

Web Impact Factor Analysis for Deemed Universities in Andhra Pradesh

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ABSTRACT

Extensive studies have been conducted on Webometric, particularly on the websites and the web impact factor. The present study analysed the websites of Deemed universities in Andhra Pradesh and Telangana. It examines 7 Deemed university websites and identifies number of web pages and link pages, and calculates Web Impact Factor (WIF) using Google search engine. The websites were ranked based on these Webometric indicators. The study revealed that websites of Andhra Pradesh Universities have more number of web-pages but Telangana University websites have high web impact factor in most of the parameters.

Keywords: Deemed universities, webometric, web impact factor (WIF)

1. INTRODUCTION

Webometric is an attractive and one of most relevant info-metric sub-discipline among traditional bibliometrics approaches¹. The availability of reliable web data is important to achieve standard results, despite of tool related technical problems and intermediaries required for web data recovery. Through Webometric studies one can observe that how users actually react and use specific web document². The aims of most Webometric studies are to validate links as a new information source and to measure its impact on official or in-formal connections. Almost all Deemed universities of Andhra Pradesh and Telangana have their own websites to provide a view of functioning of the Organisation. But, despite the scale of involvement, there has been relatively little analysis of contents and visibility of their websites. This brings us to an unavoidable stand wherein an analysis of the linking and visibility of these websites has become extremely vital. Due to the strong regional impact, there is a need for conducting research on location of websites and the links of the seven Deemed universities in Andhra Pradesh and Telangana. The study identifies the domain systems of the websites; analyses the number of web-pages and link pages, and calculates the simple Web Impact Factor (WIF), Self Link Web Impact Factor (SLWIF), External Link Web Impact Factor (ELWIF), and In-Link Web Impact Factor (ILWIF) for the Deemed University websites under study and ranks the websites according to WIF. Figure 1 illustrates noteworthy areas of Webometric analysis. Significant spots of webometric analysis³:

- (a) Web-content analysis involves automatic classification of web-pages and text by various search engines and tools for analysis
- (b) Web-link structure analysis deals with hyperlinks of

particular website, patterns of linking like self-links, external links, in-links, etc.

- (c) Web-usage analysis employed for searching user log file and browsing behaviour
- (d) Web-technology analysis focuses on search engine performance closely associated with the information retrieval supporting webometric analysis.

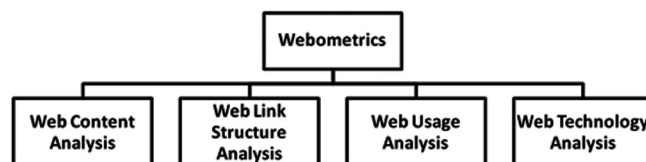


Figure 1. Significant regions of webometric analysis.

2. LITERATURE REVIEW

Rupak Chakravarty⁴, *et al.* calculated web impact factor (WIF) and R-WIF (Revised WIF) of top ten library websites of HEIs (Higher Educational Institutes) of India and further correlated both the formulas with Spearman's Rank Correlation. The study found that WIF and R-WIF are correlated and associated indicating less difference between the two ranking methods. The authors stated that the position of library websites of half HEIs of India is same while evaluating through both the formulas. Tafaraji & Tahamtan⁵ studied websites of 43 medical universities of Iran. The number of Webpages, in links and rich files were calculated. The findings indicated a significance relationship between Webometric universities ranking in Iranian Ministry of Health. Krishna Kumar & Nirmala⁶ analysed websites of Research Council of India through webometric study. Alexa Traffic Rank and the Global Rank were considered for the study. The study brought

out overall preview of the traffic and page ranks of Research Councils of India websites. Jalal⁷ examined the relationship among top ten world universities (TTWU), top ten Asian Universities (TTAU) and top ten Indian Universities (TTIU) based on the exploratory study of web link analysis. In-links and out-links analysis were done to explore the relationship among these universities. Ratha⁸, *et al.* analysed design and structure of the library websites of IITs. The study reported prominent differences among library websites based on the user supporting services, number of hyperlinks on home pages and whole websites, number of images, location of images, In-active links and web-pages, etc. Thelwall⁹ opined that the value of Webometric quickly became established through the Web Impact Factor, the key metric for measuring and analysing website hyperlinks. Link analysis became more focused as link impact analysis and link network analysis, taking the quantity of links as a reflection of research productivity or prestige. Jeysankar & Maria¹⁰ investigated the websites of universities in Kerala. The paper analysed the web impact factor of links for every websites in Kerala. Kerala Agricultural University was ranked first with respect to maximum number of web-pages of all the universities in Kerala and the University of Calicut was in second rank according to the web-pages. Ramesh Babu¹¹, *et al* analysed 40 Central Universities websites in India. The authors investigated domain systems of the websites, analysed 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 ranked the websites as per the WIF. The study also developed a novel network diagram showing link structures between web nodes in Webometric analysis. Walia & Kaur¹² made a study on Government of India websites. They highlighted the importance of online government information in India and showed how far these websites have been able to make an impact on the society. They examined the websites for their linking and content presence, and to find their web impact factor. Jeysankar & Ramesh Babu¹³ examined and explored through a webometrics study of the websites of 45 universities in Tamil Nadu comprising of 27 state and 18 private universities. Identified the domain systems of the websites; analysed the number of web-pages and link pages, and calculated the simple WIF, self-link WIF and external WIF of the University websites in Tamil Nadu and ranked the websites as per the WIF. Thelwall¹⁴ analysed a selection of seven small and medium scale national and four large web domains and six institutional websites over a series of snapshots taken from the Web during a month. The universities later modified WIF by dividing in-links to full-time academic members of staff.

3. OBJECTIVES AND LIMITATION

The study was carried out with the following objectives:

- (a) Identify and analyse the websites of Deemed Universities in Andhra Pradesh and Telangana
- (b) Find out the domain systems of all the University websites in Andhra Pradesh and Telangana according to the web-pages
- (c) Examine the number of Links, Self-link, External link and In-link, and calculate simple web impact factor (WIF) for above-mentioned criterion
- (d) Know the influence level of each independent variable with the dependent variable.

Deemed university websites affiliated to University Grants Commission (UGC) in Andhra Pradesh and Telangana are very young compared to those of State Government universities. Therefore, the academic web space of Deemed universities is an interesting experimental platform for the study of the relationship between Deemed universities and the reflection of cooperation between them and other universities in Andhra Pradesh and Telangana.

4. RESEARCH METHODOLOGY

Plentiful research has been done on webometrics concerning to link analysis websites and the trustworthiness of Web Impact Factor (WIF) as a quantitative metric to demonstrate the visibility and impact of websites. Similar studies done on webometrics by Khan, *et al.*; Amy; Madhusudhan M. & Prakash S.; Vijayakumar, M.; Nowkarisi, *et al.*; Maharana, *et al.*; Vijayakumar M. and Norusi, A.¹⁵⁻²². The research followed the descriptive approach. The research method used in this study is survey method. In order to collect data, we used the list of Andhra Pradesh and Telangana Universities affiliated University Grant Commission (UGC, India)^{23,24} before using the list, we have checked the access of each university websites. The study includes seven Deemed Universities of Andhra Pradesh and Telangana aiming to calculate number of web-pages, Self Links, External Links, and In-Links. In addition, web impact factor also measured and ranks given accordingly. The list of deemed universities under the study are provided in Table 1.

While using search engine, there are some specific search keywords assigned to retrieve the required information from the web. As noted by Thelwall²⁵, *et al*, commercial search engines are sources of information about hyperlinks between websites. This study employed Google (www.google.com) search engine to collect raw data. Google employs a conventional text-based scan to create an index of the web's content, but the pages recommended in response to a query are ranked according to information from the link analysis²⁶. The Google query is based upon the lexicon of the domain names of web-page URLs. These specific search keywords along with search syntax are presented in Table 2.

5. DATA ANALYSIS

Webometrics is a science based on info metric methods, which studies the nature and characteristics of

Table 1. Deemed universities under the study

S.No.	Deemed university	Unique resource locator (URL)	Location	Established year
Andhra Pradesh				
1.	Gandhi Institute of Technology and Management (GITAM)	http://www.gitam.edu	Visakhapatnam	2007
2.	Sri Sathya Sai Institute of Higher Learning (SSSIHL)	http://sssihl.edu.in	Anantapur	1981
3.	Vignan's Foundation of Science Technology & Research (VFS)	http://www.vignanuniversity.org	Guntur	2008
4.	Koneru Lakshmaiah Education Foundation (KLEF)	http://www.kluniversity.in	Guntur	1980
5.	Rashtriya Sanskrit Vidyapeeth (RSV)	http://rsvidyapeetha.ac.in	Tirupati	1987
Telangana				
1.	International Institute of Information Technology (IIIT)	http://www.iiit.ac.in	Hyderabad	2001
2.	ICFAI Foundation for Higher Education	http://www.ifheindia.org	Hyderabad	2008

Table 2. Webometric query syntax supported by google with results

S.No	Search commands	Search results
1	domain: URL	No. of web pages at the web-sites under the URL
2	link domain: URL	No. of link pages linking to the websites under the URL
3	link domain: URL AND domain: URL	No. of self-link pages from the same website (hyperlink)
4	link domain: URL AND NOT domain: URL	No. of web pages not under the URL but provide hyperlink to URL hence called external link pages
5	link domain: URL NOT domain: URL	No. of links incoming from other websites (In-links)

websites. In this science, Rodrigues & Gairin²⁷ performed the content analysis of web-pages through calculating and analysing their out links and in-links. The ratio between the external in-links received by a website, and the number of web-pages comprising that website is called web impact factor (WIF), which reflects its global fame and the quality of information resources it provides. Data collection was conducted in August 2015, in order to limit errors commonly associated with regular website updates. The investigator employed simple web impact factor in order to compare the universities web influences. Table 3 provide expansion for acronyms and calculate WIF formula used in this study.

Table 4 shows the classification of Deemed universities by the domain name. Among 7 Deemed Universities under study, two Government Universities, 1 in each state respectively have the domain name .ac.in; 2 private universities have the domain name .org; 3 private universities of Andhra Pradesh have their domain name .edu.in, .edu respectively. WIF is a measure of the frequency with which a web-page of a website is linked at a given point in time. A higher WIF represents greater reputation of a website²⁸.

It was observed from Table 5 Sri Sathya Sai Institute of Higher Learning (SSSIHL) has maximum number of pages followed by Gandhi Institute of Technology and Management. It could be noted that International Institute of Information Technology (IIIT) has majority number of link pages followed by ICFAI Foundation for Higher Education with 268000 web-pages. Ingwersen²⁹ proposed an innovative measurement for calculating the online impact areas of the web, including web-sites. Web impact factor (WIF) determines the average online impact of a website by dividing the number of link pages (B) by the number of web-pages (A). International Institute of Information Technology (IIIT) secures the first position with WIF of 46.42. ICFAI Foundation for Higher Education occupies second rank with the WIF of 3.71. A minimum WIF gained by Koneru Lakshmaiah Education Foundation (KLEF) (0.99) and ranked sixth.

The author perceived from Table 6 that IIIT has the utmost number of self-link web-pages (SLWP),

Table 3. Acronyms and explanations used in study for web pages

S.No.	Acronym	Expansion	Web impact factor	Calculation
1	NWP	Total No. of Web Pages (A)		
2	LWP	Link Web Pages (B)	SWIF (Simple Web Impact Factor) =	No. of Link WebPages (B) Total No of Web Pages (A)
3	SLWP	Self-Link Web Pages (C)	SLWIF (Self-Link Web Impact Factor) =	No. of Self-Link Web Pages (C) Total No of Web Pages (A)
4	ELWP	External Link Web Pages (D)	ELWIF (External-Link Web Impact Factor) =	No. of External Link Web Pages (D) Total No of Web Pages (A)
5	ILWP	In-Link Web Pages (E)	ILWIF (In-Link Web Impact Factor) =	No. of In-Link Web Pages (E) Total No of Web Pages (A)

Table 4. Classification of deemed universities by the domain

S. No.	Domain	Andhra pradesh		Telangana		Total
		Government	Private	Government	Private	
1.	.ac.in	1	0	1	0	2
2.	.edu	0	1	0	0	1
3.	.org	0	1	0	1	2
4.	.in	0	1	0	0	1
5.	.edu.in	0	1	0	0	1
Total		1	4	1	1	7

Figure 2 provides an idea about the overall web impact factor for Deemed university websites under study; found from the bar graph that IIIT has achieved maximum web impact factor; it is direct from the study that IIIT is the only institution, which have more number of link pages hence maximum web impact factor.

Following measures are suggested to improve university websites:

- Each university and their website(s) may have necessities that are essential and unique.
- Providing intranet facility in university in order to document and disseminate information effectively. In

Table 5. Distribution of link pages and its web impact factor

S. No.	Name of the institutions	NWP (A)	LWP (B)	SWIF B/A	Rank by SWIF
1.	Gandhi Institute of Technology and Management (GITAM)	101000	51	0.00	7
2.	International Institute of Information Technology (IIIT)	78200	3630000	46.42	1
3.	Rashtriya Sanskrit Vidyapeeth (RSV)	23700	39900	1.68	3
4.	Sri Sathya Sai Institute of Higher Learning (SSSIHL)	179000	217000	1.21	5
5.	ICFAI Foundation for Higher Education	72200	268000	3.71	2
6.	Vignan's Foundation of Science, Technology & Research (VFS)	4430	5680	1.28	4
7.	Koneru Lakshmaiah Education Foundation (KLEF)	1670	1650	0.99	6

Table 6. Distribution of self-link pages and its web impact factor

S. No.	Name of the institutions	NWP (A)	SLWP (C)	SLWIF C/A	Rank by SLWIF
1.	Gandhi Institute of Technology and Management (GITAM)	101000	69500	0.69	2
2.	International Institute of Information Technology (IIIT)	78200	1580000	20.20	1
3.	Rashtriya Sanskrit Vidyapeeth (RSV)	23700	10600	0.45	5
4.	Sri Sathya Sai Institute of Higher Learning (SSSIHL)	179000	79000	0.44	6
5.	ICFAI Foundation for Higher Education	72200	35900	0.50	3
6.	Vignan's Foundation of Science, Technology & Research (VFS)	4430	137	0.03	7
7.	Koneru Lakshmaiah Education Foundation (KLEF)	1670	821	0.49	4

followed by, Sri Sathya Sai Institute of Higher Learning (SSSIHL). IIIT attains the first rank with an SWIF of 20.21 and GITAM stands in second position with a SWIF of 0.69.

Table 7 provides data on distribution of External link web-pages and External web impact factor of the deemed university websites of Andhra Pradesh and Telangana. The table explains that IIIT has maximum number of ELWP and attains first position, while GITAM secured second rank with 66200 external link web-pages, and ELWIF of 0.66 .

Table 8 gives details on distribution of In-Link pages and the corresponding Web Impact Factor. IIIT is found to have highest In-Links and In-Link web impact factor, gained first position followed by ICFAI.

addition, intranet also makes available the general community within the institution a chance to influence decisions being made. At the very least, it will serve to increase awareness of what's happening.

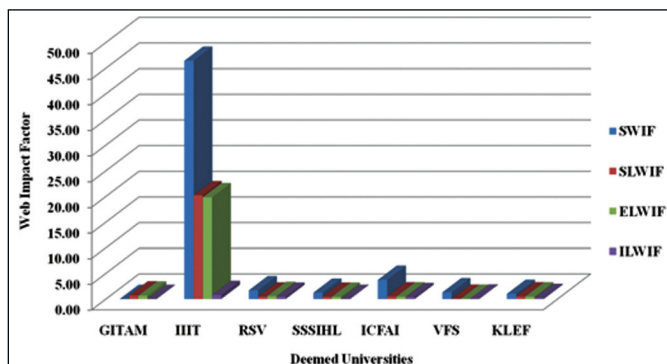
- It is very important to receive feedback from user community. This takes advantage of the impetuous nature of users. It is also essential to make sure people are being listened to.
- The target audiences for any particular page have to be clear and well-planned. Target audience include students (Current students, potential students, past students (alumni), staff members and staff-like members (e.g., postgraduate students), teachers (academics, tutors, practical demonstrators), general staff members, potential staff members (including researchers).

Table 7. Distribution of external-link pages and its web impact factor

S. No	Name of the institutions	NWP (A)	ELWP (D)	ELWIF D/A	Rank by ELWIF
1.	Gandhi Institute of Technology and Management (GITAM)	101000	66200	0.66	2
2.	International Institute of Information Technology (IIIT)	78200	1550000	19.82	1
3.	Rashtriya Sanskrit Vidyapeeth (RSV)	23700	13700	0.58	3
4.	Sri Sathya Sai Institute of Higher Learning (SSSIHL)	179000	77400	0.43	6
5.	ICFAI Foundation for Higher Education	72200	34100	0.47	5
6.	Vignan's Foundation of Science, Technology & Research (VFS)	4430	136	0.03	7
7.	Koneru Lakshmaiah Education Foundation (KLEF)	1670	811	0.49	4

Table 8. Distribution of in-link pages and its web impact factor

S. No	Name of the institutions	NWP (A)	ILWP (E)	ILWIF E/A	Rank by ILWIF
1.	Gandhi Institute of Technology and Management (GITAM)	101000	9	0	
2.	International Institute of Information Technology (IIIT)	78200	59400	0.76	1
3.	Rashtriya Sanskrit Vidyapeeth (RSV)	23700	10400	0.44	2
4.	Sri Sathya Sai Institute of Higher Learning (SSSIHL)	179000	593	0.00	
5.	ICFAI Foundation for Higher Education	72200	24700	0.34	3
6.	Vignan's Foundation of Science, Technology & Research (VFS)	4430	193	0.04	4
7.	Koneru Lakshmaiah Education Foundation (KLEF)	1670	287	0.17	6

**Figure 2. Overall web impact factor in deemed universities.**

It is further suggested that deemed universities must gain knowledge to surf this technological torrent of titanic proportions. As a result, change must be ready to be made and also easily made. The web is ephemeral.

6. CONCLUSIONS

Search facilities of commercial search engines are constantly changing, being a main obstacle for Webometrics studies. For instance, AltaVista and most of the web in-link search methods do not work anymore. In fact, Webometrics research area suffers from lack of the appropriate and stable measuring tools. It the future challenges of Webometrics related to quantitative methods such as sampling the web-pages and web links

measuring tools search engines for data collection, and qualitative methods such as interpretation of web links and classification of link creation motivations. Generally, web link analysis of deemed university websites is trustworthy, but practically web links are unequal to citations in the scholarly literature, since university content sites include related academic cites. This study reflects a direct relationship with the related links. The institutions having more number of link pages obviously encompass more impact factor. The study observed that, IIIT owing to possess more websites hence, comprise maximum web impact factor among deemed university websites of Andhra Pradesh and Telangana.

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