facility is available with different links and good retrieval interface then that website proves to be more efficient, user-friendly and user would like to use them again and again. Total 9 features were used in table 6 to find the links, search and retrieval interface of the website which were evaluated in the terms of 1 (Yes) and 0 (No). So, the total value of this table is 9.

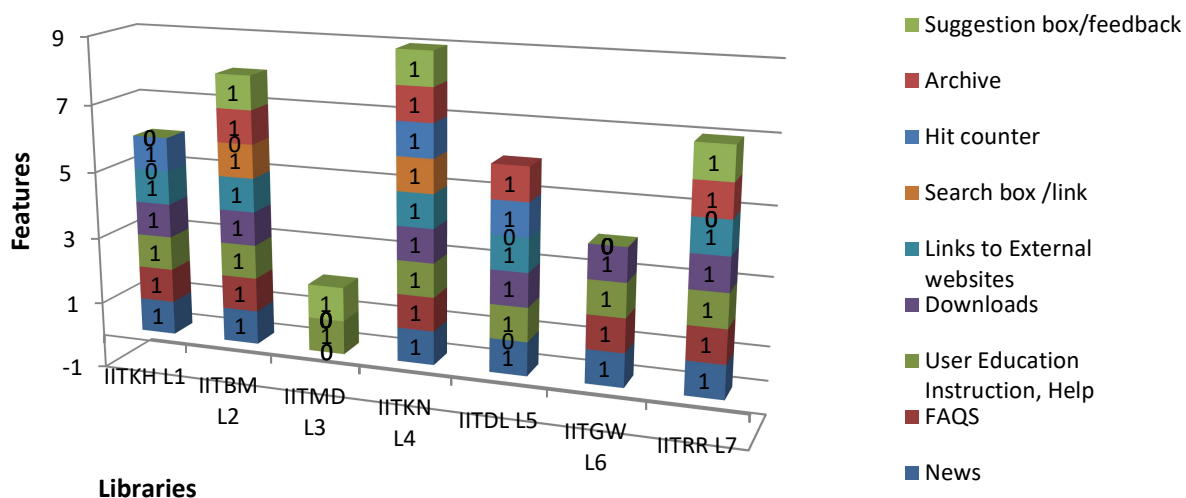
Table 6: Links, Search and Retrieval Interface

N o.	Features	IITKH L1	IITBM L2	IITMD L3	IITKN L4	IITDL L5	IITGW L6	IITRR L7
30	News	1	1	0	1	1	1	1
31	FAQS	1	1	0	1	0	0	1
32	User Education Instruction, Help	1	1	1	1	1	1	1
33	Downloads	1	1	0	1	1	1	1
34	Links to External websites	1	1	0	1	1	0	1
35	Search box /link	0	1	0	1	0	0	0
36	Hit counter	1	0	0	0	0	0	0
37	Archive	0	1	0	0	1	0	1
38	Suggestion box/feedback	0	0	1	0	0	0	1
	Total features	6	7	2	6	5	3	7

Note: 1=Yes, 0=No

The websites of IIT Bombay and Roorkee libraries score the maximum value by incorporating 7 features on their websites in this aspect. The followers are IIT Kharagpur and Kanpur with 6 features on each. Least features were found on the website of IIT Madras (2) and Guwahati (3).

The analysis of data shows that 71% (IIT Kharagpur, Delhi, Roorkee, Bombay and Kanpur) libraries are having more than 50% features (6-9). While 29% libraries i.e. IIT Madras and Guwahati have less than 40% features (2-3). This has been shown in figure 5.

**Figure 5: Links, Search and Retrieval Interface**

7.6 Information about Library Collection

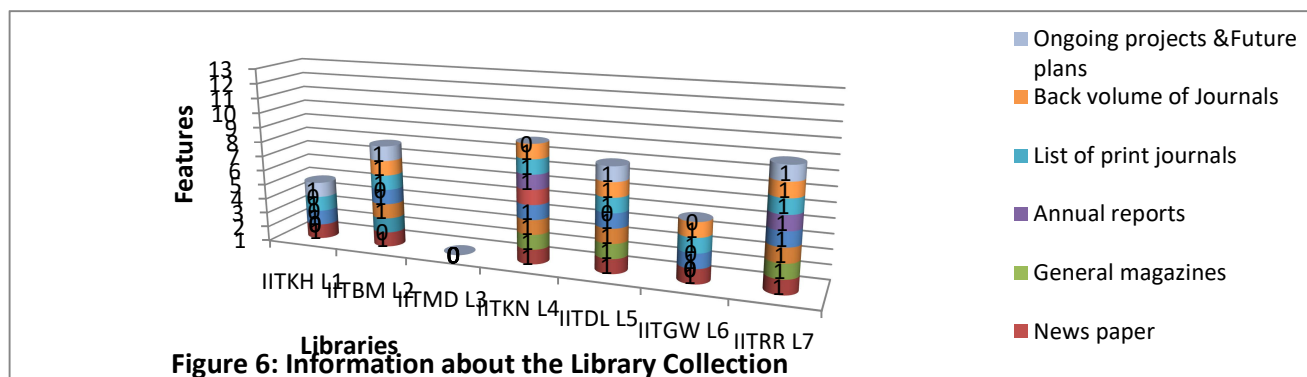
Today libraries exhibit the richness of their collection by providing statistical information on their websites. Most importantly, it also informs the users about the collection which can be accessed in the library premises. Table 7 includes 13 features about the information of library collection available on their websites which were evaluated in terms of 1(Yes) and 0 (No).

Table 7: Information about Library Collection

N o.	Features	IITKH L1	IITBM L2	IITMD L3	IITKN L4	IITDL L5	IITGW L6	IITRR L7
1	Books	1	1	*	1	1	1	1
2	Journals (Print and Online)	1	1	*	1	1	1	1
3	Reference sources	0	0	*	1	1	0	1
4	Government publications	0	0	*	0	0	0	0
5	Monographs/Pamphlets	0	1	*	0	0	0	0
6	Reports	0	1	*	1	1	0	1
7	Theses/Dissertations	1	1	*	1	1	1	1
8	News paper	0	0	*	1	0	0	0
9	General Magazines	0	0	*	0	0	0	0
10	Annual Reports	0	0	*	1	0	0	1
11	List of Print Journals	1	1	*	1	1	1	1
12	Back volume of Journals	0	1	*	1	1	1	1
13	Ongoing projects & Future plans	1	1	*	0	1	0	1
	Total features	5	8	*	9	8	5	9

Note: 1=Yes, 0=No, *=No stats

Library websites of IIT Kanpur and Roorkee have given the maximum features in this area i.e. 9 on each. IIT Bombay and Delhi gives information about 8 features each. The analysis shows that 86% (all the library except Madras) libraries gives information about their collection. But proper statistics of different library collection i.e. 9-8 were given only on 57% websites (IIT Roorkee, Delhi, Kanpur and Bombay). IIT Kharagpur library has given information about 5 features and IIT Guwahati about 4 features. IIT Madras does not provide statistics of their collection.



7.7 Information about Library Services

Library services are most important to cater to the needs of users in a library. The information about their availability on the website adds to the efficiency of a library and increases its value and use because usually it is hard for a user to find out how many types of services his library is providing. Websites are one of the best medium to convey this information. Total 16 features were used to find the availability of the different types of services which an IIT library can provide. These are given in Table 8 and evaluated on the scale of 1 (Yes) and 0 (No).

Table 8: Information about Library Services

No .	Features	IITKH L1	IITBM L2	IITMD L3	IITKN L4	IITDL L5	IITGW L6	IITRR L7
1	Circulation	1	1	1	1	1	1	1
2	Reference	0	1	0	1	1	0	0
3	Virtual Reference	1	0	0	1	0	0	0
4	Bibliographic	0	0	1	0	0	0	0
5	Indexing & Abstracting	1	0	0	0	0	0	0
6	CDs/DVDs service	1	1	1	1	1	1	1
7	Web OPAC	1	1	1	1	1	1	1
8	Video viewing	1	1	1	1	1	0	0
9	Inter Library Loan	1	1	1	1	1	0	1
10	Current Awareness Service	1	1	1	1	1	0	1
11	New Arrival/New Additions	1	1	1	1	1	0	1
12	Document Delivery Service	1	0	1	0	0	0	0
13	Database access	1	1	1	1	1	1	1
14	E-Mail queries	1	1	1	1	0	1	1
15	Reprographic	1	1	1	1	1	0	1
16	Other services	1	1	1	1	1	0	1
	Total features	14	12	13	13	11	5	10

Note: 1=Yes, 0=No

Analysis shows that all the libraries are providing information about their services on their websites. IIT Kharagpur library website provides maximum information regarding this aspect with 14 features. Libraries of IIT Bombay, Madras and Kanpur provides information about 12, 13 and 13 features respectively. IIT Delhi and IIT Roorkee are providing 11 and 10 features respectively. Least information about the services is being provided on websites of IIT Guwahati which is 5 features. It can be seen that maximum information about the same (features 14 to 13) is available on 57% library websites (IIT Kharagpur, Bombay, Madras and Kanpur). These websites provide the maximum information about different types of services their libraries offer. 29 % libraries (IIT Delhi and IIT Roorkee) provide

information about 11 and 10 features respectively. Only one library that is 14% (IIT Guwahati) provides information about less than 50% features. 86% libraries (All except IIT Guwahati) have given information about other services such as Central Library, IIT Kharagpur-Audio Visual Lounge, Central Library, IIT Bombay-Book Bank and Facility of Visually Impaired Students, Central Library, IIT Madras-Children's' Library, Translation Facility and Book Bank, P. K. Kelkar Library (Formerly Central Library) IIT Kanpur-E-mail Alert Service, Central Library, IIT Delhi-Remote Access and Newspaper Clipping, Mahatma Gandhi Central Library, IIT Roorkee-SMS/E-mail Alert Service.

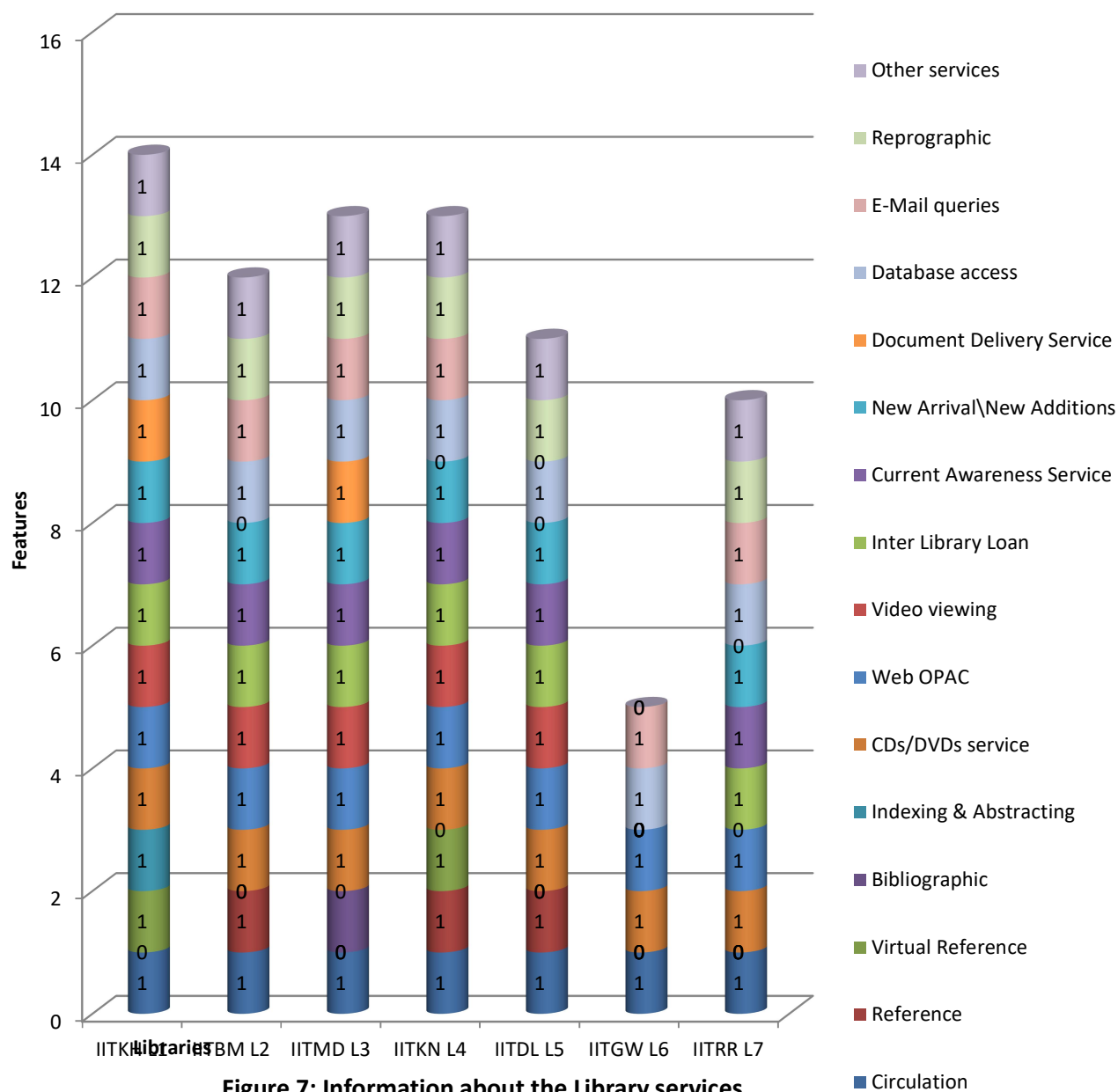


Figure 7: Information about the Library services

7.8: Information about E-Resources

Library website is the most important source for providing information about and access to the e-resources available and accessible in a library. It also provides information and access to the useful free online information resources. 7 features were included in Table 9 to find the information about the offerings of IIT libraries' e-resources. The Total features included in this table are 7 and evaluated in terms of 1(Yes) and 0 (No).

Table 9: Information about E-Resources

No .	Features	IITKH L1	IITBM L2	IITMD L3	IITKN L4	IITDL L5	IITGW L6	IITRR L7
1	E-Books	1	1	1	1	1	1	1
2	E-Journals	1	1	1	1	1	1	1
3	e-Databases	1	1	1	1	1	1	1
4	CD-ROM/DVDs	1	1	1	1	1	1	1
5	Audio/Video	1	1	1	0	1	0	0
6	E-Journals listing	1	1	1	1	1	1	1
7	Institutional Repository	1	1	1	1	1	1	1
	Total features	7	7	7	6	7	6	6

Note: 1=Yes, 0=No

This is clear from the analysis of 7 features on E-resources in Table 9 that all the libraries are providing most of their E-resources on their websites and their LAN. 57% libraries have all the above features on their websites. These libraries are IIT Kharagpur, Bombay, Madras, and Delhi. While 43% libraries such as IIT Kanpur, Guwahati and Roorkee offer 6 out of 7 above features. The information about audio/video resources are unavailable on all these websites.

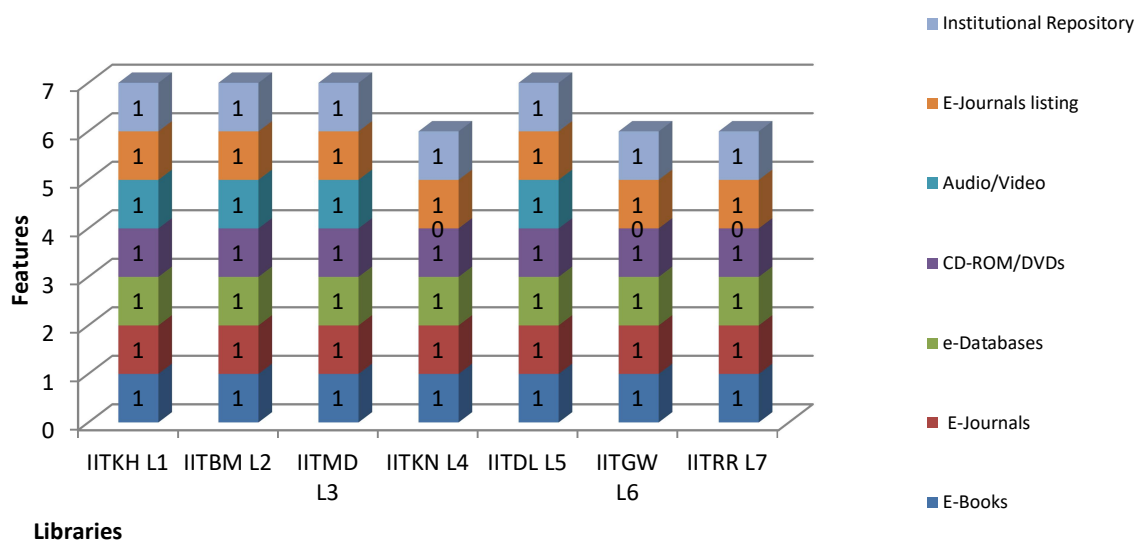


Figure 8: Information about E-resources

7.9 Essential features on Libraries' Home pages

Home pages are the faces of websites and most of the time it is the first page on which a user arrives to get desired information. So, the home page must provide the most essential information about the library and library website. To analyze such information 10 features were selected after scanning enough literature and academic library websites. These features were analyzed in Table 10 in terms of 1(Yes) and 0 (No).

Table 10: Essential features on Libraries' Home pages

N o.	Features	IITKH L1	IITBM L2	IITMD L3	IITKN L4	IITDL L5	IITGW L6	IITRR L7
1	About the library	1	1	1	1	1	1	1
2	Direct link from parent institutions' website	0	1	1	1	1	1	1
3	Phone Number	1	1	1	1	1	1	0
4	Library hours	1	1	1	1	1	1	1
5	Link to sections' information	1	1	1	1	1	1	0
6	Link to catalog	1	1	1	1	1	1	1
7	Links to services	1	1	1	1	1	0	0
8	Link to site map	0	1	0	0	0	0	0
9	News and events	1	1	0	1	1	1	1
10	Link to feedback, "support the library", Friends group, or a way to get involved as a library supporter	0	1	0	1	0	0	1
	Total features	7	10	7	9	8	7	6

Note: 1=Yes, 0=No

All the features of this subgroup were found on the library website of IIT Bombay i.e.10. Library websites of IIT Kanpur and Delhi have provided 9 and 8 features respectively. 3 libraries have given 7 features each on their website. These are IIT Kharagpur, Madras and Delhi. Library website of IIT Roorkee have given least features in this aspect i.e.6, but it is still more than 50% features.

Analysis of home pages of all the websites reveals that the best home pages belong to 43% libraries (IIT Bombay, Kanpur and Delhi) by having 10 to 8 features on them from above Table. Since these features are essential for a library's homepage, we kept 57% library websites (IIT Kharagpur, Madras, Guwahati and Roorkee) in least found features in this aspect (i.e. from7-6).

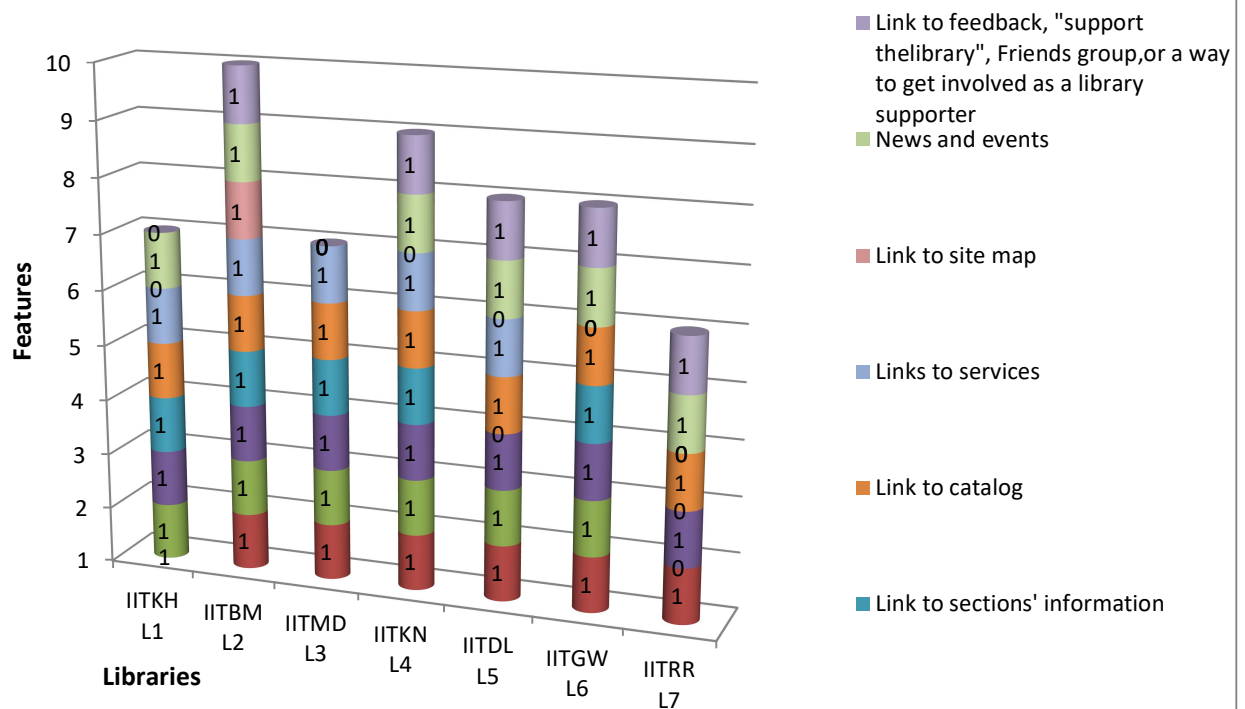


Figure 9: Essential features on Libraries' Home pages

7.10 Use of "Web 2.0" Tools

The web is moving from Web 2.0 to Web 3.0. So, it is obvious that libraries should utilize the existing useful technologies which can save a lot of efforts and time of the library users and to great extent library staffs' too. Nowadays, Web 2.0 tools are free and one of the easiest ways to improve the efficiency and attractiveness of the websites. These tools can be used to keep users up-to-date about the library. Most commonly used Web 2.0 tools were grouped under the Table 11 to collect the information about their use on IIT library websites. There were total 6 features included for this purpose. These features were evaluated in the term of 1(Yes) and 0 (No).

Table 11: Use of "Web 2.0" Tools

N o.	Features	IITKH L1	IITBM L2	IITMD L3	IITKN L4	IITDL L5	IITGW L6	IITRR L7
1	Facebook	1	1	1	1	0	1	1
2	RSS	0	1	0	0	0	1	0
3	Instant messaging	0	1	0	1	0	0	0
4	Blogs	1	0	0	0	0	0	1
5	Podcasts	0	0	0	0	0	0	0
6	Personal Bookmarks/Tagging	0	0	0	0	0	0	0
	Total features	2	3	1	2	0	2	2

Note: 1=Yes, 0=No

The analysis showed all the libraries (IIT Kharagpur, Bombay, Madras, Kanpur, Guwahati and Roorkee), except IIT Delhi, are using 1 to 3 features from the above Table on their websites. Only 14% i.e. one library website (IIT Bombay) is using 50% features of these technologies by utilizing 3 features of Web 2.0. 57% libraries are using 2 features on their websites. These are libraries of IIT Kharagpur, Kanpur, Guwahati and Roorkee. However, 14 % libraries i.e. only one library (IIT Delhi) is not using any feature from above table on its website.

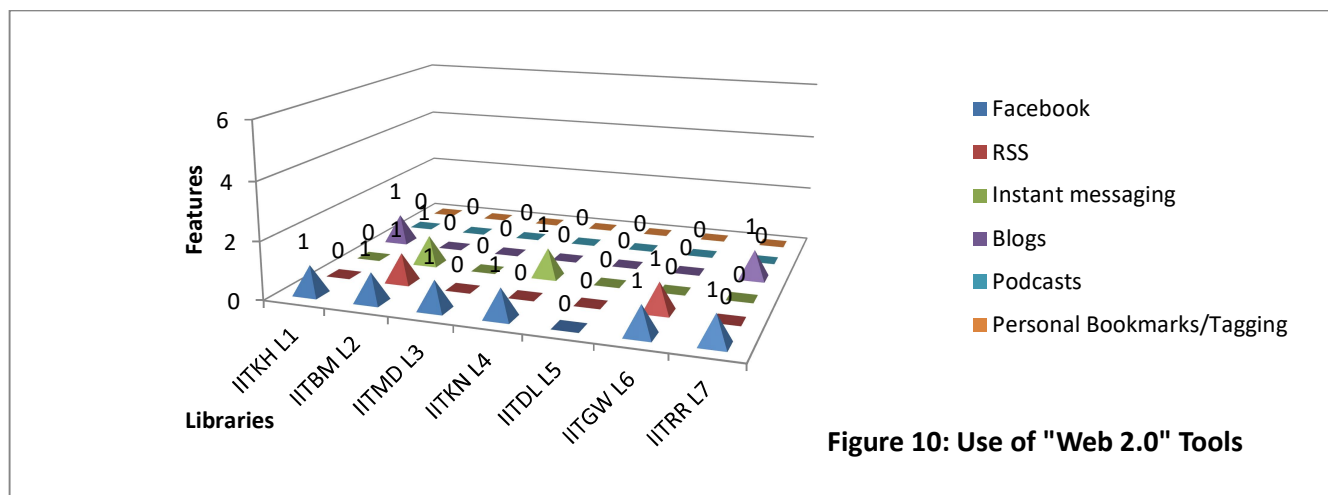


Figure 10: Use of "Web 2.0" Tools

8. Analysis of Total Features found

After analyzing all the features of all the library websites under the different subgroups, a grand total of all the features of each website was derived. After that the percentage of total applied features on each website was calculated to rank these websites for their content, efficiency, structure etc. This percentage has been termed as '**Application Index**' in this study. The formula used for this purpose is as the following:

$$\text{Application Index (AI)} = \frac{\text{Total Value of Features found on the website (TVF)}}{\text{Total Maximum Value of Checkpoints (TMV)}} \times 100$$

The TMV in above formula is 98. So, the formula can be written as follows:

$$\text{AI} = \frac{\text{TVF}}{97} \times 100$$

Table 12 shows the total features found in each group on each library website and the Application Index of each library website.

Table 12: Total Features Found and Application Index of Each Library Website

Features	IITKH L1	IITBM L2	IITMD L3	IITKN L4	IITDL L5	IITGW L6	IITRR L7	Max. Value
General Information	4	5	6	6	5	3	6	6
Info abt Diff.Sections	7	6	6	7	6	4	3	8
Info abt Lib Admn.& Staff	2	2	2	3	3	3	2	3
Info abt authority,structure, up-to-date.	14	15	10	15	18	14	16	19
Link, Search, Retrieval Interface	6	7	2	6	5	3	7	9
Info abt Lib Coll.	5	8	*	9	8	5	9	13
Info abt Library Services	14	12	13	13	11	5	10	16
Info abt EResources	7	7	7	6	7	6	6	7
Ess.Feature on Library Homepage	7	9	7	9	8	7	6	10
Web 2.0 tools	2	3	1	2	0	2	2	6
Total Features found	68	74	54	76	71	52	67	97
Application Index	70.10	76.29	55.67	78.35	73.20	53.61	69.07	

Note: Total features = 90 Total value of all tables = 97

9. Ranking of Library Websites

After analysing all the features and AI of each library website, all the websites were ranked on the base of their TVF and AI in descending order. Table 13 represents the ranking of all the websites under study.

The analysis of above Table 12 reveals that 71% libraries' AI is more than 60. These libraries are central libraries of IIT Bombay, IIT Kanpur and IIT Delhi. While 29% libraries AI is less than 60. These central libraries are from Madras and Guwahati. Table 12 has been graphically presented by figure 11 and 12.

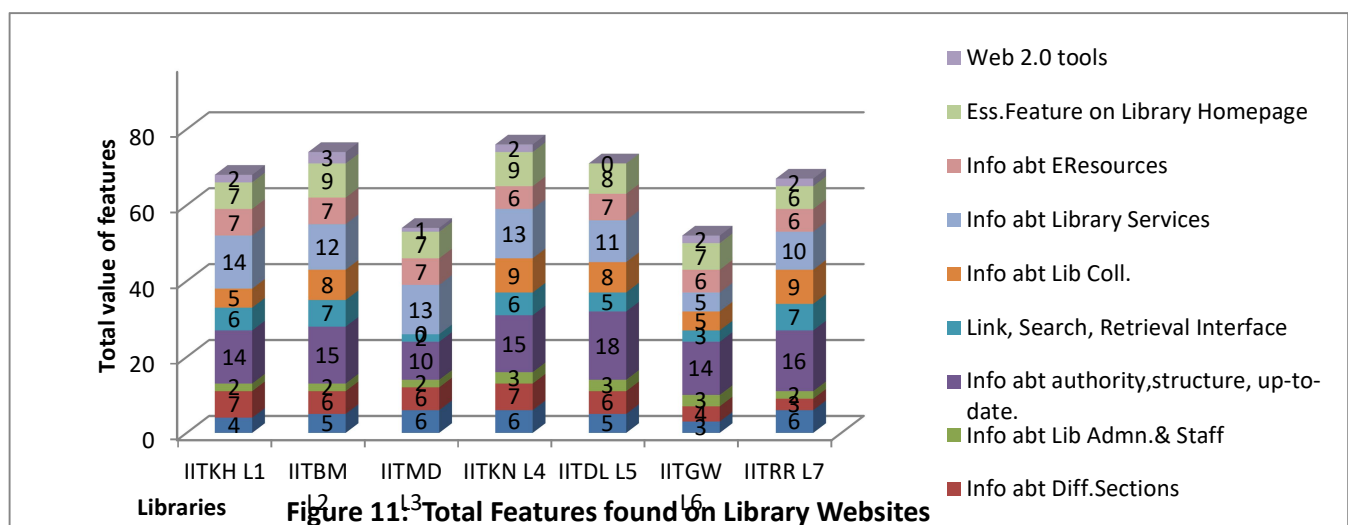


Figure 12 depicts the Application Index of each IIT library.

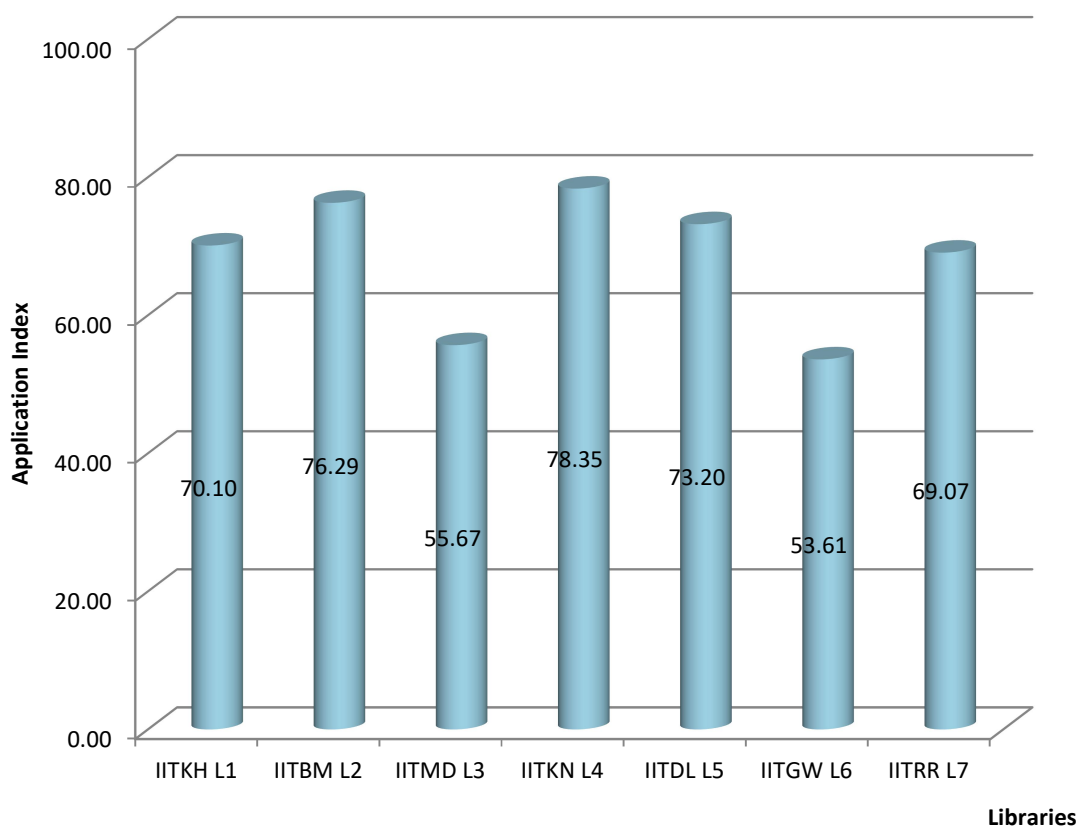


Figure 12: Application Index

Table 13: Ranking of Library Websites

Rank	Library	New Code	TVF	AI
1.	P K Kelkar Library (Formerly Central Library) IIT Kanpur	IIT KN L4	76	78
2.	Central Library, IIT Bombay	IIT BM L2	74	76
3.	Central Library, IIT Delhi Library	IIT DL L5	71	73
4.	Central Library, IIT Kharagpur	IIT KH L1	68	70
5.	Mahatma Gandhi Central Library, IIT Roorkee	IIT RR L7	67	69
6.	Central Library, IIT Madras	IIT MD L3	54	56
7.	Lakshminath Bezbaroa Central Library, IIT Guwahati	IIT GW L6	52	54

10. Findings

The findings of overall study are as follows:

1. The best library website is of P. K. Kelkar Library, IIT Kanpur with 76TVF (AI=78) out of 90 features (value=97).
2. IIT Bombay and Delhi comes to the second and third place with total 74 features (AI=76) and 71 features (AI=73).
3. On the 4th rank was IIT Kharagpur library website which had 68 features (AI= 70).
4. The least features were found on the library websites of Central Library IIT Guwahati and Central Library IIT Madras which were having 52 (AI=54) and 54 (AI=56) features respectively.
5. Overall study shows that old IIT library websites are doing very well. From their current status, it can be observed that they are continuously developed by their administrators and in dynamic mode. But this is unfortunate that these libraries are not able to utilize Web 2.0 tools efficiently. They also need to apply more efficient and suitable ICT in organizing and managing their websites.

11. Recommendations

Based on the findings of this study an attempt has been made to suggest a few recommendations, which will help to create and design more useful, attractive and interactive library websites. It will also help the library professionals to evaluate its content, quality,

design, structure, and other useful features on a library website so as to design a much more effective website. The following recommendations are given in order of their presents in the checklist:

1. Before designing a library website, it is better to study the guidelines and criteria for designing a library website and to surf through the best ranked websites on the internet. This will help to determine what features should be included in the website and which should not be included.
2. Finding of this study shows that just 43% of library websites in communicating their mission/objectives. According to Kuchi (2006) "Clarifying and communicating the mission assures the library's constituencies about why it is doing what it does; and it gives rationale, meaning, and structure to the library's decisions and actions". So, these should be included.
3. The libraries should provide floor map, information about different sections and sitemap for the convenience of the library users. Information about floor map and its different sections will help users to find out for what purpose, where they should go and contact. It will help new users to make themselves familiar with their library system and resources. Sitemap help a lot to navigate to the required information. So, sitemap should be provided on the library websites.
4. Library websites should provide information about Library Committee as it will bring

transparency in the administrative operations of the library as well as it will keep its staff and users informed about the new and previous decisions and reports of the library.

5. Libraries should have their own Domain and Website. Then it is easier to update it regularly and use it as a better tool for disseminating and offering current information to its user.
6. The findings of this study shows that only 28% libraries were providing contact details about the webmasters of the websites. Webmaster is considered one of the important features of the websites. So, the information and contact details of webmaster of library website should be given on the websites.
7. Most of the IIT library websites had not given the date of last update on their websites. This confuses the users about the matter on the library website. Library websites should be dynamic in nature and should be updated regularly by adding current information.
8. The findings of the present study show that only few libraries were making the use of the features such as search box/link, FAQs, hit counter, suggestion box etc. Since these are the important features for a library website, they should be included.
9. Satisfaction of the users is the ultimate aim of libraries' services which can be achieve by the support and feedback of the library users. Library website can play an important role in this regard by providing the feedback and link to "support the library" in their website.

12. Conclusion

Websites are considered one of the most popular and fast means that carries information. But the popularity of a website depends on their authenticity, up-to-dateness, reliability and scope etc. Today having a website is not a big deal, but designing an efficient, useful website as well as maintaining and updating it regularly is a big issue. But for IIT libraries, which belong to the best technological Institutes of India, having and maintaining good websites is not a big task. Analysis in this study found that all old IIT libraries are having good library websites; especially, Bombay, Delhi and Kharagpur. But some are lacking in some important features. These should be taken care of to provide the effective, efficient and useful information in a better way required and to make library functionalities more transparent to their users.

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