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Webometric Study of IIT Libraries Websites

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ABSTRACT

The paper presents an analysis of design and structure of the library websites of IITs. It found significant differences according to some important point of view such as the user supporting services, number of hyperlinks on home pages and whole websites, number of images, location of images, In-active links and web pages, etc. The paper finally looks the design and structure of the library websites of IITs.

Keywords: Webpage, website, webometrics, IIT library, web analysis, link analysis

1. INTRODUCTION

The world wide web has now become one of the main sources of information to academic and research activities, and therefore, is an excellent platform to test new method of evaluating webometrics. The IIT libraries are developing from several years. In the last several years, many research studies have focused on how people use electronic resources or on their feelings about electronic resources in the library. The IIT libraries have embraced the internet fairly but 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).

2. NEED OF STUDY

The study was conducted to know and determine:

- About the website of IIT libraries
- Web structure of IIT libraries
- Length of IIT libraries websites
- About tabulation work on websites of IIT libraries
- Retrieval service on the IIT libraries websites
- Location and number of images
- E-resource service through the IIT libraries websites

3. OBJECTIVE OF STUDY

- To calculate the number of web pages, number of links, number of self links pages and external links pages of IIT libraries
- To compare various IIT libraries websites to determine which is the best
- To analyse the services of IIT libraries websites
- To analyse graphical presentation of IIT libraries websites

4. HYPOTHESIS

- Website of IIT libraries may be more useful for research scholars, students, and faculty members of IITs
- Study may be very useful for the students of library and information science to same types of research

5. METHODOLOGY

The study is totally observational in which the structure, design, size, graphical presentation, library services and products of the websites of IIT libraries were observed. The primary data was collected from the websites of IIT libraries then input the primary data according to different point of view in the MS-excel sheet then created the tables and graphs that are presenting the finding of study. The secondary data collected was from books, journals, internet, conference proceedings, and other sources.

6. SCOPE AND LIMITATION

The present study covered all the websites of IIT libraries in India. The following library websites are included:

1. Delhi (www.iitd.ac.in/~library)

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2. Mumbai (www.library.iitb.ac.in)
3. Chennai (Madras) (www.iim.ac.in/library)
4. Kanpur (www.iitk.ac.in)
5. Kharagpur (www.library.iitkgp.ac.in)
6. Guwahati (www.iitg.ernet.in/rs/lib)
7. Roorkee (www.iitr.ac.in/centers/lib)
8. Ropar (www.iitr.ac.in/centrallib)
9. Bhubaneswar (www.iitbbs.ac.in/library.html)
10. Gandhinagar (www.iitgn.ac.in/library.html library)
11. Hyderabad (www.iith.ac.in/resourses/iith~library.html)
12. Patna (www.iitp.ac.in)
13. Rajsthan (www.iitd.jodhpur.ac.in/library)
14. Indore (www.iiti.ac.in/node/223)
15. Mandi (www.iitmandi.ac.in/campus/campuslife/library.html)

7. LITERATURE REVIEW

Ratha, Naidu, and Silawat[1] investigated the structure of the national library websites of SAARC countries. Arakaki and Willett[2] reports an analysis of the websites of UK Departments of Library and Information Science. A webometric study of the websites of 45 universities in Tamil Nadu comprising of 27 state and 18 private universities was done. Elgohary[4] investigated the web impact factor of Arab universities. Walia and Kaur[5] reported the results of a webometrics investigation done on the website of selected library association website of India.

8. RESULTS AND DISCUSSIONS

The subject 'webometrics study of IIT libraries websites in India' has been chosen and analysis has been done with 15 IIT libraries websites. Data has been collected about the different aspects and analysed:

8.1 Total Links of Library Websites of IITs

Table 1 shows the total links of IIT library websites of India. The library website of IIT Delhi led with total links 4070 (935.19 %), followed by library websites of IIT Guwahati 2605 (22.59 %), IIT Bombay 2597 (22.52 %), IIT Madras 205 (10.45 %) and IIT Khargpur 205 (1.77 %).

$$\mu = \frac{\sum_{i=1}^{n} x_i}{n}$$

μ= Mean, n = IIT library, x = total links of IIT library, μ = 11531/15, μ = 768.73

Thus, there are 11531 total links calculated in all the library websites and average of total links each IIT website is 769 links.

Table 1. Total links

S. No.	IIT	Total links	Percentage (%)
1.	Kharagpur	0205	01.77
2.	Bombay	2597	22.52
3.	Madras	1205	10.45
4.	Kanpur	0106	00.91
5.	Delhi	4070	35.29
6.	Guwahati	2605	22.59
7.	Roorkee	0080	00.69
8.	Ropar	0098	00.86
9.	Bhubaneswar	0004	00.03
10.	Hyderabad	0120	01.04
11.	Gandhinagar	0197	01.73
12.	Patna	0003	00.02
13.	Rajasthan	0001	00.00
14.	Mandi	0072	00.62
15	Indore	0168	01.45
	Total	**11531**	**100**

8.2 Other Links of IIT Libraries Websites

Table 2 shows the analysis of the other links in IIT library websites. The library website of IIT Delhi leads with 3709 (38.28 %), followed by IIT Guwahati 2605 (26.85 %), IIT Bombay 2054 (21.02 %), IIT Madras 931 (9.61 %), and IIT Kharagpur 100 (1.03 %).

μ = Mean, n = IIT library, X = other link of IIT library μ = 9687/15, μ= 645.8

Thus, there are 9687 total other links in IITs libraries websites and the mean or average of other links are 646 of each IIT library website.

Table 2. Other links

S. No.	IIT	Other links	Percentage (%)
1.	Kharagpur	0100	01.03
2.	Bombay	2054	21.02
3.	Madras	0931	09.61
4.	Kanpur	0056	00.57
5.	Delhi	3709	38.28
6.	Guwahati	2605	26.89
7.	Roorkee	0009	00.09
8.	Ropar	0041	00.42
9.	Bhubaneswar	0001	00.01
10.	Hyderabad	0007	00.07
11.	Gandhinagar	0055	00.56
12.	Patna	0002	00.02
13.	Rajasthan	0001	00.01
14.	Mandi	0027	00.27
15.	Indore	0089	00.91
	Total	**9687**	**100**

8.3 Analysis of Never Active Links

Table 3 illustrates the analysis of the never active links in IIT library websites, in which the library websites of IIT

Table 3. Never active links

S. No.	IIT	Never active link	Percentage (%)
1.	Kharagpur	16	06.15
2.	Bombay	75	28.84
3.	Madras	03	01.15
4.	Kanpur	33	12.69
5.	Delhi	65	25.00
6.	Guwahati	00	00.00
7.	Roorkee	07	02.69
8.	Ropar	02	00.76
9.	Bhubaneshwar	01	00.38
10.	Hyderabad	34	13.07
11.	Gandhinagar	10	03.84
12.	Patna	00	00.00
13.	Rajasthan	00	00.00
14.	Mandi	02	00.76
15.	Indore	12	04.61
	Total	**260**	**100**

Bombay at the top with 75 (28.84 %) never active links, followed by library of IIT Delhi 65 (25.00 %), library of IIT Hyderabad 34 (13.07 %), library of IIT Kanpur 33 (22.69 %) and library of IIT Kharagpur 16 (6.15 %).

μ = Mean, n = IIT Library, X = Never active links of IIT library
μ = 260/15, μ= 17.33

Thus, there are 260 total never active links in websites of IIT libraries and the mean or average of never active links 17 of each IIT library website.

8.4 Total Number of Webpages

Table 4 manifests the analysis of total webpages in the libraries websites of IITs, in which the library website of IIT Bombay leads with 468 (35.64 %) total webpages, followed by IIT Delhi 296 (22.54 %), IIT Gandhinagar 110 (8.37 %), IIT Kharagpur 89 (6.77 %) and IIT Madras 78 (5.94 %).

μ = Mean, n = IIT library, X = Total webpages of IIT library
μ = 1313/15, μ = 87.53

Thus, there are 1313 total webpages in websites of IITs libraries and the mean or average of total webpages are 88 of each IIT library website.

8.5 Analysis of pdf Files Links to Library Websites

Table 5 manifests the analysis of the total pdf files that linked to websites libraries of IITs, in which the library website of IIT Gandhinagar is on the top most with 78 (27.46 %) pdf files, followed by library of IIT Delhi 55 (19.36 %), IIT Madras 55 (19.36 %), IIT Bombay 33 (11.61 %) and IIT Indore 21 (7.39 %).

Table 4. Total web pages

S. No.	IIT	Total web page	Percentage (%)
1.	Kharagpur	089	06.77
2.	Bombay	468	35.64
3.	Madras	078	05.94
4.	Kanpur	014	01.06
5.	Delhi	296	22.54
6.	Guwahati	000	00.00
7.	Roorkee	058	04.41
8.	Ropar	025	01.90
9.	Bhubaneswar	003	00.22
10.	Hyderabad	067	05.10
11.	Gandhinagar	110	08.37
12.	Patna	001	00.07
13.	Rajasthan	000	00.00
14.	Mandi	055	04.18
15.	Indore	049	03.73
	Total	**1313**	**100**

Table 5. Total pdf files

S. No.	IIT	pdf files	Percentage (%)
1.	Kharagpur	20	07.04
2.	Bombay	33	11.61
3.	Madras	55	19.36
4.	Kanpur	02	00.70
5.	Delhi	55	19.36
6.	Guwahati	00	00.00
7.	Roorkee	00	00.00
8.	Ropar	08	02.81
9.	Bhubaneswar	00	00.00
10.	Hyderabad	00	00.00
11.	Gandhinagar	78	27.46
12.	Patna	00	00.00
13.	Rajasthan	00	00.00
14.	Mandi	12	04.22
15.	Indore	21	07.39
	Total	**284**	**100**

μ = Mean, n = IIT library, X=PDF page of IIT library, μ = 284/15, μ = 18.93

Thus, there are 284 total pdf files that link to library website of IITs and the mean or average of total pdf pages are 19 of each IIT library website.

8.6 Analysis of Doc Files Link to IIT Websites

Table 6 describes that 1029 total number of .doc files are liked with the library websites of the IITs. In which the library website of IIT Bombay leads with 435 (42.27 %), followed by IIT Delhi 241 (23.42 %), IIT Kharagpur 69 (6.70 %), IIT Hyderabad 67 (6.51 %), and IIT Roorkee 58 (5.63 %).

Table 6. doc files

S. No.	IIT	doc files	Percentage (%)
1.	Kharagpur	069	06.70
2.	Bombay	435	42.27
3.	Madras	023	02.23
4.	Kanpur	012	01.16
5.	Delhi	241	23.42
6.	Guwahati	000	00.00
7.	Roorkee	058	05.63
8.	Ropar	017	01.65
9.	Bhubaneswar	003	0.29
10.	Hyderabad	067	6.51
11.	Gandhinagar	032	3.10
12.	Patna	001	0.09
13.	Rajasthan	000	0.00
14.	Mandi	043	4.17
15.	Indore	028	2.72
	Total	**1029**	**100**

μ = Mean, n = IIT library, X = Word page of IIT library, μ = 1029/15, μ = 69. Thus, there is 1029 total doc files link with the websites of IIT libraries and the mean or average of total doc files are 69 each library website.

8.7 Analysis of User Supporting Services

It is necessary to find out whether the user supporting service like web OPAC, search bar, site map and inter library loan facility are available or not on the library websites of IIT. It is found that the web OPAC is available only in the 4 (26.67 %) websites followed by the search bar available in 5 (33.33 %), the site map available in 9 (60 %) and inter library loan facility available in 3 (20 %) websites (Table 7). Thus, there are only three library websites (Bombay, Madras and Delhi) which provide all the above mentioned user supporting services.

Table 7. User supporting services

S. No.	IIT	Web OPAC	Search bar	Site map	ILL
1.	Kharagpur	Not open	No	Yes	No
2.	Bombay	Yes	Yes	Yes	Yes
3.	Madras	Yes	Yes	Yes	Yes
4.	Kanpur	No	Yes	No	No
5.	Delhi	Yes	Yes	Yes	Yes
6.	Guwahati	No	No	No	No
7.	Roorkee	No	No	Yes	No
8.	Ropar	No	No	No	No
9.	Bhubaneswar	No	No	Not open	No
10.	Hyderabad	No	No	Yes	No
11.	Gandhinagar	Yes	Yes	Yes	No
12.	Patna	No	No	No	No
13.	Rajasthan	No	No	No	No
14.	Mandi	No	No	Yes	No
15.	Indore	No	No	Yes	No

8.8 Analysis of Information Services

It is necessary to find out which IIT library provides the information service through its website like audio/video, e-resources, and blogs services as these services are very useful for the users. Four essential services of IITs were compared (Table 8):

(1) Audio/video service 6 (40 %)

(2) E-resources service 10 (66.66 %)

(3) Digital library service 6 (40 %)

(4) Blogs service 2 (13.33 %)

Table 8. Audio/video, e-resources, digital library and blogs

S. No.	IIT	Audio/ video	E-reso- urces	Digital library	Blogs
1.	Kharagpur	yes	Yes	Yes	No
2.	Bombay	Yes	Yes	Yes	Yes
3.	Madras	yes	Yes	Yes	No
4.	Kanpur	Not open	Not Open	No	No
5.	Delhi	yes	Yes	Yes	Yes
6.	Guwahati	No	Yes	No	No
7.	Roorkee	No	Not Open	No	No
8.	Ropar	No	Yes	No	No
9.	Bhubaneshwar	No	No	No	No
10.	Hyderabad	Yes	Yes	Yes	No
11.	Gandhinagar	Yes	Yes	Yes	No
12.	Patna	No	No	No	No
13.	Rajasthan	No	No	No	No
14.	Mandi	No	Yes	No	No
15.	Indore	No	Yes	No	No

8.9 Analysis of Hindi Version of IIT Libraries Websites

Table 9 shows only websites of libraries of IIT Bombay and IIT Delhi are available in Hindi language.

Table 9. Hindi version

S. No.	IIT	Hindi version
1.	Kharagpur	No
2.	Bombay	Yes
3.	Madras	No
4.	Kanpur	No
5.	Delhi	Yes
6.	Guwahati	No
7.	Roorkee	No
8.	Ropar	No
9.	Bhubaneshwar	No
10.	Hyderabad	No
11.	Gandhinagar	No
12.	Patna	No
13.	Rajasthan	No
14.	Mandi	No
15.	Indore	No

8.10 Analysis of Images in Library Websites of IITs

Table 10 describes the total number of images on the websites in which library website of IIT Kharagpur is on the top with 50 (43.47 %) images, followed by IIT Madras 22 (19.13 %), IIT Bombay 18 (15.64 %), IIT Delhi 12 (10.43 %), and IIT Roorkee 6 (5.21 %).

μ = Mean, n = IIT library, X=Images, μ = 115/15, μ = 7.67

There are 115 total images on IIT libraries websites and the mean of total images is 8 for each IIT library website.

Table 10. Images in library websites

S. No.	IIT	Image	Percentage (%)
1.	Kharagpur	50	43.47
2.	Bombay	18	15.64
3.	Madras	22	19.13
4.	Kanpur	01	00.86
5.	Delhi	12	10.43
6.	Guwahati	00	00.00
7.	Roorkee	06	05.21
8.	Ropar	00	00.00
9.	Bhubaneswar	00	00.00
10.	Hyderabad	01	00.86
11.	Gandhinagar	00	00.00
12.	Patna	01	00.86
13.	Rajasthan	00	00.00
14.	Mandi	04	03.47
15.	Indore	00	00.00
	Total	**115**	**100**

9. FINDINGS

Based on the collected data and its analysis the following are the findings of the present study:

- The IIT Delhi has the highest number of total links among all the IITs library websites. The IIT Delhi has 4070 (35.29 %) total links in which the 3709 (38.28 %) links are also included that are not created by the IIT Delhi it's only connected with the library website of IIT Delhi.
- The library websites of IIT Bombay is at the top most with 75(28.84 %) never active links (those are not able to perform) but it is also traced out that the library website of IIT Bombay more informative because it has 468 (35.64 %) total webpages.
- It is also traced that the highest numbers of pdf files are connected with the library website of IIT Gandhinagar.
- Some of the library websites are also providing library services through their websites. The library websites of IIT Bombay, IIT Madras and IIT Delhi provide the user supporting services like Web OPAC, search bar, site map and inter library loan.
- The library websites of IIT Bombay and IIT Delhi are also available in Hindi language.
- Most of the libraries don't update their websites only the IIT Madras, IIT Delhi and IIT Bombay library websites are updating continuously.
- Some of the library websites expose the descriptive Information about their collection, infrastructure, system and services.
- Some of the libraries websites are also providing the information services. Library websites of IIT Bombay and IIT Delhi provide the audio/visual, e-resource, and digital library services.

10. SUGGESTIONS

- IIT library authority should appoint a separate team for creating, designing and updating the websites.
- Rajasthan IIT library should create separate webpages or websites.
- Large amount of the text on the single webpage does work properly because it makes difficult for users to extract useful information. So web developer should not keep too much information on the single webpage.
- All the IIT libraries websites should include the user supporting facilities like web OPAC and search bar.
- All IIT library websites should provide e-resources services.
- All IIT libraries websites should share online resources through the ILL services to their students, researchers and faculty members.
- All the IITs libraries should use the same standard to the information retrieval.
- Layout, colour, and structure of each library websites should be simple and attractive.
- Library websites of IITs should be provided the Library 2.0 services like the chat referencing, instant massaging, social networking sites, etc., to communicate the information in full duplex mode.

11. CONCLUSIONS

The study has been exploratory. Links analysis of the websites of the IIT libraries in India is an unexplored area of webometrics research. This study gives a fair idea about the information provided by the 15 IITs library web sites of the India. These finding open the door to the future studies of new area of the web. If the web masters of IITs library websites follow the above suggestions so they can improve the web facilities.

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