Library Philosophy and Practice (e-journal)   **Libraries at University of Nebraska-Lincoln**

2021

Web Impact Factor and link analysis of Central University Websites of North Eastern States of India

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Abstract

This study was conducted to observe the websites of Ten Central Universities situated in the north-eastern states of India and find out the three different Web Impact Factors of the websites under study. This paper shows the status of those websites finding out different number of hyperlinks to and from the websites. The paper also shows how the numbers of webpages in a websites as compared to the number of different links plays huge role in the utility of the website.

Keywords: Websites, Web Impact Factor, Webometrics, Central universities of North-East, Link Analysis, Webpages.

Introduction

The universe of knowledge is growing day by day. It is becoming a very hard task for both librarians (information science professionals) and the users to keep up with this information explosion. To study the ever growing knowledge universe from time to time different tools like bibliometrics, webometrics, scientometrics are being used. In this present era of globalization Internet is serving as the major gateway to the information sources for the information seeker. Therefore webometrics study is getting more and more importance day by day.

Since in India after the IITs, the central Universities sit at the top most position of the educational and research institution hierarchy, studying their websites will give us an idea of how to prepare a website for an educational institutes. The aim of this paper is to find out and evaluate different parameters of those websites and for that purpose we have selected the central universities located in the north eastern region of India also calculated their Web Impact Factors.

Using various parameters of webometrics along with an online survey, this paper has been prepared under the title "Web Impact Factor and link analysis of Central University Websites of North Eastern States".

Web Impact Factor

The term Webometrics was first coined by Almind and Ingwersen in 1997. Webometrics is basically is the science of measurement and analyse of World Wide Web using various metrics. According to Bjorneborn and Ingwersen (2004) the definition of Webometrics is "The study of the quantitative aspects of the construction and use of information resources, structures and technologies on Web drawing on bibliometrics and informatrics approaches." There is one another popular definition of webometrics by thelwall (2009), which says "The study of web-based content primarily quantitative methods for social science research goals using techniques that are not specific to one field of study." Thelwall has identified four key areas of Webometrics (Thelwall, 2009, 2012), which are:

- Link Analysis
- Web Citation Analysis
- Search Engine Evaluation
- Web Data Analysis or Measuring Web 2.0.

The term "Web Impact Factor" was first introduced by Ingwersen (1998). It is measured as the number of Webpages in a website receiving links from other websites divided by the total no of Webpages of that websites. Mathematically:

$$WIF = \frac{Total\ link\ pages\ of\ the\ website}{Number\ of\ webpages\ of\ the\ website}$$

There are three types of Web Impact Factors. They are:

- Simple Web Impact Factor
$$SWIF = \frac{Total\ link\ pages\ of\ the\ website}{Number\ of\ webpages\ of\ the\ website}$$

- Revived Web Impact Factor
$$RWIF = \frac{Total\ no\ of\ internal\ link\ pages\ of\ the\ website}{Number\ of\ webpages\ of\ the\ website}$$

- External Web Impact Factor
$$EWIF = \frac{Total\ no\ of\ external\ link\ pages\ of\ the\ website}{Number\ of\ webpages\ of\ the\ website}$$

Objectives

The study has been conducted to achieve following objectives:

- To analysis the different links associated with the website.
- Find out the total number of webpages each website contains.

⌐ℷ Calculate the three different WIFs of the websites under study.

Methodology

Collectively in all the eight states of North-East India, there are total of 10 central universities including the National Sport University of Manipur. The study has been conducted within the period starting from 1 October 2021 to 30 October 2021 to achieve the desired objectives following the methodology as mentioned below.

⌐ℷ The websites of the selected universities are identified and their URLs are collected.
⌐ℷ Using **Advance Keyword Searching** (using keyword 'domain:' and 'site:') and **Small SEO Tools** web software primary data regarding total number of webpages, total number of Links, Internal links and External links of the individual websites are collected.
⌐ℷ The primary data obtained are evaluated and different **WIF**s are calculated.
⌐ℷ Gathered data and calculated results are then represented in tabular form.

Literature Review

The resources that have consulted for the study are listed below in chronological order from older to recent study.

Thelwall, M., Vaughan, L. and Bjimeborn, L. (2006) in their article "Webometrics" have made a review on link analysis and some aspects of Webometrics including web log file analysis.

Jeyshankar, R. and Babu, R (2009) in their article "Websites of Universities in Tamil Nadu: A webometric Study" have explored the websites of 45 universities in Tamil Nadu through a webometric study. The study reflects that some universities in Tamnil Nadu have higher number of Web Pages 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.

Fereshtech, D and Marzich,G (2010) in their article "Link analysis and impact of top universites of Islamic world on the world wide web" have made an attempt to compare the university websites of the top 27 universities located in the Islamic countries basect on the WIF ranking, to calculate different number of links and to compare them and als the number of webpages each websites had in the year of 2009

Kothainayaki, S. and Gopalakrishnan, S. (2011) in their article "Webometric analysis of agricultural universities in India" made an attempt to evaluate Agricultural Universities in India through webometrics method. A total of 54 Agricultural Universities were considered, which includes 44 State Agricultural Universities (SAUs), I Central University, 5 Deemed Universities, and 4 Central Universities with agriculture faculty. Various concepts like Google PageRank, Alexa Traffic Rank, and rich files are considered for evaluation. It also presents the network diagrams showing the link structures between the web nodes in webometric analysis.

Ratha, B., Joshi, L. and Naidu, G.H.S. (2012) in their article "Webometric Study of IIT Libraries Websites" made an attempt to present an analysis of design and structure of the library websits of I's. It found significant differences according to some important point of view such as the user supporting services, number of lyperlinks on home pages and whole websites, number of images, location of images, In-active links and web pages, etc.

Varadharajalu, J. and Dhanavandam, S. (2017) in their article "Analysis of Web Impact Factor (WIF) for the Website of State Universities in Kerala" attempted to calculate the Simple Web Factor (WIF) and External Web Impact Factor (EWIF) of the websites of state universities in Kerala.

Verma, M.K. and Brahma, K. (2017) in their article "A webometric analysis of National Libraries' websites in South Asia" made a study to analyse the number of web pages link pages and calculated the Web Impact Factor i.e., Simple Web Impact Factor, Internal Link Web Impact Factor and Extermal Link Web Impact Factor of National Libraries in South Asian countries and ranked the websites as per the WIF. The study used Open Site Explorer optimization tool and search engine for links.

Observation and Analysis

Here in this module, all the data collected and observed have been tabulated and then three different **WIF** for each of the websites selected have been calculated.

Table 1: URL of the websites of the universities with the no. of webpages and no. of different links each of them contains:

	Name of the Library	URLs	Total No of Webpages	Total links	Internal links	External Links
1	Tezpur University	http://www.tezu.ernet.in/	560	151	77	131
2	Silchar University	http://www.aus.ac.in/	8630	204	182	18
3	Rajiv Gandhi University, Arunachal Pradesh	https://rgu.ac.in/	13700	195	181	14
4	Mizoram University	http://mzu.edu.in/	2580	228	170	53
5	North Eastern Hill University Shillong	https://www.nehu.ac.in/	422	257	233	15
6	Manipur Univerrsity	https://www.manipuruniv.ac.in/p/	199	243	198	40
7	Nagaland University	https://www.nagalanduniversity.ac.in/English/	5210	145	118	25
8	Sikkim University	https://cus.ac.in/	1350	132	121	11

		index.php/en/				
9	National Sport University of Manipur	https://www.nsu.ac.in/	856	98	72	15
10	Tripura University	https://www.tripurauniv.ac.in/	7570	575	541	29

From **Table 1** it is observed that web site of Rajiv Gandhi University of Arunachal Pradesh contains maximum no. of webpages. Web site of Silchar University and Tripura University have respectively second and third highest no of web pages.

Table 2: URL of the websites of the universities with their different Web Impact Factors:

	Name of the Library	URLs	SWIF	RWIF	EWIF
1	Tezpur University	http://www.tezu.ernet.in/	0.269643	0.1375	0.233929
2	Rabindra Library Silchar University	http://www.aus.ac.in/	0.023638	0.021089	0.002086
3	Rajiv Gandhi University, Arunachal Pradesh	https://rgu.ac.in//	0.014234	0.013212	0.001022
4	Mizoram University	http://mzu.edu.in/	0.088372	0.065891	0.020543
5	North Eastern Hill University Shillong	https://www.nehu.ac.in/	0.609005	0.552133	0.035545
6	Manipur Univerrsity	https://www.manipuruniv.ac.in/p/	1.221106	0.994975	0.201005
7	Nagaland University	https://www.nagalanduniversity.ac.in/English/	0.027831	0.022649	0.004798
8	Sikkim University	https://cus.ac.in/index.php/en/	0.097778	0.08963	0.008148
9	National Sport University of Manipur	https://www.nsu.ac.in/	0.114486	0.084112	0.017523
10	Tripura University	https://www.tripurauniv.ac.in/	0.075958	0.071466	0.003831

From **Table 2** it is observed that the Website of Manipur University tops the list as per Simple and Revived Web Impact Factors and the Website of Tezpur University has the highest External Web Impact Factors. Website of Rajiv Gandhi University of Arunachal Pradesh has the lowest Simple, Revived and External Factors.

Findings

From the study following findings are achieved:

1. All the University have their own websites with different design and different numbers of webpages. Among which the Website of Rajiv Gandhi University of Arunachal Pradesh contains maximum no. of webpages(13700) and the Website of Manipur University contains the lowest numbers of webpages(199).
2. It is found that during the study period Manipur University Website has the highest Simple Web Impact Factor(1.221106) and Revived Web Impact Factors(0.994975). The Website of Tezpur University has exceptionally highest External Web Impact Factor(0.233929).
3. It is observed that the Website of Rajiv Gandhi University of Arunachal Pradesh has the lowest Web Impact Factors(SWIF: 0.014234, RWIF: 0.013212 & EWIF: 0.001022). It is because, the Website contains the remarkably a largest number of webpages as compared to the other websites under study but not enough numbers of links in between them and to other pages as compared to the number of webpages it contains.

Conclusion

Web Impact Factors plays an important role as an indicator for a websites which shows the utility of a website. But due to the diverse nature of different websites and different method of calculation of WIF, just comparing WIFs we cannot conclude the quality of a website. Rather it can be treated as a utility indicator for a website. To till date quite a significant numbers of researchers have tried to analysis different type of Web Impact Factors and most of the research were targeted the academic websites. It is seen that as compared to the commercial corporate websites, academic websites have lower Web Impact Factors. It may be because of the language barrier, structural fault, not enough interlinks between the webpages, not proper SEO, not ranking the websites etc.

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