Evaluation of Selected Universities Library Websites Listed by National Institutional Ranking Framework (NIRF) during the Year 2017: A Webometric Analysis

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ABSTRACT

The present study is carried out for analyzing the selected universities library websites ranked by National Institutional Ranking Framework (NIRF) for the year 2017. The paper investigates domain authority, a number of webpages, links and calculates the Web Impact Factor of 23 universities' library websites. Though top 25 universities were selected for the study out of which 1 university library website found an error while fetching data and 1 more university was not having library website. The study revealed that the Internal Web Impact Factor and Simple Web Impact Factor of Birla Institute of Technology and Science, Rajasthan occupies at the top with 3309.52. Whereas, Jamia Millia Islamia occupies second place with 1250 IWIF and 1250.05 SWIF and the third place was occupied by Jawaharlal Nehru Centre for Advanced Scientific Research with 230.26 IWIF and 230.31 SWIF. Indian Institute of Science, Bangalore recorded highest EWIF with 11.67.

Keywords: Webometric, Websites, Libraries website, NIRF, Link analysis, Web impact factor etc.

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INTRODUCTION

The library websites are the primary source of information as finding information by simply searching on the internet is considered the easiest way than going to the library and finding books from the shelf. In the age of digitization, many libraries have transformed from traditional to digital libraries and started to offer a variety of wide range of resources and services for library users. Libraries are treated as the backbone of an academic institution where information and knowledge are shared to academicians for making it benefit and make the full use of it in their academic activities and library websites become the gateway of knowledge access from the library. The purpose of the present study is to examine the selected universities library websites in 2017 and rank their websites based on WIF. For many years, a webometric study was recorded to be an emerging area in the field of Library and Information Science. This paper will explore the present status of library websites of universities ranked by NIRF in 2017 that will help the users in knowing the most visited library websites and will be easy for the internet surfers to access library resources when needed.

Webometrics

In present digital era, the web has become a key source of information and plays an important role in its dissemination. Webometric is a very important segment in the field of library and information science. According to Thelwall, Webometrics is the study of web-based content with primarily quantitative methods for social science research goals using techniques that are not specific to one field of study, which emphasizes the development of applied methods for use in the wider social sciences. Webometrics covers research of all network-based communication using informetric or other quantitative measures.[1]

A Web Impact Factor is a part of the methodology in webometrics studies. The Web Impact Factor (WIF) was developed by Ingwersen[2] to measure the impact of websites by the number of links it receives. It provides quantitative tools for ranking, evaluating, categorizing and comparing websites and top-level domains and sub-domains. A website with a higher

impact factor may be considered to be more prestigious or of higher quality than those websites with a lower impact factor. Three types of links and Web Impact Factor (WIF) are formulated in the following way:

- The Simple WIF: The ratio of all links to the number of pages.

- The Internal WIF: The ratio of internal links within the site to a number of pages.

- The External WIF: The ratio of links made from external sites to the target site, to the number of pages at the site.

National Institutional Ranking Framework (NIRF)

The National Institutional Ranking Framework (NIRF) is a methodology adopted by the Ministry of Human Resource Development (MHRD), Government of India, to rank all institutions of higher education in India. The Framework was approved by the MHRD and launched by Minister of Human Resource Development on 29 September 2015.[3] There are separate rankings for different types of institutions depending on their areas of operation like universities and colleges, engineering institutions, management institutions, pharmacy institutions and architecture institutions. About 3500 institutions voluntarily participated in the first round of rankings and 2017 ranked lists were released by MHRD on 3 April 2017.[4]

Literature Review

Babu, Jeyshankar and Rao[5] examined 40 central universities websites in India. Investigated domain systems of the websites, analyses the number of webpages and link pages and calculated the simple web impact factor, self-link web impact factor, external link web impact factor and revised web impact factor for Central Universities in India and ranks the websites as per the WIF. Joicy and Varghese[6] evaluated the websites of Research and Development institutions in India and study revealed that majority of the R and D institutions in India provide informative links to contacts, copyright, news and events, RTI and history, only a few websites provide opportunity for user interaction in the form of feedback and majority of the R and D institutions websites are good to navigate and find information. Walia and Gupta[7] conducted a study on Web Impact Factor of Select National Libraries' Websites and their study revealed that among the selected national libraries, websites of national libraries' of America, Australia and Britain were more visible and hosted the more content compare to the websites of India, Namibia and South Africa. Shukla and Tripathi[8] investigated the backlinks of Institutes of National Importance and Premier Management Institutions Library websites. The researchers retrieved backlinks by four search engines Google, AlltheWeb, AltaVista and Yahoo Site and revealed that among four search engines, Yahoo Site Explorer

is more reliable, index page/homepage of library websites attracts the highest backlinks than other web pages of library websites. Verma and Brahma[9] conducted a study on webometric analysis of 10 Central Universities in North East India. The study calculates the link pages, the number of webpages and analysis the Web Impact Factor of Central universities in North East India and found that Mizoram University (MZU) ranks at the top among the Central Universities websites in North East India. Devi and Verma[10] have evaluated and compared the web contents of the North Eastern Hill University and Mizoram University. The authors have developed 73 criteria under 14 broad headings for analyzing the contents where 69 criteria have been analyzed quantitatively. A quantitative three-point-rating scale was designed to determine a meaningful numerical rating. The study reveals that NEHU scored the highest point with 85.51 percent to that of MZU (68.11%). The authors suggest for evaluating the websites frequently so that the latest information can reach to the end users. Panda and Sahoo[11] has conducted a webometric study on 16 IITs of India. They have analysed the number of web pages and link pages, identifies the domain systems of the websites, calculates the self-link web impact factor, simple web impact factor (SWIF) and external web impact factor (EWIF) of IITs in India. The study also reflects that some of the IITs have higher number of web pages, but correspondingly with small number of link pages and the websites fall behind in their self-link, simple and external link WIF. Verma and Brahma[12] conducted a study on ranking of National Institutes of Technology (NITs) of Northeast region of India on the basis of the web impact factor and found that out of 8 NITS in NE region, NIT Silchar of Assam scores maximum number of webpages, highest Internal and External links and leads with highest WIF.

Objectives of the Study

1. Analyse the URL of universities library websites ranked by NIRF
2. Calculate the number of webpages and domain authority of universities library websites ranked by NIRF
3. Examine the link-equity of universities library websites ranked by NIRF
4. Find out the internal and external link pages of universities library websites ranked by NIRF
5. Calculate the web impact factor of universities library websites ranked by NIRF

METHODOLOGY

An observation method was used as research methodology and data were collected from the library websites of 23 universities ranked by National Institutional Ranking Framework (NIRF) for the year 2017 by using the tool called Open Site Explorer (www.opensiteexplorer.org). The data was

collected on 4th January 2018. The Open Site Explorer is one of the essential tools that gives a wealth of data by gathering, sorting and exporting link data easier than ever. It is built with speed and accessibility at the forefront and provides a tremendous amount of information about the links to any page or site.

Method of calculating Web Impact Factor

Distribution of Data by SWIF has been calculated by the following formula[13]

$$SWIF = \frac{Total\ No.\ of\ Links}{Total\ No.\ of\ Webpages}$$

Distribution of Data by IWIF has been calculated by the following formula:

$$IWIF = \frac{Total\ No.\ of\ Internal\ Links}{Total\ No.\ of\ Webpages}$$

Distribution of Data by EWIF has been calculated by the following formula:

$$EWIF = \frac{Total\ No.\ of\ External\ Links}{Total\ No.\ of\ Webpages}$$

Scope of the Study

The scope of present study is limited to analyze the current status of library websites of top 25 Universities of India ranked in National Institutional Ranking Framework (NIRF) in the year 2017 as listed in Table 1. (Source: https://www. nirfindia. org/universityranking.html). The scope is further limited to

Table 1: Top 25 Universities listed by National Institutional Ranking Framework.

Sl. No.	Universities	Library Hyperlink	State	Year of Establishment
1	Indian Institute of Science	http://www.library.iisc.ernet.in/	Karnataka	1909
2	Jawaharlal Nehru University	http://lib.jnu.ac.in/	New Delhi	1969
3	Banaras Hindu University	http://www.bhu.ac.in/bhulibrary/index.html	Uttar Pradesh	1916
4	Jawaharlal Nehru Centre for Advanced Scientific Research	http://lib.jncasr.ac.in/	Karnataka	1989
5	Jadavpur University*	http://122.15.82.18/digilib/	West Bengal	1955
6	Anna University	https://www.annauniv.edu/Library/index.html	Tamil Nadu	1978
7	University of Hyderabad	http://igmlnet.uohyd.ac.in:8000/	Telangana	1974
8	University of Delhi	http://crl.du.ac.in/	New Delhi	1922
9	Amrita Vishwa Vidyapeetham	https://www.amrita.edu/department/library	Tamil Nadu	2003
10	Savitribai Phule Pune University	http://lib.unipune.ac.in:8002/	Maharashtra	1948
11	Aligarh Muslim University	https://www.amu.ac.in/malibrary/	Uttar Pradesh	1875
12	Jamia Millia Islamia	http://jmi.ac.in/zhlibrary	New Delhi	1920
13	Birla Institute of Technology and Science	http://www.bits-pilani.ac.in/library	Rajasthan	1964
14	Vellore Institute of Technology	http://www.vit.ac.in/academics/library	Tamil Nadu	1984
15	Indian Agricultural Research Institute	http://library.iari.res.in/	New Delhi	1905
16	Calcutta University	http://caluniv.ac.in/libraries/library.html	West Bengal	1857
17	Tamil Nadu Agricultural University	http://www.tnau.ac.in/library.html	Tamil Nadu	1971
18	Manipal Academy of Higher Education	https://manipal.edu/mu/campus-life/around-campus/campus-facilities/libraries.html	Karnataka	1956
19	Visva Bharati	http://www.visvabharati.ac.in/Library.html	West Bengal	1921
20	Siksha`O` Anusandhan University	http://www.soa.ac.in/library/	Odisha	1996
21	Homi Bhabha National Institute*	—	Maharashtra	2005
22	Bharath Institute of Higher Education and Research	https://www.bharathuniv.ac.in/facilities/library/index.php	Tamil Nadu	1984
23	Osmania University	http://www.osmania.ac.in/studentsupport-library.php	Telangana	1918
24	Punjab Agricultural University	http://web.pau.edu/msrlibrary/	Punjab	1962
25	Institute of Chemical Technology	http://www.ictmumbai.edu.in/DisplayPage.aspx?page=qandItemID=35	Maharashtra	1933

(Source: https://www.nirfindia.org/universityranking.html) Note: Jadavpur University* = can't access data; Homi Bhabha National Institute* = No library website

only 23 Universities website because two Universities Library Website (Jadhavpur University and Homi Bhabha National Institute) was not working at time of data collection.

Data Analysis

Table 2 gives details about Domain Authority and Page Authority of 23 universities library websites. It shows that the Domain Authority of Indian Institute of Science Bangalore with 75 (6.15%) scores highest, followed by Jawaharlal Nehru University with 67 (5.49%) and Anna University and University of Delhi with 66 (5.41%). On the other hand, the Page Authority of Indian Institute of Science again scores highest with 55 (7.57%), followed by Amrita Vishwa Vidyapeetham with 50 (6.88%) and University of Delhi with 48 (6.61%).

Table 3 depicted the Internal Equity–Passing Links, External Equity–Passing Links and Total Equity–Passing Links of 23 universities library websites and resolved that the Internal Equity–Passing Links of Birla Institute of Technology and Science leads with maximum links i.e.,139000 (65.42%), the second highest was occupied by Jamia Millia Islamia with 46250 (21.76%) links and Jawaharlal Nehru Centre for Advanced Scientific Research with 9441 (4.44%) links becomes

third. Based on External Equity–Passing Links, the Indian Institute of Science leads with highest links i.e., 631 (75.65%), followed by Calcutta University with 83 (9.95%) and Amrita Vishwa Vidyapeetham with 53 (6.35%). Thus, it indicates that the Total Equity–Passing Links of Birla Institute of Technology and Science with 139000 (65.16%) was the highest among all, followed by Jamia Millia Islamia with 46252 (21.68%) and Jawaharlal Nehru Centre for Advanced Scientific Research with 9441 (4.42%).

Table 4 illustrated the Total Internal Links, Total External Links and Total Links of 23 universities library websites. The Total Internal links of Birla Institute of Technology and Science again scores the highest with 139000 (65.42%), followed by Jamia Millia Islamia with 46250 (21.76%) and Jawaharlal Nehru Centre for Advanced Scientific Research with 9441 (4.44%). Whereas, the Total External links of Indian Institute of Science occupies at top with 642 (73.70%), followed by Calcutta University with 83 (9.52%) and Amrita Vishwa Vidyapeetham with 57 (6.54%). It is viewed from the table that Birla Institute of Technology and Science got the highest number total links, followed by Jamia Millia

Table 2: Domain Authority and Page Authority.

Sl. No.	Universities	Domain Authority (%)	Page Authority (%)
1	Indian Institute of Science	75 (6.15%)	55 (7.57%)
2	Jawaharlal Nehru University	67 (5.49%)	47 (6.47%)
3	Banaras Hindu University	60 (4.92%)	44 (6.06%)
4	Jawaharlal Nehru Centre for Advanced Scientific Research	53 (4.34%)	41 (5.64%)
5	Anna University	66 (5.41%)	37 (5.09%)
6	University of Hyderabad	47 (3.85%)	1 (0.13%)
7	University of Delhi	66 (5.41%)	48 (6.61%)
8	Amrita Vishwa Vidyapeetham	62 (5.08%)	50 (6.88%)
9	Savitribai Phule Pune University	59 (4.84%)	1 (0.13%)
10	Aligarh Muslim University	55 (4.51%)	27 (3.71%)
11	Jamia Millia Islamia	47 (3.85%)	37 (5.09%)
12	Birla Institute of Technology and Science	55 (4.51%)	42 (5.78%)
13	Vellore Institute of Technology	64 (5.25%)	34 (4.68%)
14	Indian Agricultural Research Institute	52 (4.26%)	40 (5.50%)
15	Calcutta University	56 (4.59%)	41 (5.64%)
16	Tamil Nadu Agricultural University	55 (4.51%)	35 (4.82%)
17	Manipal Academy of Higher Education	57 (4.67%)	28 (3.85%)
18	Visva Bharati	41 (3.36%)	15 (2.06%)
19	Siksha`O` Anusandhan University	7 (0.57%)	1 (0.13%)
20	Bharath Institute of Higher Education and Research	35 (2.87%)	19 (2.61%)
21	Osmania University	55 (4.51%)	29 (3.99%)
22	Punjab Agricultural University	48 (3.93%)	32 (4.40%)
23	Institute of Chemical Technology	37 (3.03%)	22 (3.03%)
	Total	1219 (100%)	726 (100%)

Islamia and Jawaharlal Nehru Centre for Advanced Scientific Research.

Table 5 depicts the Followed Linking Root Domains, Total Linking Root Domains and Linking C Blocks of websites of 23 universities library websites. The table clearly shows that the Followed Linking Root Domains of Amrita Vishwa Vidyapeetham scores highest with 53 (36.30%), followed by Indian Institute of Science Bangalore with 46 (31.50%) at second and Jawaharlal Nehru University with 7 (4.79%) at third. The Total Linking Root Domains of Amrita Vishwa Vidyapeetham and Indian Institute of Science Bangalore with 54 (32.33%) was the highest, followed by University of Delhi with 19 (11.37%) and Jawaharlal Nehru University with 7 (4.19%). The Linking C Blocks of Indian Institute of Science Bangalore with 47 (40.86%) was the highest, followed by University of Delhi with 19 (16.52%) and Jawaharlal Nehru University with 7 (6.08%).

Table 6 explored the Web Impact Factor of 23 universities library websites and found that the Internal Web Impact

Factor and Simple Web Impact Factor of Birla Institute of Technology and Science occupies at the top with 3309.52. Whereas, Jamia Millia Islamia occupies second place with 1250 IWIF and 1250.05 SWIF and the third place was occupied by Jawaharlal Nehru Centre for Advanced Scientific Research with 230.26 IWIF and 230.31 SWIF. The table also indicates that the External Web Impact Factor of selected universities library websites was too low, which shows only Indian Institute of Science, Bangalore recorded highest EWIF with 11.67. University of Hyderabad, Savitribai Phule Pune University and Siksha`O` Anusandhan University has got zero Web Impact Factor. Thus, the overall Web Impact Factor of Birla Institute of Technology and Science recorded to be on top.

Findings

1. The Domain and Page Authority of Indian Institute of Science, Bangalore recorded to be on top with 75 (6.15%) and 55 (7.57%).

Table 3: Internal Equity-Passing Links, External Equity-Passing Links and Total Equity-Passing Links.

Sl. No.	Universities	Internal Equity-Passing Links (%)	External Equity-Passing Links (%)	Total Equity-Passing Links (%)
1	Indian Institute of Science	7775 (3.65%)	631 (75.65%)	8406 (3.94%)
2	Jawaharlal Nehru University	7733 (3.63%)	9 (1.07%)	7742 (3.62%)
3	Banaras Hindu University	228 (0.10%)	16 (1.91%)	244 (0.11%)
4	Jawaharlal Nehru Centre for Advanced Scientific Research	9441 (4.44%)	0	9441 (4.42%)
5	Anna University	2 (0)	8 (0.95%)	10 (0)
6	University of Hyderabad	0	0	0
7	University of Delhi	212 (0.09%)	24 (2.87%)	236 (0.11%)
8	Amrita Vishwa Vidyapeetham	211 (0.09%)	53 (6.35%)	264 (0.12%)
9	Savitribai Phule Pune University	0	0	0
10	Aligarh Muslim University	2 (0)	6 (0.71%)	8 (0)
11	Jamia Millia Islamia	46250 (21.76%)	2 (0.23%)	46252 (21.68%)
12	Birla Institute of Technology and Science	139000 (65.42%)	0	139000 (65.16%)
13	Vellore Institute of Technology	1 (0)	0	1 (0)
14	Indian Agricultural Research Institute	1247 (0.58%)	0	1247 (0.58%)
15	Calcutta University	115 (0.05%)	83 (9.95%)	198 (0.09%)
16	Tamil Nadu Agricultural University	13 (0.06%)	1 (0.11%)	14 (0)
17	Manipal Academy of Higher Education	3 (0)	0	3 (0)
18	Visva Bharati	2 (0)	0	2 (0)
19	Siksha`O` Anusandhan University	0	0	0
20	Bharath Institute of Higher Education and Research	4 (0)	0	4 (0)
21	Osmania University	117 (0.05%)	0	117 (0.05%)
22	Punjab Agricultural University	0	1 (0.11%)	1 (0)
23	Institute of Chemical Technology	111 (0.05%)	0	111 (0.05%)
	Total	212467 (100%)	834 (100%)	213301 (100%)

Table 4: Total Internal Links, Total External Links and Total Links.

Sl. No.	Universities	Total Internal Links (%)	Total External Links (%)	Total links (%)
1	Indian Institute of Science	7775 (3.65%)	642 (73.70%)	8417 (3.94%)
2	Jawaharlal Nehru University	7735 (3.64%)	9 (1.03%)	7744 (3.62%)
3	Banaras Hindu University	228 (0.10%)	16 (1.83%)	244 (0.11%)
4	Jawaharlal Nehru Centre for Advanced Scientific Research	9441 (4.44%)	2 (0.22 %)	9443 (4.42%)
5	Anna University	3 (0)	8 (0.91%)	11 (0)
6	University of Hyderabad	0	0	0
7	University of Delhi	212 (0.09%)	35 (4.01%)	247 (0.11%)
8	Amrita Vishwa Vidyapeetham	212 (0.09%)	57 (6.54%)	269 (0.12%)
9	Savitribai Phule Pune University	0	0	0
10	Aligarh Muslim University	2 (0)	9 (1.03%)	11 (0)
11	Jamia Millia Islamia	46250 (21.76%)	2 (0.22 %)	46252 (21.68%)
12	Birla Institute of Technology andScience	139000 (65.42%)	3 (0.34%)	139000 (65.15%)
13	Vellore Institute of Technology	1 (0)	0	1 (0)
14	Indian Agricultural Research Institute	1247 (0.58%)	0	1247 (0.58%)
15	Calcutta University	115 (0.05%)	83 (9.52%)	198 (0.09%)
16	Tamil Nadu Agricultural University	13 (0)	1 (0.11%)	14 (0)
17	Manipal Academy of Higher Education	3 (0)	0	3 (0)
18	Visva Bharati	2 (0)	0	2 (0)
19	Siksha`O` Anusandhan University	0	0	0
20	Bharath Institute of Higher Education and Research	4 (0)	0	4 (0)
21	Osmania University	117 (0.05%)	0	117 (0.05%)
22	Punjab Agricultural University	0	4 (0.45%)	4 (0)
23	Institute of Chemical Technology	111 (0.05%)	0	111 (0.05%)
	Total	212471 (100%)	871 (100%)	213339 (100%)

Table 5: Followed Linking Root Domains, Total Linking Root Domains and Linking C Blocks.

Sl. No.	Universities	Followed Linking Root Domains (%)	Total Linking Root Domains (%)	Linking C Blocks (%)
1	Indian Institute of Science	46 (31.50%)	54 (32.33%)	47 (40.86%)
2	Jawaharlal Nehru University	7 (4.79%)	7 (4.19%)	7 (6.08%)
3	Banaras Hindu University	4 (2.73%)	4 (2.39%)	5 (4.34%)
4	Jawaharlal Nehru Centre for Advanced Scientific Research	1 (0.68%)	2 (1.19%)	3 (2.60%)
5	Anna University	5 (3.42%)	5 (2.99%)	5 (4.34%)
6	University of Hyderabad	0	0	0
7	University of Delhi	11 (7.53%)	19 (11.37%)	19 (16.52%)
8	Amrita Vishwa Vidyapeetham	53 (36.30%)	54 (32.33%)	4 (3.47%)
9	Savitribai Phule Pune University	0	0	0
10	Aligarh Muslim University	3 (2.05%)	4 (2.39%)	4 (3.47%)
11	Jamia Millia Islamia	2 (1.36%)	2 (1.19%)	2 (1.73%)
12	Birla Institute of Technology and Science	1 (0.68%)	2 (1.19%)	3 (2.60%)
13	Vellore Institute of Technology	1 (0.68%)	1 (0.59%)	1 (0.86%)
14	Indian Agricultural Research Institute	1 (0.68%)	1 (0.59%)	3 (2.60%)
15	Calcutta University	3 (2.05%)	3 (1.79%)	3 (2.60%)
16	Tamil Nadu Agricultural University	2 (1.36%)	2 (1.19%)	2 (1.73%)
17	Manipal Academy of Higher Education	1 (0.68%)	1 (0.59%)	1 (0.86%)
18	Visva Bharati	1 (0.68%)	1 (0.59%)	1 (0.86%)
19	Siksha`O` Anusandhan University	0	0	0
20	Bharath Institute of Higher Education and Research	1 (0.68%)	1 (0.59%)	1 (0.86%)
21	Osmania University	1 (0.68%)	1 (0.59%)	1 (0.86%)
22	Punjab Agricultural University	1 (0.68%)	2 (1.19%)	2 (1.73%)
23	Institute of Chemical Technology	1 (0.68%)	1 (0.59%)	1 (0.86%)
	Total	146 (100%)	167 (100%)	115 (100%)

Table 6: Ranking of Universities on the Basis of Web Impact Factor.

Sl. No.	Universities	IWIF	EWIF	SWIF	Ranking
1	Birla Institute of Technology and Science	3309.52	0.07	3309.52	1
2	Jamia Millia Islamia	1250	0.05	1250.05	2
3	Jawaharlal Nehru Centre for Advanced Scientific Research	230.26	0.04	230.31	3
4	Jawaharlal Nehru University	164.57	0.19	164.76	4
5	Indian Institute of Science	141.36	11.67	153.03	5
6	Indian Agricultural Research Institute	31.17	0	31.17	6
7	Banaras Hindu University	5.18	0.36	5.54	7
8	Amrita Vishwa Vidyapeetham	4.24	1.14	5.38	8
9	University of Delhi	4.41	0.72	5.14	9
10	Institute of Chemical Technology	5.04	0	5.04	10
11	Calcutta University	2.8	2.02	4.82	11
12	Osmania University	4.03	0	4.03	12
13	Aligarh Muslim University	0.07	0.33	0.4	13
14	Tamil Nadu Agricultural University	0.37	0.02	0.4	13
15	Anna University	0.08	0.21	0.29	14
16	Bharath Institute of Higher Education and Research	0.21	0	0.21	15
17	Visva Bharati	0.13	0	0.13	16
18	Punjab Agricultural University, Ludhiana	0	0.12	0.12	17
19	Manipal Academy of Higher Education	0.1	0	0.1	18
20	Vellore Institute of Technology	0.02	0	0.02	19
21	University of Hyderabad	0	0	0	0
22	Savitribai Phule Pune University	0	0	0	0
23	Siksha`O` Anusandhan University	0	0	0	0

2. The Internal Equity–Passing Links (65.42%) and Total Equity-Passing Links (65.16%) of Birla Institute of Technology and Science, Rajasthan recorded to be on top, on the other hand, the Indian Institute of Science (75.65%), Bangalore leads with highest External Equity-Passing Links.

3. The Total Internal links and Total links of Birla Institute of Technology and Science, Rajasthan again recorded to be on top with 139000, the Total External links of Indian Institute of Science, Bangalore occupies at the top with 642 (73.70%).

4. The Followed Linking Root Domains of Amrita Vishwa Vidyapeetham scores highest with 53 (36.30%). The Total Linking Root Domains of Amrita Vishwa Vidyapeetham and Indian Institute of Science Bangalore with 54 (32.33%) was the highest and the Linking C Blocks of Indian Institute of Science, Bangalore once again with 47 (40.86%) was the highest.

5. The Internal Web Impact Factor and Simple Web Impact Factor of Birla Institute of Technology and Science, Rajasthan occupies at the top position with 3309.52. Whereas, Jamia Millia Islamia occupies second place with 1250 IWIF and 1250.05 SWIF and the third place was occupied by Jawaharlal Nehru Centre for Advanced Scientific Research with 230.26 IWIF and 230.31 SWIF.

6. The External Web Impact Factor of selected universities library websites was too low, only Indian Institute of Science, Bangalore recorded highest EWIF with 11.67.

7. University of Hyderabad, Savitribai Phule Pune University and Siksha`O` Anusandhan University has got zero Web Impact Factor.

CONCLUSION

The present study gives an idea about the selected websites of Indian Universities libraries ranked by National Institutional Ranking Framework (NIRF) for the year 2017. The paper investigates the URL, webpages, domain authority, link–equity, internal and external link pages of 23 universities library websites and calculates their web impact factor and rank them orderly. NIRF is a methodology for ranking of universities and colleges in India and functions as an autonomous body under an initiative by the Department of Higher Education. A detailed study in this area is quite interesting and explorative to know about the current status of library websites and will be helpful for the readers. The paper resolved that the overall Web Impact Factor of Birla Institute of Technology and Science, Rajasthan recorded to be on top.

It also notices that Indian Institute of Science, Bangalore has only recorded highest EWIF among all library websites, leaving rest of the websites with very low EWIF. It is suggested that University of Hyderabad, Savitribai Phule Pune University and Siksha`O` Anusandhan University should improve its links for better accessibility and connectivity among universities library websites should be supported.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ABBREVIATIONS

NIRF: National Institutional Ranking Framework; **WIF:** Web Impact Factor; **URL:** Uniform Resource Locator; **IWIF:** Internal Web Impact Factor; **SWIF:** Simple Web Impact Factor; **EWIF:** External Web Impact Factor.

REFERENCES

1. Thelwall M. Introduction to webometrics: quantitative web research for the social sciences. New York: Morgan and Claypool Publishers. 2009. DOI: https://doi.org/10.2200/S00176ED1 V01Y200903ICR004

2. Kumar JS, Chandra BS, Mukhopadhyay P. Web impact factor and link analysis of selected Indian universities. Annals of Library and Information Studies. 2010;57:109-21. URL: http://eprints.rclis. org/16164/1/Annals-57-2.pdf.

3. National Institutional Ranking Framework: Overview. MHRD, Government of India. Retrieved on 5December. 2017. Available on-https:// www.nirfindia.org/About

4. India Rankings 2016. National Institutional Ranking Framework. MHRD, Government of India. Retrieved on 1st January, 2018. Available- https://www.mnirfindia.org/ Ranking.

5. Ramesh BR, Jeyshankar R, Rao PN. Websites of central universities in India: A webometric analysis. Desidoc Journal of Library and Information Technology. 2010;30(4):33-43. DOI: 10.14429/djlit.30.458.

6. A JJ, Rekha RV. Websites of research and development institutions in India: A webometric study. International Journal of Digital Library Services. 2011;1(2):90-104.URL: http://www.ijodls.in/uplo ads/3/6/0/3/3603729/rekha_kishore[9]_90-105.pdf.

7. Walia PK, Gupta M. Web impact factor of select national libraries' websites. DESIDOC Journal of Library and Information Technology. 2012;32(4):347-52. DOI: http://dx.doi.org/10.14429/djlit .32.4.2530.

8. Shukla A, Tripathi A. Backlinks analyses of institutes of national importance and premier management institutions library websites. Journal of International Academic Research for Multidisciplinary. 2014;2(7):560-75.

9. Verma MK, Brahma K. Websites of central universities in north east India: A webometric analysis. DESIDOC Journal of Library and Information Technology. 2017;37(3):389-95. DOI: http://dx.doi.org/10.14429/djlit.37.3.10906.

10. Devi KK, Verma MK. Comparison of design and content features of North Eastern Hill University (NEHU) and Mizoram University (MZU) websites: A study. World Digital Libraries: An International Journal. 2016;9(1):19-32.

11. Maharana RK, Panda K, Sahoo J. Web impact factor (WIF) and link analysis of Indian Institute of Technologies (IITs): A webometric study. Library Philosophy and Practice (e-journal). 2012;789:1-11.

12. Verma MK, Brahma K. Ranking of National Institutes of Technology (NITs) of northeast region of India on the basis of web impact factor. COLLNET Journal of Scientometrics and Information Management. 2017;11(2):1-14.

13. Verma MK, Brahma K. A webometric analysis of national libraries' websites in South Asia. Annals of Library and Information Studies. 2017;64(2):116-24. URI:http://nopr.niscair.res.in/handle/12345 679/42441.