

Websites of Central Universities in North East India: A Webometric Analysis

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ABSTRACT

Webometrics is concerned with measuring forms of the web: web pages, words in web pages, parts of web pages, websites, etc. Websites of 10 Central Universities in North East India are examined. The study calculates the link pages, the number of web pages, and analysis the Web Impact Factor of Central universities in North East India and the result found that the Tezpur University occupies first place with the highest Domain & Page Authority, External Equity-Passing Links and Total External links. While, Mizoram University leads with the highest Internal Equity-Passing Links, Total Equity-Passing Links, Total Internal links and Total links. After analysing the websites of these 10 Central Universities of North East India, the result reveals that Web Impact Factor of Mizoram University (MZU) occupies at top position with 83.54 SWIF, 52.73 IWIF and 30.80 EWIF among the other Central Universities Websites in North East India.

Keywords: Central universities north east india, webometrics, web impact factor, world wide web, search engine optimisation

1. INTRODUCTION

Since the mid-1990s has emerged a new research field, webometrics, investigating the nature and properties of the Web drawing on modern infometric methodologies. The World Wide Web (WWW) has become a major source of information for research and academic activities. Hence, is the best platform to investigate new methods of evaluating webometric activities. In the face of a growing demand for education and fundamental changes in higher education in most countries, the increasing value gets the creative coordination of world universities on the basis of a constant exchange of experience between them. The easiest and the effective way to operational exchange of information is publication on the website. Enhancing a web policy expands the dialogue between the universities, contributes to the formation of new communications in the scientific community, and helps the realisation of

innovative development. This would shed some light on the use of key communication medium and could lead to more effective academic use of the web.

Bojorneborne¹ defined webometrics as: 'the study of the quantitative aspects of the construction and use of information resources, structures and technologies on the web, drawing on bibliometric and informetric approaches'. This definition covers the construction side and usage side of the web, which embrace the following four main areas of webometrics study:

- (a) Web-page content analysis
- (b) Weblink structure analysis (e.g., hyperlink, self-link and external link)
- (c) Web usage analysis (e.g., exploiting log files for users searching and browsing behaviour), and
- (d) Web technology analysis (including search engine performance).

Table 1. List of central universities in north east india

S. No.	Name of the University	State	Websites
1.	Assam University	Assam	http://www.assamuniversity.nic.in
2.	Tezpur University	Assam	http://www.tezu.ernet.in
3.	Rajiv Gandhi University	Arunachal Pradesh	http://www.rgu.ac.in
4.	Manipur University	Manipur	http://manipuruniv.ac.in
5.	Central Agricultural University	Manipur	http://www.cicmanipur.nic.in/html/cau.asp
6.	North Eastern Hill University	Meghalaya	http://www.nehu.ac.in
7.	Mizoram University	Mizoram	http://www.mzu.edu.in
8.	Nagaland University	Nagaland	http://www.nagauniv.org
9.	Sikkim University	Sikkim	http://www.sikkimuniversity.in
10.	Tripura University	Tripura	http://www.tripurauniversity.in

(Source: Source: <http://mhrd.gov.in/central-universities-0>)

2. CENTRAL UNIVERSITIES OF NORTH EASTERN STATES OF INDIA

This study examined the websites of these 10 Central Universities (Table 1) of 8 different states of North East in India which listed. This study makes a webometric analysis of central universities' websites in North Eastern States of India. There are 47 central universities in India, out of this, 10 Central Universities are from 8 different states of Northeast in India. The present study aimed at to build academic ranking of these websites by calculating their Web Impact Factor (WIF). The ranking of these websites will enable the readers to identify and compare the Central Universities websites in North East India by their WIF.

3. LITERATURE REVIEW

Jalal, Biswas & Mukhopadhyay² studied the Web impact factor and link analysis of selected Indian universities and has found that NIT Durgapur, NIT Allahabad, NIT Calicut, NIT Surathkal and NIT Trichi are producing maximum links. Delhi University, Banaras Hindu University, Jawaharlal Nehru University, Aligarh Muslim University are having maximum in-links and are connected with each other. Jeysankar & Babu³ examined and explored the websites of 45 universities in Tamil Nadu comprising of 27 state and 18 private universities. They have identified the domain systems, analysed the number of web pages, link page, and calculated self-link web impact factor, simple web impact factor (SWIF), external web impact factor (EWIF) of the universities websites in Tamil Nadu and ranked the websites according to their WIF. Lee & Teh⁴ have evaluated the design and content of 12 academic library websites of public and private institutions of higher learning in Malaysia and uses a mixed-method approach that combines both quantitative and qualitative analyses of academic library Websites evaluation. Their findings observed that the academic libraries in Malaysia have generally set up well designed and useful websites. Only a few academic library websites, found to have very simple and basic features.

Madhusudhan & Prakash⁵ made a webometric study on websites of Indian Institute of Technology. The study explored different characteristics of linking analysis of sixteen IIT websites. The IIT Bombay and IIT Madras secured 1st position and 2nd position respectively in WIF (in-link) as well as in world rank; whereas, WIF (in-link) position of IIT Rajasthan shows one position better rank than the world ranking, i.e., 15th position. Maharana, Panda & Sahoo⁶ 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 & Brahma⁷ conducted a study on webometric analysis of selected non-profit organisations (NGOs) of Assam and has found that Centre for North East Studies and Policy Research, Guwahati and AARANYAK is at the top rank among the selected NGOs websites in Assam.

4. OBJECTIVES

The objectives of the study are as follows:

- (a) Analyse the domains of central universities websites of North East India
- (b) Calculate the number of web pages of central universities websites of North East India
- (c) Examine the link-equity in websites of Central universities of North East India under study
- (d) Find out internal and external link pages of websites of central universities of North East India. under study
- (e) Calculate the web impact factor of Central Universities websites of North East India.

5. METHODOLOGY

For the present study, data were collected from the websites of Central Universities in North East India during 5-10 October 2016. The study identified Websites of 10 Central Universities in North East India. This study used open site explorer (www.opensiteexplorer.org) and website optimisation for collecting raw data. While measuring the WIF, it is important to select a suitable search engine which will count the number of pages in website and number of pages linking to the websites. Open site explorer is an optimisation tool and search engine for links. It makes gathering, and sorting and exporting link data easier than ever. It provides a tremendous amount of information about the links to any page or site.

6. WEB IMPACT FACTOR

The Web Impact Factor (WIF) is a form of measurement used to determine the relative standing of websites in particular fields or a country; for instance, academic websites in a country. The higher the impact factor, the higher the perceived reputation of the website. WIFs are the part of the methodology of webometrics.

The Web Impact Factor provides quantitative tools for, evaluating, categorising, ranking and comparing websites, top level domains and sub-domains.

The three types of links are:

- (a) The Simple WIF, which means the ratio of all links to the number of pages
- (b) The Internal WIF, which means the ratio of internal links within the site to number of pages

(c) The External WIF, which means the ratio of links made from external sites to the target site, to the number of pages at the site

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

$$SWIF = \frac{\text{(Total number of links)}}{\text{(Total number of webpages)}}$$

Distribution of Data by IWIF has been Calculated by the Following Formula:

$$IWIF = \frac{\text{(Total number of internal links)}}{\text{(Total number of webpages)}}$$

Distribution of Data by EWIF has been calculated by the Following Formula:

$$EWIF = \frac{\text{(Total number of external links)}}{\text{(Total number of webpages)}}$$

Table 2. Domain authority and page authority

S. No.	Name of the University	Domain authority (%)	Page authority (%)
1.	Assam University	36 (10.16)	45 (10.58)
2.	Tezpur University	77 (21.75)	61 (14.35)
3.	Rajiv Gandhi University	38 (10.73)	46 (10.82)
4.	Manipur University	40 (11.29)	47 (11.05)
5.	Central Agricultural University	12 (3.38)	25 (5.88)
6.	North Eastern Hill University	46 (12.99)	55 (12.94)
7.	Mizoram University	38 (10.73)	46 (10.82)
8.	Nagaland University	16 (4.51)	30 (7.05)
9.	Sikkim University	29 (8.19)	36 (8.47)
10.	Tripura University	22 (6.21)	34 (8)
	Total	354	425

Table 4. Internal equity-passing links, external equity-passing links and total equity-passing links

S. No.	Name of the University	Int. equity-passing links (%)	Ext. equity-passing links (%)	Total Equity-passing links (%)
1.	Assam University	0	169 (6.28)	169 (2.76)
2.	Tezpur University	9 (0.26)	866 (32.18)	875 (14.33)
3.	Rajiv Gandhi University	820 (24.01)	278 (10.33)	1098 (17.98)
4.	Manipur University	0	117 (4.34)	117 (1.91)
5.	Central Agricultural University	0	2 (0.07)	2 (0.03)
6.	North Eastern Hill University	254 (7.43)	723 (26.86)	977 (16)
7.	Mizoram University	2331 (68.27)	483 (17.94)	2814 (46.09)
8.	Nagaland University	0	7 (0.26)	7 (0.11)
9.	Sikkim University	0	25 (0.92)	25 (0.40)
10.	Tripura University	0	21 (0.78)	21 (0.34)
	Total	3414	2691	6105

Table 3. Just-discovered and established links

S. No.	Name of the university	Just-discovered	Established links
1.	Assam University	0	47(179)
2.	Tezpur University	2	220(1500)
3.	Rajiv Gandhi University	0	99(1158)
4.	Manipur University	0	22(120)
5.	Central Agricultural University	0	1(2)
6.	North Eastern Hill University	4	183(1625)
7.	Mizoram University	0	98(3843)
8.	Nagaland University	0	5(7)
9.	Sikkim University	0	16(32)
10.	Tripura University	0	15(23)

7. DATA ANALYSIS

There are 10 Central Universities in the North East Region of India. Data is analysed based on the objectives of the study using MS word and presented in tables. Table 2 shows the Domain Authority and Page Authority of Central Universities websites, in which Domain Authority of Tezpur University is in the highest position with 77(21.75%) among the websites, followed by NEHU with 46(12.99%) and Manipur University with 40(11.29%). The Page Authority of Tezpur University with 61(14.35%) is the highest, followed by NEHU with 55(12.94%) and Manipur University with 47(11.05%).

Table 3 illustrates that the North Eastern Hill University (NEHU) has got 4 Just-discovered links followed by Tezpur University with 2. The Established Links of Tezpur University with 220 occupied the first position followed by NEHU with 183 and Rajiv Gandhi University with 99.

Table 4 illustrates the ranking of Central universities websites on the basis of Internal Equity-Passing Links, External Equity-Passing Links and Total Equity-Passing Links. It is found that the Internal Equity-Passing Links of Mizoram University with 2331(68.27%) is the highest, followed by Rajiv Gandhi University with 820(24.01%) and NEHU with 254(7.43%). On External Equity-Passing

Table 5. Total internal links, total external links and total links

S. No.	Name of the university	Total internal links	Total external links	Total links
1.	Assam University	0	179 (3.59)	179 (2.10)
2.	Tezpur University	9 (0.25)	1491 (29.96)	1500 (17.66)
3.	Rajiv Gandhi University	820 (23.33)	338 (6.79)	1158 (13.64)
4.	Manipur University	0	120 (2.41)	120 (1.41)
5.	Central Agricultural University	0	02 (0.04)	02 (0.02)
6.	North Eastern Hill University	259 (7.37)	1366 (27.45)	1625 (19.14)
7.	Mizoram University	2426 (69.03)	1417 (28.48)	3843 (45.27)
8.	Nagaland University	0	07 (0.14)	07 (0.08)
9.	Sikkim University	0	32 (0.64)	32 (0.37)
10.	Tripura University	0	23 (0.64)	23 (0.27)
	Total	3514	4975	8489

Links basis, Tezpur University with 866(32.18%) scores the highest, followed by NEHU with 723(26.86%) and Mizoram University with 483(17.94%). The Total Equity-Passing Links of Mizoram University with 2814(46.09%) occupies the first place, followed by Rajiv Gandhi University with 1098(17.98%) and NEHU with 977(16%).

Table 5 depicts the ranking of Central universities websites on the basis of Total Internal Links, Total External Links and Total Links. The result visualised that the Mizoram University leads with 2426 (69.03%) Total Internal Links, followed by Rajiv Gandhi University with 820(23.33%) becomes second and NEHU with 259(7.37%) becomes third. The Tezpur University with 1491(29.96%) of Total External Links has the highest, followed by Mizoram University with 1417(28.48%) and NEHU with 1366(27.45%). The Mizoram University with 3843(45.27%) Total Links scores the highest, followed by NEHU with 1625(19.14%) and Tezpur University with 1500(17.66%) Total Links.

Table 6 illustrates the Individualised Domains of Assam University, in which the result viewed that ugc.ac.in with the Domain Authority of 72 got the highest among all the Root Domains and the Linking root domain of page4.me/ has the highest with 5,780.

Table 7 shows the Individualised Domains of Tezpur University, in which the result visualised that dmoz.org/ with Domain Authority of 94 is the highest among all the Root Domains and the Linking Root Domain of blogspot.com/ with 16,33,848 has the highest.

Table 8 illustrates the Individualised Domains of Rajiv Gandhi University, in which ugc.ac.in with Domain Authority of 72 and the Linking root domain of 2180 is highest of all the Root Domains.

Table 9 illustrates the Individualised Domains of Manipur University, in which the result visualised that blogspot.com with Domain Authority of 91 and Linking root domain of 16,33,848 is the highest among the Root Domains.

Table 6. Individualised domains of Assam University

S. No.	Linking root domain names	Domain authority	Linking root domains
1.	ugc.ac.in/	72	2,180
2.	mba-institutes.com/	63	1,348
3.	page4.me/	53	5,780
4.	unom.ac.in/	52	561

Table 7. Individualised domains of Tezpur University

S. No.	Linking root domain names	Domain authority	Linking root domains
1.	blogspot.com/	91	16,33,848
2.	dmoz.org/	94	41,473
3.	uni-bremen.de/	78	11,884
4.	ernet.in/	77	8,883
5.	ictp.it/	73	2,083

Table 8. Individualised domains of Rajiv Gandhi University

S. No.	Linking root domain names	Domain authority	Linking root domains
1.	ugc.ac.in/	72	2180
2.	iitd.ac.in/	69	1840
3.	mhrd.gov.in/	70	1566
4.	webometrics.info/	69	2238
5.	marv.jp/	64	1641

Table 9. Individualised domains of Manipur University

S. No.	Linking root domain names	Domain authority	Linking root domains
1.	goidirectory.nic.in/	67	1244
2.	rti.gov.in	63	828
3.	aicte-india.org/	63	1036
4.	righttoinformation.gov.in/	54	419
5.	blogspot.com	91	16,33,848

Table 10. Individualised domains of North Eastern Hill University

S. No.	Linking root domain names	Domain authority	Linking root domains
1.	Angelfire.com/	90	80,678
2.	Cnrs.fr/	94	20,887
3.	Dmoz.org/	94	41,473
4.	Blogspot.com/	91	16,33,848
5.	Lse.ac.uk/	88	21220

Table 11. Individualised domains of Mizoram University

S. No.	Linking root domain names	Domain authority	Linking root domains
1.	ala.org/	92	23,527
2.	tmcnet.com/	83	12,607
3.	google.co.in/	82	23,988
4.	ugc.ac.in/	72	2180
5.	blogspot.com/	91	16,33,848

The Individualised Domains of Central Agricultural University, Manipur, in which aiu.ac.in/ has the Domain Authority of 57 and Linking root domain of 307.

Table 10 shows the Individualised Domains of North Eastern Hill University, in which Cnrs.fr/ and Dmoz.org/ with Domain Authority of 94 and the Linking root domain of Blogspot.com/ with 16, 33,848 is the highest.

Table 11. illustrates the Individualised Domains of Mizoram University, in which the Domain Authority of ala.org/ with 92 and the Linking root domain of blogspot.com/ with 16,33,848 is the highest.

Table 12 illustrates the Individualised domains of Nagaland University, in which the Domain Authority of aiu.ac.in/ with 57 and on the Linking root domain basis, faithwes.com/ with 3596 is the highest.

The Individualised Domains of Sikkim University, the result of Domain Authority and Linking root domain found to be Zero.

Table 13 illustrates the Individualised Domains of Tripura University, in which aicte-india.org/with the Domain Authority of 63 and kerda.gov.in/with the Linking root domain of 2147 is the highest.

Table 14 shows The Web Impact Factor of Central Universities in North East India which analyses the Simple link, Internal link and External link WIF and resolved

Table 12. Individualised domains of Nagaland University

S. No.	Linking root domain names	Domain authority	Linking root domains
1.	aiu.ac.in/	57	307
2.	faithwes.com/	48	3596
3.	manabadi.co.in/	40	288
4.	mokokchung.nic.in/	25	19
5.	examsegg.com/	20	6

Table 13. Individualised domains of Tripura University

S. No.	Linking root domain names	Domain authority	Linking root domains
1.	aicte-india.org/	63	1036
2.	kerda.gov.in/	62	2147
3.	lexadin.nl/	52	577
4.	surfindia.com/	38	271
5.	knowindia.gov.in/	37	81

Table 14. Web impact factor

S. No.	Name of the university	SWIF	IWIF	EWIF
1.	Assam University	3.97	0	3.97
2.	Tezpur University	24.59	0.14	24.44
3.	Rajiv Gandhi University	25.17	17.82	7.34
4.	Manipur University	2.55	0	2.55
5.	Central Agricultural University	0.08	0	0.08
6.	North Eastern Hill University	29.54	4.70	24.83
7.	Mizoram University	83.54	52.73	30.80
8.	Nagaland University	0.23	0	0.23
9.	Sikkim University	0.88	0	0.88
10.	Tripura University	0.67	0	0.67

that the Mizoram University occupies the first place with 83.54 SWIF, followed by NEHU which occupied second place with 29.54 SWIF and third place goes to Rajiv Gandhi University with 25.17 SWIF. In ranking on the basis of Internal Web Impact Factor (IWIF), the Mizoram University occupies the first place with 52.73 IWIF, followed by Rajiv Gandhi University which occupied the second place with 17.82 IWIF and third place goes to NEHU with 4.70 IWIF. On the basis of External web impact factor (EWIF), Mizoram University once again occupies the first place with 30.80 EWIF, followed by NEHU which occupied second place with 24.83 EWIF and Tezpur University with 24.44 EWIF occupied the third place.

8. FINDINGS

- i. The Domain Authority of Tezpur University is in the highest position with 77(21.75%) among the websites, followed by NEHU with 46(12.99%) and Manipur University with 40(11.29%).
- ii. The Tezpur University is at the top most with 61(14.35%) Page Authority, followed by NEHU with 55(12.94%) and Manipur University with 47(11.05%).
- iii. The Mizoram University has the highest Internal Equity-Passing Links with 2331(68.27%), followed by Rajiv Gandhi University with 820(24.01%) and NEHU with 254(7.43%). On External Equity-Passing Links basis, Tezpur University with 866(32.18%) score the highest, followed by NEHU with 723(26.86%) and Mizoram University with 483(17.94%). The Total Equity-Passing Links of Mizoram University with

2814(46.09%) occupies the first place, followed by Rajiv Gandhi University with 1098(17.98%) and NEHU with 977(16%).

- iv. The Mizoram University leads with 2426(69.03%) Total Internal Links, followed by Rajiv Gandhi University with 820(23.33%) and NEHU with 259(7.37%). On the Total External Links basis, Tezpur University with 1491 (29.96%) ranks the first, followed by Mizoram University with 1417 (28.48%) and NEHU with 1366 (27.45%). The Mizoram University with 3843 (45.27%) Total Links scores the highest, followed by NEHU with 1625 (19.14%) and Tezpur University with 1500 (17.66%) Total Links.
- v. On the basis of Simple Web Impact Factor (SWIF), the Mizoram University occupies the first place with 83.54 SWIF, followed by NEHU which occupied second place with 29.54 SWIF and third place goes to Rajiv Gandhi University with 25.17 SWIF. In ranking on the basis of Internal Web Impact Factor (IWIF), the Mizoram University occupies the first place with 52.73 IWIF, followed by Rajiv Gandhi University which occupied the second place with 17.82 IWIF and third place goes to NEHU with 4.70 IWIF. On the basis of External web impact factor (EWIF), Mizoram University once again occupies the first place with 30.80 EWIF, followed by NEHU which occupied second place with 24.83 EWIF and Tezpur University with 24.44 EWIF occupied the third place.

9. CONCLUSIONS

This study gives a basic idea and information about the websites of 10 Central Universities of North East India. The study aimed at to build academic ranking of these websites by calculating their Web Impact Factor (WIF). The ranking of these websites will enable the readers to identify and compare the Central Universities websites in North East India by their WIF. From the above findings it is concluded that Mizoram University (MZU) with its highest WIF gained the top profile among the Central Universities Websites in North East India. Whereas NEHU, Tezpur University and Rajiv Gandhi University are also in the path of good ranked. It was observed that Central Agricultural University, Nagaland University and Tripura University websites has got the least number of Domain Authority which indicates their low rank on search engines. Its needs to improve the website for the ranking of entire domains or subdomains and to enable the users to find their relevant information in quickest possible time and same line, the Page Authority of some universities websites also needs to be improve to get the ranking of higher page score. The six central universities of Northeast India (Assam University, Manipur University, Central Agricultural

University, Nagaland University, Sikkim University and Tripura University) are having zero Internal Equity-Passing Links and the two universities (i.e., Central Agricultural University and Nagaland University) have got the least External Equity-Passing Links. Central Agricultural University, Nagaland University, Sikkim University and Tripura University are having less number of Total links, which indicates that the total amount of links site (all types of links) are poor and needs improvement to stay connected with each other. The overall Web Impact Factor of all central universities of Northeast India is found low and is needed to improve for better visibility and accessibility.

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