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# Webometric Analysis of Deemed University Websites in India

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## **0. Abstract**

*This paper examines Webometric analysis the website of deemed universities in India. This study covered 125 deemed universities in India. The researcher identified and classified the four domains like State Universities, Central Universities, Deemed Universities and Private Universities. The researcher found that, out of 21 states, Tamil Nadu has a maximum of 28 (22.40%) universities, it is followed by Maharashtra 21(16.8%). The study calculated the Internal Link, External Link, back link and Size of the website. The study indicates that the numbers of backlinks are very low comparing to some of internal and external link. The researcher suggested that the websites of deemed universities need to attract more external links and impact factor by introducing novel and creative online sources and services and updates of news and research information.*

**Keyword:** Deemed university websites, university websites, website analysis, Link analysis, Internal Link; External Link Back Link, Web Impact Factor and size of websites.

## **1. Introduction**

The great technological revolution has brought in vast amount of and nearly unlimited accessibility of information. The user and his/her ability to shift through the vast sea of information has become the primary research focus in the twenty-first century. Information and knowledge present powerful tools for the advancement of personal and communal life; knowledge of positive use is imperative. The websites of higher education institutions play a major role in communicating the world by providing useful and current information. The interdisciplinary nature of the field of Library and Information Science has caused some of the issues related to information science to be directed at related fields: technology for those involved in computer science and information systems and administration for people engaged in management and

organization. Now a days the university websites play the vital role for all the aspects so this study mainly concentrate the deemed university websites in India.

The term webometrics is a coinage from two modern English words, “web” and “metric”. The word web is a short form of WWW. It is the study of the quantitative aspects of the construction and use of information resources, structures and technologies on the WWW drawing on Bibliometrics and Informetrics approaches.

The term webometrics was first coined by Almind and Ingwersen in the year 1997. It is further expanded as “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. The purpose of this definition was to help publicize appropriate methods outside of the information science discipline rather than to replace the original definition within information science. Similar scientific fields are Bibliometrics, Informetrics, Scientometrics, Virtual ethnography, and Web mining.

The idea of applying bibliometric techniques to the web was proposed by Almind and Ingwersen (1997). According to them should be defined as the ratio of links made to a website, to the number of pages at the website. Ingwersen distinguished between:

- The External link WIF, the ratio of external links to the number of pages.
- The internal or Self WIF, the ratio of internal links within the site to number of pages.
- The Revised WIF, the ratio of inlinks to the target site, to the number of pages at the site.

In links from outside represent more effort to point to target pages, and thus contain more valuable information. However, it is not always easy to separate self links from inlinks Li (2003).

## **2. Review of Literature**

The academic web is a global source of expertise and also a means to communicate scientific and cultural achievements (Aguillo, Granadino, Ortega, and Prieto, 2005). The impact of electronic publications is far larger than that obtained by traditional journals and books on paper. Websites are the most efficient and cheapest way for boosting all three academic missions: teaching, research and technology transfer. Lack of visibility on the web is leading to a worrying level of academic digital divide (Aguillo, Ortega and Fernandez, 2008). Jeysankar & Ramesh Babu (2009) have examined websites of 45 universities in Tamil Nadu comprising of 27 state and 18 private universities. This study identifies the domain systems of the websites; analysis the

number of WebPages, link pages and calculates the Simple Web Impact Factor, Self Link Web Impact Factor, External Link Web Impact Factor and Revised Web Impact Factor of the university websites in Tamil Nadu and ranks the websites as per the WIF. Reflects that some universities in Tamil Nadu have higher number of WebPages but correspondingly their link pages are very small in number and websites fall behind in their simple, self-link and external link web impact factor.

There are three key aspects to be measured in the academic web: Size, that is, volume of information published. Visibility, the number of 'situations' (site citations & external inlinks) the domain receives; and popularity as the number of visits or visitors of the web pages (Aguillo, Ortega and Fernandez, 2008).

Web links studies have been conducted by the scholars and information professionals all over the world since its introduction from Thelwall. Web link research in webometrics research started with Larson, Rousseau, and Almind and Ingweson. They highlighted their research with the citation counts focusing on the Web Impact Factor. Several subsequent studies by Ramesh Babu, Jeysankar and Rao (2010), Rousseau (1997), and Lee and Park (2012) were carried out with many of them focusing on the Academic institutions like colleges and universities.

Jeysankar and Nachiappan (2018) were studied web sites of Council of Scientific and Industrial Research (CSIR) institutions in India. They covered 41 CSIR research institutions in India and establish a kind of ranking of websites of CSIR institutions in India by measuring their WIF. The researcher identified and classified the domain of CSIR institutes' websites in India; and calculated the Number of WebPages, link pages, self -link pages and external link pages of CSIR institutes' websites in India.; To calculate the Simple Web Impact Factor (WIF), Self link Web Impact Factor, External Web Impact factor and Revised Web Impact Factor of CSIR institutes'' websites in India and rank them as per the WIF and To analyse the link network of the CSIR websites in India.

A series of criteria are monitored, but only size (S) and visibility (V) are included in the final ranking. The model states that the ratio between both is 1:1, but in order to reflect the diversity of the academic contents, the size component is split into three to measure raw volume of pages, number of rich files (R), and number of papers collected by Google Scholar (Sc). The last two indicators are relevant as we intend to measure commitment to open access publication. According to the proposed model the ranking (WR) is obtained with the following formula:

$$WR = 2*Rank (S)+Rank (R)+Rank (Sc)+4*Rank (V)$$

The ratio combining the weights assigned to each element is  $(2+1+1):4$  or 1:1 as intended. Other variants are also acceptable, but empirical tests show they provide results less comparable to other sources. In order to avoid size-related problems, search engines bias, and other factors, the absolute numbers collected were log-normalized, transformed in ordinals and then combined with the aforementioned formula for (WR) (Zitt and Filliatreau, 2007).

### **3. Need for the Study**

Today website becomes in dispensable resources among the academic institutions, since it has convenience for transforming the information to the users. Web based indicators and web performance is way to measure to the academic performance of the university. Hence it is essential to measure the performances these academic websites. The metric studies paved way for measuring the websites, the emergence of webometrics enable to identify the performance of academic websites. Hence in this study the deemed university websites were analysed using the webometric principles of web link structure analysis i.e. internal link, external link and back link.

### **4. Methods of Data Collection**

This study used Exalead (<http://www.exalead.com/search/web/>) search engine for collecting data. Exalead advanced web queries was used to find the approximate number of pages in each website that link to one another. The Exalead query is based upon the lexicon of the domain names of webpage URLs. The Exalead has been used to search and collect data. The data collection method extensively makes use of four special key words like domain, linkdomain, linkdomain AND, linkdomain AND NOT and linkdomain NOT: from Exalead Search engines. The four Boolean search statement methods used to collect data for each deemed universities' websites.

### **5. Objectives**

1. To identify the domain preferred by the deemed universities for their websites in India.
2. To find out the usage of internal link, external link and back link in deemed university websites in India.
3. To find out the web impact factor of deemed university websites in India.

4. To find out the external web impact factor of deemed university websites in India.

## 6. Data Analysis and Interpretation

There are 741 universities are functioning in India. These universities are categorised as State University, Central University, Deemed University and Private University. The number of universities under each category is shown in Table 1.

**Table 1: Type of Universities**

S. No.	Type of Universities	Frequency	Percent	Cumulative Percent
1	State University	342	46.2	46.2
2	Central University	46	6.2	52.4
3	Deemed University	125	16.9	69.2
4	Private University	228	30.8	100.0
<b>Total</b>		<b>741</b>	<b>100.0</b>	

There exists 342 (46.2%) state universities, it is followed by 228 (30.80%) Private Universities, 125 (16.90%) Deemed universities and 46 (6.20%) are Central Universities. In this study 125 deemed university websites were taken up for webometric study. These deemed universities further analysed based on the year of establishment and their specialisation on subject domain.

**Table 2: Details about Deemed Universities**

S. No.	Description	Frequency	Percentage
<b>Year of Establishment</b>			
1	Before 1980	11	8.8
2	Between 1981 and 1990	21	16.8
3	Between 1991 and 2000	15	12.0
4	After 2001 and above	78	62.4
<b>Domain</b>			
1	Arts and Science	56	44.8
2	Engineering	39	31.2
3	Medical	20	16.0
4	Others	10	8.0
<b>Overall</b>			
<b>Total</b>		<b>125</b>	<b>100</b>

Out of 125 deemed universities, 78 (62.40%) were established in the 21<sup>st</sup> Century i.e. after the year 2001. Only 37.6% of deemed universities were established before 2000 of which 21 (16.8%) deemed universities were established between 1981 and 1990. Out of 125 deemed universities, 56 (44.80%) were Arts and Science universities. It is followed by Engineering (39, 31.2%); Medicine (20, 16%) and others (10, 8%).

The deemed universities were further analysed state wise and the same is shown in Table 3.

**Table 3: State wise distribution of Deemed Universities Vs. Year of Establishment**

S. No.	Name of the State	Before 1980	Between 1981 and 1990	Between 1991 and 2000	After 2001 and above	Total
1	Andhra Pradesh	1 (0.8)	2 (1.6)	1 (0.8)	1(0.8)	5 (4.0)
2	Arunachal Pradesh	0 (0.0)	1 (0.8)	0 (0.0)	0 (0.0)	1 (0.8)
3	Bihar	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)	1 (0.8)
4	Chandigarh	0 (0.0)	0(0.0)	0 (0.0)	1 (0.8)	1 (0.8)
5	Delhi	3 (2.4)	3 (2.4)	1 (0.8)	3 (2.4)	10 (8.0)
6	Gujarat	1 (0.8)	0 (0.0)	0 (0.0)	1 (0.8)	2 (1.6)
7	Haryana	0 (0.0)	1 (0.8)	0 (0.0)	5 (4.0)	6 (4.8)
8	Jharkhand	1 (0.8)	1 (0.8)	0 (0.0)	0 (0.0)	2 (1.6)
9	Karnataka	1 (0.8)	0 (0.0)	1 (0.8)	12 (9.6)	14 (11.2)
10	Kerala	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.6)	2 (1.6)
11	Madhya Pradesh	0 (0.0)	0 (0.0)	1 (0.8)	2 (1.6)	3 (2.4)
12	Maharashtra	1 (0.8)	5 (4.0)	4 (3.2)	11 (8.8)	21 (16.8)
13	Orissa	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.6)	2 (1.6)
14	Puducherry	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)	1 (0.8)
15	Punjab	0 (0.0)	1 (0.8)	0 (0.0)	1 (0.8)	2 (1.6)
16	Rajasthan	1 (0.8)	2 (1.6)	1 (0.8)	4 (3.2)	8 (6.4)
17	Tamil Nadu	1 (0.8)	2 (1.6)	2 (1.6)	23 (18.4)	28 (22.4)
18	Telangana	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.6)	2 (1.6)
19	Uttar Pradesh	0 (0.0)	3 (2.4)	3 (2.4)	4 (3.2)	10 (8.0)
20	Uttarakhand	1(0.8)	0 (0.0)	1 (0.8)	1 (0.8)	3 (2.4)
21	West Bengal	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)	1 (0.8)
<b>Total</b>		<b>11 (8.8)</b>	<b>21 (16.8)</b>	<b>15 (12.0)</b>	<b>78 (62.4)</b>	<b>125 (100)</b>

The 125 universities spread over 21 states in India. Out of 21 states, Tamil Nadu has a maximum of 28 (22.40%) universities, it is followed by Maharashtra 21(16.8%), Karnataka 14 (11.20%) and Uttar Pradesh 10 (8.00%).

As per the policy of higher education each and every academic institutions must have websites. Accordingly all these universities having the academic websites. These universities were further classified based on the domain in URL and the same is shown in Table 4.

**Table 4: Domain-wise distribution of Websites of Deemed Universities Vs. Year of Establishment**

S. No.	Domain	Before 1980	Between 1981 and 1990	Between 1991 and 2000	After 2001 and above	Total
1	.ac.in	4 (3.2)	9 (7.2)	7 (5.6)	36 (28.8)	56 (44.8)
2	.co.in	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)	1 (0.8)
3	.com	0 (0.0)	0 (0.0)	0 (0.0)	7 (5.6)	7 (5.6)
4	.edu	1 (0.8)	2 (1.6)	1 (0.8)	8 (6.4)	12 (9.6)
5	.edu.in	0 (0.0)	5 (4.0)	4 (3.2)	10 (8.0)	19 (15.2)
6	.ernet.in	1 (0.8)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)
7	.gov.in	0 (0.0)	1 (0.8)	0 (0.0)	0 (0.0)	1 (0.8)
8	.in	2 (1.6)	1 (0.8)	0 (0.0)	5 (4.0)	8 (6.4)
9	.nic.in	1 (0.8)	1 (0.8)	1 (0.8)	0 (0.0)	3 (2.4)
10	.org	2 (1.6)	2 (1.6)	2 (1.6)	10 (8.0)	16 (12.8)
11	.org.in	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)	1 (0.8)
<b>Total</b>		<b>11 (8.8)</b>	<b>21 (16.8)</b>	<b>15 (12.0)</b>	<b>78 (62.4)</b>	<b>125 (100)</b>

Among the 125 universities, 56 (44.80%) universities are having a domain name as *.ac.in*. It is followed by *edu.in* 19 (15.20%), *.org* 16 (12.80%) and *.edu* 12 (9.60%). The domain names *.ernet.in*; *.gov.in*; and *.nic.in* are preferred least by the deemed universities especially after the year 2001.

The Internal Link, External Link and Size of the website for these 125 deemed universities were obtained using Web Optimization tool. Internal Link, External Link and Size of the website and the same are shown in Table 5. Based on Internal Link, External Link, Size of the website (in KB), Web Impact Factor (WIF) and External Web Impact Factor (EWIF) using the formula shown below have been calculated and also provided in the Table 5.

$$\text{External Link WIF} = \frac{\text{Number of External Link}}{\text{Number of Web Pages (In bytes)}}$$

$$\text{WIF} = \frac{\text{Number of Internal link Pages}}{\text{Number of Web Pages (In bytes)}}$$



**Table 5: Distribution of WIF and EWIF of Deemed universities in India**

S. No.	Name of the University	Internal Link	External Link	Size (in Kb)	WIF	EWIF
1	Vignan's Foundation for Science, Technology and Research University	247	43	1754.89	0.14	0.02
2	Koneru Lakshmaiah Education Foundation University	372	29	2230.43	0.17	0.01
3	Rashtriya Sanskrit Vidyapeetha	85	1	161.79	0.53	0.01
4	Sri Sathya Sai Institute of Higher Learning	32	6	25.72	1.24	0.23
5	Gandhi Institute of Technology and Management	116	41	3063.29	0.04	0.01
6	North Eastern Regional Institute of Science and Technology	65	7	867.38	0.07	0.01
7	Nava Nalanda Mahavihara	56	8	5990.69	0.01	0.00
8	PEC University of Technology	88	19	843.80	0.10	0.02
9	Indian Agricultural Research Institute	270	19	3042.44	0.09	0.01
10	Indain Institute of Foreign Trade	15	4	1734.65	0.01	0.00
11	Indian Law Institute	38	11	260.20	0.15	0.04
12	Institute of liver and Biliary Sciences	190	10	2106.21	0.09	0.00
13	Jamia Hamdard	20	69	2934.46	0.01	0.02
14	National Museum Institute of History of Arts, Conservation and Musicology	63	5	101.35	0.62	0.05
15	National University of Educational Planning and Administration	0	0	200.05	0.00	0.00
16	Rashtriya Sanskrit Sansthana	92	0	2989.35	0.03	0.00
17	Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeetha	155	4	724.43	0.21	0.01
18	TERI School of Advanced studies	158	11	2951.83	0.05	0.00
19	Gujarat Vidyapeeth	61	54	674.73	0.09	0.08
20	Sumandeep Vidyapeeth	0	0	0.09	0.00	0.00
21	Maharishi Markandeshwar University	42	100	2957.57	0.01	0.03
22	Lingaya's University	42	9	2019.43	0.02	0.00
23	National Brain Research Centre	0	0	203.37	0.00	0.00
24	National Dairy Research Institute	0	0	0.21	0.00	0.00
25	Manav Rachna International University	27	252	146.13	0.18	1.72
26	National Institute of Food Technology, Entrepreneurship & Management	0	0	0.44	0.00	0.00
27	Birla Institute of Technology	370	32	520.80	0.71	0.06
28	Indian School of Mines	169	81	848.20	0.20	0.10
29	B.L.D.E. University	81	3	200.65	0.40	0.01
30	Christ University	142	43	2894.39	0.05	0.01
31	Indian Institute of Science	174	88	555.54	0.31	0.16
32	International Institute of Information Technology	134	17	725.13	0.18	0.02

33	Jain University	156	39	1502.74	0.10	0.03
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34	Jagadgura Sri Shivarathreeswara University	215	24	1171.22	0.18	0.02
35	Jawahar lal Nehru Centre for Advanced Scientific Research	46	9	143.30	0.32	0.06
36	K.L.E. Academy of Higher Education and Research	84	30	2508.88	0.03	0.01
37	Manipal Academy of Higher Education	145	14	3851.42	0.04	0.00
38	NITTE University	40	107	403.20	0.10	0.27
39	Sri Devraj Urs Academy of Higher Education & Research	56	7	2266.67	0.02	0.00
40	Sri Siddhartha Academy of Higher Education	112	5	2638.31	0.04	0.00
41	Swami Vivekananda Yoga Anusandhana Samsthana	8	79	1406.04	0.01	0.06
42	Yenepoya University	560	6	1545.57	0.36	0.00
43	Kerala Kalamandalam	0	0	160.97	0.00	0.00
44	Indian Institute of Space Science and Technology	153	13	2494.72	0.06	0.01
45	Indian Institute of Information Technology and Management	154	11	1190.22	0.13	0.01
46	Pandit Dwarka Prasad Mishra Indian Institute of Information Technology	531	90	3105.20	0.17	0.03
47	Lakshmibai National Institute of Physical Education	13	57	600.70	0.02	0.09
48	Bharati Vidyapeeth	66	18	1472.47	0.04	0.01
49	Central Institute of Fisheries Education	0	0	NA	0.00	0.00
50	D.Y Patil Educational Society	112	1	46.22	2.42	0.02
51	Datta Meghe Institute of Medical Sciences	0	2	7.30	0.00	0.27
52	Deccan College Postgraduate & Research Institute	98	7	NA	0.00	0.00
53	Dr. D.Y. Patil Vidyapeeth	181	65	NA	0.00	0.00
54	Gokhale Institute of Politics & Economics	29	7	389.51	0.07	0.02
55	Homi Bhabha National Institute	1	0	1781.79	0.00	0.00
56	Indira Gandhi Institute of Development Research	79	10	554.09	0.14	0.02
57	Institute of Armament Technology	64	36	3186.46	0.02	0.01
58	International Institute for Population Sciences	0	2	478.12	0.00	0.00
59	Institute of Chemical Technology	0	0	1300.79	0.00	0.00
60	Krishna Institute of Medical Sciences	228	11	2385.77	0.10	0.00
61	MGM Institute of Health Sciences	87	7	874.13	0.10	0.01
62	Narsee Monjee Institute of Management Studies	71	29	1238.44	0.06	0.02
63	Padmashree Dr.D.Y. Patil Vidyapeeth	204	27	0.37	549.73	72.76
64	Pravara Institute of Medical Sciences	51	1	833.04	0.06	0.00
65	Symbiosis International University	140	68	2487.36	0.06	0.03
66	Tata Institute of Fundamental Research	129	57	1.39	92.63	40.93

67	Tata Institute of Social Sciences	124	53	2904.76	0.04	0.02
68	Tilak Maharashtra Vidyapeeth	345	9	8528.54	0.04	0.00
69	Kalinga Institute of Industrial Technology	63	21	2825.90	0.02	0.01
70	Shiksha 'O' Anusandhan University	28	10	572.54	0.05	0.02
71	Sri Balaji Vidyapeeth Mahatma Gandhi University	19	24	329.66	0.06	0.07
72	Sant Longowal Institute of Engineering and Tech	0	0	3014.31	0.00	0.00
73	Thopar Institute of Engineering & Technology	252	20	940.31	0.27	0.02
74	Banasthai Vidyapith	0	0	0.08	0.00	0.00
75	Birla Institute of Technology & Science	370	33	NA	0.00	0.00
76	Institute of Advanced Studies in Education	57	6	NA	0.00	0.00
77	IIS University	152	19	3732.19	0.04	0.01
78	Jain Vishva Bharati Institute	385	90	1548.74	0.25	0.06
79	Janardan Rai Nagar Rajasthan Vidyapeeth	65	1	198.34	0.33	0.01
80	LNM Institute of Information Technology	145	25	902.78	0.16	0.03
81	Mody Institute of Education and Research	84	196	2981.77	0.03	0.07
82	Academy of Maritime Education and Training	142	13	1867.11	0.08	0.01
83	Amrita Vishwa Vidyapeetham	80	25	50.30	1.59	0.50
84	Avinashilingam Institute for Home Science & Higher Education for Women	27	2	0.19	141.78	10.50
85	B.S. Abdur Rahman Institute of Science and Tech	272	26	2999.72	0.09	0.01
86	Bharath Institute of Higher Education & Research	129	22	11.26	11.45	1.95
87	Chennai Mathematical Institute	20	5	70.36	0.28	0.07
88	Chettinad Academy of Research and Education	5	1	523.00	0.01	0.00
89	Gandhiigram Rural Institute	229	32	762.90	0.30	0.04
90	Hindustan Institute of Technology and Science	267	227	2947.90	0.09	0.08
91	Kalasalingam Academy of Research and Higher Education	17	120	3046.76	0.01	0.04
92	Karunya Institute of Technology and Sciences	48	44	40.89	1.17	1.08
93	Karpagam Academy of Higher Education	134	3	18.98	7.06	0.16
94	M.G.R. Educational and Research Institute	24	8	76.28	0.31	0.10
95	Meenakshi Academy of Higher Education and Research	25	3	NA	0.00	0.00
96	Noorul Islam Centre for Higher Education	68	8	3371.90	0.02	0.00
97	Periyar Manaimmai Institute of Science and Technology	134	17	3121.21	0.04	0.01
98	Ponnaiyan Ramajayam Institute of Science and Technology	56	31	774.61	0.07	0.04
99	S.R.M Institute of Science and Technology	314	26	931.70	0.34	0.03
100	Sathyabama Institute of Science and Technology	144	33	1147.26	0.13	0.03

101	Saveetha Institute of Medical and Technical Sciences	452	17	0.15	3106.36	116.83
102	Shanmugha Arts Science Technology and Research Academy	123	24	46.79	2.63	0.51
103	Sri Chandrasekharendra Saraswathi Vishwa Mahavidyalaya	148	7	1115.65	0.13	0.01
104	Sri Ramachandra Medical College and Research Institute	12	2	3033.03	0.00	0.00
105	St. Peter's Institute of Higher Education and Research	121	9	199.74	0.61	0.05
106	Vels Institute of Science Technology and Advanced Studies	256	5	3073.14	0.08	0.00
107	Vellore Institute of Technology	122	35	46.13	2.64	0.76
108	Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology	152	50	2935.74	0.05	0.02
109	Vinayaka Mission's Research Foundation	127	6	807.41	0.16	0.01
110	International Institute of Information Technology	73	16	177.52	0.41	0.09
111	ICFAI Foundation for Higher Education	28	9	147.09	0.19	0.06
112	Sam Higginbottom Institute of Agriculture, Technology and Sciences	0	2	370.25	0.00	0.01
113	Bhatkhande Music Institute	3	47	2962.09	0.00	0.02
114	Central Institute of Higher Tibetan Studies	0	0	629.37	0.00	0.00
115	Dayalbagh Educational Institute	76	5	930.30	0.08	0.01
116	Indian Institute of Information Technology	100	45	3442.56	0.03	0.01
117	Indian Veterinary Research Institute	191	11	2668.92	0.07	0.00
118	Jaypee Institute of Information Technology	151	16	3107.01	0.05	0.01
119	Nehru Gram Bharati Vishwavidyalaya	1	0	0.31	3.20	0.00
120	Shobhit Institute of Engineering & Technology	131	61	2987.29	0.04	0.02
121	Santosh University	76	16	3753.53	0.02	0.00
122	Forest Research Institute	112	14	2704.95	0.04	0.01
123	Gurukul Kangri Vishwavidyalaya	19	136	748.56	0.03	0.18
124	Graphic Era University	0	0	2934.56	0.00	0.00
125	Ramakrishna Mission Vivekananda Educational and Research Institute	13	1	2951.30	0.00	0.00

The size of the websites ranges between 1 kb and 8529 kb. The size of the website of 6 universities cannot be obtained. The Inlink ranges between 1 and 560 links and there is no Inlink for 15 deemed university websites. The External link ranges between 1 and 252 links and there is no External link for 15 deemed university websites.

Web Impact Factor (WIF) for deemed university websites ranges between 0.01 and 3106.36. Out of 125, 24 deemed universities by WIF is 0.00. This indicates that the 24 universities may not have either inlink or size may be huge. External Web Impact Factor (EWIF) for deemed university websites ranges between 0.01 and 116.83. Out of

125, 40 deemed universities by EWIF is 0.00. This indicates that the 40 universities may not have either external link or size may be huge.

Further the ration between internal link, external link and back link has been calculated using the formula given below and the values are shown in Table 6.

$$\text{Ratio of IL and EL} = \frac{\text{Number of Internal Link}}{\text{Number of External Link}}$$

$$\text{Ratio between IL, EL and BL} = \frac{\text{Internal link} + \text{External Link}}{\text{Back Link}}$$

**Table 6: Ratio between Internal Link, External Link and Back Link**

S. No.	Name of the University	Internal Link (A)	External Link (B)	Back Link (C)	Ratio of A/B	Ratio of (A+B)/C
1	Vignan's Foundation for Science, Technology and Research University	247	43	1000	5.74	0.29
2	Koneru Lakshmaiah Education Foundation University	372	29	1881	12.83	0.21
3	Rashtriya Sanskrit Vidyapeetha	85	1	212	85.00	0.41
4	Sri Sathya Sai Institute of Higher Learning	32	6	1216	5.33	0.03
5	Gandhi Institute of Technology and Management	116	41	1000	2.83	0.16
6	North Eastern Regional Institute of Science and Technology	65	7	398	9.29	0.18
7	Nava Nalanda Mahavihara	56	8	1000	7.00	0.06
8	PEC University of Technology	88	19	1000	4.63	0.11
9	Indian Agricultural Research Institute	270	19	2201	14.21	0.13
10	Indian Institute of Foreign Trade	15	4	3770	3.75	0.01
11	Indian Law Institute	38	11	321	3.45	0.15
12	Institute of liver and Biliary Sciences	190	10	1000	19.00	0.20
13	Jamia Hamdard	20	69	1000	0.29	0.09
14	National Museum Institute of History of Arts, Conservation and Musicology	63	5	135	12.60	0.50
15	National University of Educational Planning and Administration	No Link		108285	0.00	0.00
16	Rashtriya Sanskrit Sansthana	92	0	730	0.00	0.13
17	Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeetha	155	4	166	38.75	0.96
18	TERI School of Advanced studies	158	11	1000	14.36	0.17
19	Gujarat Vidyapeeth	61	54	1176	1.13	0.10
20	Sumandeep Vidyapeeth	No Link		1143	0.00	0.00
21	Maharishi Markandeshwar University	42	100	1440	0.42	0.10
22	Lingaya's University	42	9	1000	4.67	0.05

23	National Brain Research Centre	No Link		686	0.00	0.00
24	National Dairy Research Institute	No Link		1000	0.00	0.00
25	Manav Rachna International University	27	252	16769	0.11	0.02
26	National Institute of Food Technology, Entrepreneurship & Management	No Link		128	0.00	0.00
27	Birla Institute of Technology	370	32	128	11.56	3.14
28	Indian School of Mines	169	81	1000	2.09	0.25
29	B.L.D.E. University	81	3	1000	27.00	0.08
30	Christ University	142	43	11490	3.30	0.02
31	Indian Institute of Science	174	88	83790	1.98	0.00
32	International Institute of Information Technology	134	17	1000	7.88	0.15
33	Jain University	156	39	1000	4.00	0.20
34	Jagadgura Sri Shivarathreeswara University	215	24	1165	8.96	0.21
35	Jawahar lal Nehru Centre for Advanced Scientific Research	46	9	1000	5.11	0.06
36	K.L.E. Academy of Higher Education and Research	84	30	1128	2.80	0.10
37	Manipal Academy of Higher Education	145	14	4632	10.36	0.03
38	NITTE University	40	107	1000	0.37	0.15
39	Sri Devraj Urs Academy of Higher Education & Research	56	7	372	8.00	0.17
40	Sri Siddhartha Academy of Higher Education	112	5	1000	22.40	0.12
41	Swami Vivekananda Yoga Anusandhana Samsthana	8	79	4824	0.10	0.02
42	Yenepoya University	560	6	16423	93.33	0.03
43	Kerala Kalamandalam	No Link		1646	0.00	0.00
44	Indian Institute of Space Science and Technology	153	13	1000	11.77	0.17
45	Indian Institute of Information Technology and Management	154	11	1000	14.00	0.17
46	Pandit Dwarka Prasad Mishra Indian Institute of Information Technology	531	90	1883	5.90	0.33
47	Lakshmi Bai National Institute of Physical Education	13	57	156	0.23	0.45
48	Bharati Vidyapeeth	66	18	967	3.67	0.09
49	Central Institute of Fisheries Education	No Link		961	0.00	0.00
50	D.Y Patil Educational Society	112	1	1000	112.00	0.11
51	Datta Meghe Institute of Medical Sciences	0	2	998	0.00	0.00
52	Deccan College Postgraduate & Research Institute	98	7	144	14.00	0.73
53	Dr. D.Y. Patil Vidyapeeth	181	65	1000	2.78	0.25
54	Gokhale Institute of Politics & Economics	29	7	290	4.14	0.12
55	Homi Bhabha National Institute	1	0	804	0.00	0.00
56	Indira Gandhi Institute of Development Research	79	10	2704	7.90	0.03
57	Institute of Armament Technology	64	36	389	1.78	0.26
58	International Institute for Population Sciences	0	2	1331	0.00	0.00
59	Institute of Chemical Technology	No Link		1206	0.00	0.00
60	Krishna Institute of Medical Sciences	228	11	1000	20.73	0.24
61	MGM Institute of Health Sciences	87	7	1000	12.43	0.09

62	Narsee Monjee Institute of Management Studies	71	29	10629	2.45	0.01
63	Padmashree Dr.D.Y. Patil Vidyapeeth	204	27	305	7.56	0.76
64	Pravara Institute of Medical Sciences	51	1	1000	51.00	0.05
65	Symbiosis International University	140	68	2637	2.06	0.08
66	Tata Institute of Fundamental Research	129	57	8504	2.26	0.02
67	Tata Institute of Social Sciences	124	53	9012	2.34	0.02
68	Tilak Maharashtra Vidyapeeth	345	9	1000	38.33	0.35
69	Kalinga Institute of Industrial Technology	63	21	4954	3.00	0.02
70	Shiksha 'O' Anusandhan University	28	10	476	2.80	0.08
71	Sri Balaji Vidyapeeth Mahatma Gandhi University	19	24	1000	0.79	0.04
72	Sant Longowal Institute of Engineering and Tech	No Link		494	0.00	0.00
73	Thopar Institute of Engineering & Technology	252	20	2036	12.60	0.13
74	Banasthai Vidyapith	No Link		1348	0.00	0.00
75	Birla Institute of Technology & Science	370	33	1012	11.21	0.40
76	Institute of Advanced Studies in Education	57	6	1000	9.50	0.06
77	IIS University	152	19	448	8.00	0.38
78	Jain Vishva Bharati Institute	385	90	964	4.28	0.49
79	Janardan Rai Nagar Rajasthan Vidyapeeth	65	1	285	65.00	0.23
80	LNM Institute of Information Technology	145	25	325	5.80	0.52
81	Mody Institute of Education and Research	84	196	250	0.43	1.12
82	Academy of Maritime Education and Training	142	13	1000	10.92	0.16
83	Amrita Vishwa Vidyapeetham	80	25	20721	3.20	0.01
84	Avinashilingam Institute for Home Science & Higher Education for Women	27	2	1000	13.50	0.03
85	B.S. Abdur Rahman Institute of Science and Tech	272	26	25414	10.46	0.01
86	Bharath Institute of Higher Education & Research	129	22	39858	5.86	0.00
87	Chennai Mathematical Institute	20	5	1000	4.00	0.03
88	Chettinad Academy of Research and Education	5	1	1000	5.00	0.01
89	Gandhiigram Rural Institute	229	32	1000	7.16	0.26
90	Hindustan Institute of Technology and Science	267	227	4551	1.18	0.11
91	Kalasalingam Academy of Research and Higher Education	17	120	1000	0.14	0.14
92	Karunya Institute of Technology and Sciences	48	44	6303	1.09	0.01
93	Karpagam Academy of Higher Education	134	3	ERROR	44.67	0.00
94	M.G.R. Educational and Research Institute	24	8	1000	3.00	0.03
95	Meenakshi Academy of Higher Education and Research	25	3	655	8.33	0.04
96	Noorul Islam Centre for Higher Education	68	8	1000	8.50	0.08
97	Periyar Manaimmai Institute of Science and Technology	134	17	1000	7.88	0.15
98	Ponnaiyan Ramajayam Institute of Science and Technology	56	31	1000	1.81	0.09
99	S.R.M Institute of Science and Technology	314	26	1251	12.08	0.27
100	Sathyabama Institute of Science and Technology	144	33	1000	4.36	0.18



101	Saveetha Institute of Medical and Technical Sciences	452	17	2295	26.59	0.20
102	Shanmugha Arts Science Technology and Research Academy	123	24	4868	5.13	0.03
103	Sri Chandrasekharendra Saraswathi Vishwa Mahavidyalaya	148	7	623	21.14	0.25
104	Sri Ramachandra Medical College and Research Institute	12	2	69926	6.00	0.00
105	St. Peter's Institute of Higher Education and Research	121	9	1000	13.44	0.13
106	Vels Institute of Science Technology and Advanced Studies	256	5	1000	51.20	0.26
107	Vellore Institute of Technology	122	35	3086	3.49	0.05
108	Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology	152	50	4711	3.04	0.04
109	Vinayaka Mission's Research Foundation	127	6	1347	21.17	0.10
110	International Institute of Information Technology	73	16	1291	4.56	0.07
111	ICFAI Foundation for Higher Education	28	9	1000	3.11	0.04
112	Sam Higginbottom Institute of Agriculture, Technology and Sciences	0	2	1590	0.00	0.00
113	Bhatkhande Music Institute	3	47	959	0.06	0.05
114	Central Institute of Higher Tibetan Studies	No Link		196	0.00	0.00
115	Dayalbagh Educational Institute	76	5	1613	15.20	0.05
116	Indian Institute of Information Technology	100	45	1000	2.22	0.15
117	Indian Veterinary Research Institute	191	11	957	17.36	0.21
118	Jaypee Institute of Information Technology	151	16	1000	9.44	0.17
119	Nehru Gram Bharati Vishwavidyalaya	1	0	530	0.00	0.00
120	Shobhit Institute of Engineering & Technology	131	61	4668	2.15	0.04
121	Santosh University	76	16	755	4.75	0.12
122	Forest Research Institute	112	14	1000	8.00	0.13
123	Gurukul Kangri Vishwavidyalaya	19	136	184	0.14	0.84
124	Graphic Era University	No Link		673	0.00	0.00
125	Ramakrishna Mission Vivekananda Educational and Research Institute	13	1	1000	13.00	0.01

Ratio between Internal Link and External link for deemed university websites ranges between 0.06 and 112.0. Out of 125, 18 deemed universities by internal and external link is 0.00. This indicates that the 18 universities may not have either internal link and /or external link.

Relation between Internal, External and Back Link has been calculated for deemed university websites ranges between 0.01 and 3.14. Out of 125, 21 deemed universities by either internal link, or external link or back link is 0.00. This indicates that the number of backlinks are least comparing to some of internal and external link.

## 7. Major Findings and Conclusion

- It is noticed that 741 universities are functioning in India. These universities are categorised as State University, Central University, Deemed University and Private University. Out of 741 universities, there were 125 (16.90%) Deemed universities.
- Out of 125 deemed universities, 78 (62.40%) were established in the 21<sup>st</sup> Century i.e. after the year 2001. There are 56 (44.80%) Arts and Science universities. It is followed by Engineering (39, 31.2%); Medicine (20, 16%) and others (10, 8%).
- 125 universities spread over 21 states in India. Out of 21 states, Tamil Nadu has a maximum of 28 (22.40%) universities, it is followed by Maharashtra 21(16.8%), Karnataka 14 (11.20%) and Uttar Pradesh 10 (8.00%).
- 56 (44.80%) universities are having a domain name as .ac.in. It is followed by edu.in 19 (15.20%) .org 16 (12.80%) and .edu 12 (9.60%).
- It is found that, the size of the websites ranges between 1 kb and 8529 kb, the Internal link ranges between 1 and 560 links and External link ranges between 1 and 252 links.
- Web Impact Factor (WIF) for deemed university websites ranges between 0.01 and 3106.36 and External Web Impact Factor (EWIF) for deemed university websites ranges between 0.01 and 116.83.
- Ratio between Internal Link and External link for deemed university websites ranges between 0.06 and 112.0 and Relation between Internal, External and Back Link has been calculated for deemed university websites ranges between 0.01 and 3.14.

The websites are playing important role in the webometric study which consists of web domain, sites and web pages. This study emphasized on the Internal Link; External Link and Back Link, Web Impact Factor for each website of deemed universities in India. So, it is suggested that the websites of deemed universities need to attract more external links and impact factor by introducing novel and creative online sources and services and updates of news and research information.

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