A Webometric Study of Top 10 Karnataka Engineering Institutions Library Websites Listed by NIRF during 2022

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Abstract

This study aimed to analyze the top ten Karnataka engineering library websites listed in the National Institutional Ranking Framework (NIRF) for 2022. This paper study domain authority, page authority, a number of web pages, links, and calculates the web impact factor of the top 10 Karnataka engineering institutions. The study found that the International Institute of Information Technology, Bangalore Simple Web Impact Factor placed in top position 280 SWIF. In terms of Internal Web Impact (IWIF), the B.M.S. College of Engineering, Bengaluru took the top spot (194 IWIF) and in terms of External Link Web Impact Factor (EWIF), the International Institute of Information Technology Bangalore placed in the top position (91 EWIF).

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Keywords

Webometric Study, web impact factor, Karnataka engineering institutions Library Websites, National Institutional Ranking Framework, NIRF

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1. Introduction

The term webometrics was first coined by Almind and Ingwersen (1997). "Webometrics is 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" (Bjorneborn&Ingwersen 2004). "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" (Thelwall 2009).

One of the most valuable webometric methods is the Web Impact Factor (WIF) that was proposed by Peter Ingwersen in 1998. The JIF measures citations made in journals published during one time period to articles published in another time period, while the WIF is a "snapshot" of a search engine database at a specific time. Compared with the content of a journal paper, the content of a web resource lacks peer review and thus lacks quality control. The WIF is therefore not exactly the equivalent of the JIF. However, the WIF was inspired by the JIF (Noruzi 2006).

2.National Institutional Ranking Framework (NIRF)

The National Institutional Ranking Framework (NRIF) was approved by the MHRD and released by the Honorable Minister of Human Resources Development on September 29, 2015. The framework provides a methodology for Ranking institutions across the country. The methodology is based on the general recommendations of a core committee set up by the MHRD to define the general parameters for ranking the various universities and institutions. The parameters generally cover "teaching, learning and resources", "research and professional practices", "graduation results", "awareness and inclusion", and "perception". The latest ranking released from MHRD on July 15, 2022.

3.Literature Review

Ramesh Babu, Jeyshankar, Nageswara (2010) examines 40 central universities websites in India. Investigate domain systems of the website, number of webpages, calculates Web Impact factor like SWIP, SLWIP, ELWIP and RWIP. Study found that Mizoram University occupies the 1st place with 2662 link pages and 41 Webpages with 6. 39SWIF.Orissa occupies the 1st place with Self Link pages and 18 Webpages with 0.78 SLWIP. Aligarh Muslim

university occupies the 1st place with 826 webpages, 713 link pages and with ELWIP 0. 86.Vermaand Brahma (2018) investigateweb impact factor of six public libraries of India which are fully funded by Ministry of Culture with the supervision of administration. The study found that the highest domain and page authority was recorded by KhudaBaksh Oriental Public Library and National Library.Web impact factor of Central Secretariat Library recording the maximum, followed by National Library and Khuda Baksh Oriental Public Library.Brahma, Verma and Sinha (2019)analysis top seven universities of North-East India ranked by National Institutional Ranking Framework selected (NIRF) in 2018. The study explored that overall, the WIF of Mizoram University Library ranked at top with highest Internal WIF of 172.73 and Simple WIF of 172.84, whereas, North-Eastern Hill University Library occupied second place with Internal WIF of 139.45, External WIF of 4.58 and Simple WIF of 144.28 and Nagaland University Library recorded to be on third place with Internal WIF of 77.95 and Simple WIF of 77.95. Majhi and Das (2019) examine the various web impact factors, scores and ranking of the websites of high courts in India. Andhra Pradesh High Court websites occupies the first place with 41408.45Simple Web Impact Factor. Meghalaya High Court websites occupies the first place with 13.57 in Self Link Web Impact Factor and also first place In-Link Web Impact Factor with 12.37.Ghoshand Roy (2022) examined the website of 72 unique health and medical science repositories that have been finally selected from ROAR and open DOAR after eliminating all common repositories. Results indicate that the Collegeof Physicians of Philadelphia Digital Library occupies first place with 10.40%SWIF. The repository of the Rockefeller University i.e., digital commons @ RU ranks first position with 16800 web pages and 30800 in-link web pages and 1.83 in-links WIF. Meghwal, Joshi,Chaparwal and Rajput (2022) examines the webometric analysis of top 10 university websites and analyses domain age and domain extension, domain authority and page authority, total back links and quality back links, webpage speed and mobile responsive and identify web impact factor of universities website.

4.Scope and Limitations of The Study

A current Webometric study analyzes the top 10 Karnataka Engineering Institutions Library websites listed by NIRF for the 2022 period. The current Webometric study examines the top 10 Karnataka Engineering Institutions Library websites considered for analysis, and the study focuses on the website's overall links. Links such as "external links", "internal links, library website spam scores". The study also aims to rank the top 10 engineering library websites by measuring the Web Impact Factor (WIF).

5.Objectives ofthe Study

1. Analyze the URL of top 10 Karnataka engineering institutions library websites ranked by NIRF.
2. Calculate the domain authority and Page authority of top 10 Karnataka engineering institutions' library Websites ranked by NIRF.
3. Examine the Spam Score of top 10 Karnataka engineering institutions library websites ranked by NIRF.
4. Find out the internal and external link pages of top 10 Karnataka Engineering institutions library websites Ranked by NIRF.
5. Calculate the web impact factor top 10 Karnataka engineering institutions' library websites ranked by NIRF.

6.Methodology

In this study, the websites of the top 10 Karnataka Engineering Institutions Library websites ranked by the National Institutional Ranking Framework (NIRF) were collected and analyzed using the Google search engine. We used the Google search engine to collect web page count statistics and used the following syntax to collect data for the top 10 Karnataka Engineering Institutions Library websites such as: https://library.nitk.ac.in/joomla/ extracts the number of web pages for the site located at https://library.nitk.ac.in/joomla/.We used Smallseotools software to collect domain authority, page authority, internal and external links. Spam scores were collected using Dapachecker software. Data were collected from August 13-26, 2022 and presented in tabular form using MS Excel.

6.1 Method of Calculating Web Impact Factor

Simple Web Impact Factor (SWIF) has been evaluated by the following Formula:

$$SWIF = \frac{\text{Total No of Links}}{\text{Total No of webpages}}$$

The following Formula has evaluated internal Web Impact Factor (IWIF):

$$IWIF = \frac{\text{Total No of Internal Links}}{\text{Total No of webpages}}$$

The following formula has evaluated external Web Impact Factor (EWIF):

$$EWIF = \frac{\text{Total No of External Links}}{\text{Total No of webpages}}$$

7.Data Analysis

Table1. Top 10 Karnataka Engineering institutions library websites ranked by NIRF and its URL

Sl. no.	Name of Institutions	Home URL	All India rank	Score
1	National institute of technology Karnataka, Surathkala	https://library.nitk.ac.in/joomla/	10	66.04
2	Visvesvaraya Technological university, Belgaum	http://library.vtu.ac.in/	49	50.2
3	Manipal Institute of Technology, Manipal	https://manipal.edu/mit/mit-experience/library.html	55	48.33
4	M.S. Ramaiah Institute of Technology, Bengaluru	http://www.msrit.edu/facilities/library.html	67	45.17
5	International Institute of Information Technology Bangalore	https://www.iiitb.ac.in/library-collection	81	41.91
6	B.M.S. College of Engineering, Bengaluru	https://bmsce.ac.in/home/About-Library	83	41.71
7	R.V. College of Engineering, Bengaluru	https://www.rvce.edu.in/library	89	40.73
8	Siddaganga Institute of Technology, Tumkur	http://www.sit.ac.in/html/department.php?deptid=19	97	40.24
9	PES University, Bangalore	http://library.eccampus.pes.edu:8080/opac/Default.aspx	100	40.14
10	Jain University, Bangalore	https://www.jainuniversity.ac.in/library-resource-center/	115	38.55

Source:https://www.nirfindia.org/2022/EngineeringRanking.html

Table2. Domain authority and page authority

Sl. no.	Name of Institutions	Domain Authority	Page Authority	MOz Rank
1	National institute of technology Karnataka, Surathkala	38	33	3.3
2	Visvesvaraya Technological university, Belgaum	44	40	4
3	Manipal Institute of Technology, Manipal	56	42	4.2
4	M.S. Ramaiah Institute of Technology, Bengaluru	35	34	3.4
5	International Institute of Information Technology Bangalore	46	29	2.9
6	B.M.S. College of Engineering, Bengaluru	33	24	2.4
7	R.V. College of Engineering, Bengaluru	36	32	3.2
8	Siddaganga Institute of Technology, Tumkur	34	25	2.5
9	PES University, Bangalore	36	29	2.9
10	Jain University, Bangalore	41	27	2.7
	Total	399	442	

Domain authority, Page Authority and Moz Rank report generated by SmallSEOtool

Table 3. Total Internal Links, Total External Links and Total No Links

Name of institutions	Internal links	External links	Total links
National Institute of Technology Karnataka, Surathkala	107(52.9%)	95(47.0%)	202(100%)
Visvesvaraya Technological university, Belgaum	60(34.6%)	113(65.3%)	173(100%)
Manipal Institute of Technology, Manipal	110(90.9%)	11(9.09%)	121(100%)
M.S. Ramaiah Institute of Technology, Bengaluru	12(27.9%)	31(72.0%)	43(100%)
International Institute of Information Technology Bangalore	189(67.5%)	91(32.5%)	280(100%)
B.M.S. College of Engineering, Bengaluru	194(94.6%)	11(5.36%)	205(100%)
R.V. College of Engineering, Bengaluru	133(92.3%)	11(7.63%)	144(100%)
Siddaganga Institute of Technology, Tumkur	183(78.5%)	50(21.4%)	233(100%)
PES University, Bangalore	39(92.8%)	3(7.14%)	42(100%)
Jain University, Bangalore	107(64.8%)	58(35.1%)	165(100%)

Internal links, external links and Total links report generated by https://searchenginereports.net/ and SmallSEOtool

Table 4. spam score

Sl no	Name of institutions	Spam score
1	National Institute of technology Karnataka, surathkala	1
2	Visvesvaraya technological university, Belgaum	2
3	Manipal Institute of Technology, Manipal	3
4	M.S. Ramaiah Institute of Technology, Bengaluru	61
5	International Institute of information technology Bangalore	4
6	B.m.s. College of Engineering, Bengaluru	1
7	R.v. College of Engineering, Bengaluru	2
8	Siddaganga institute of technology, tumkur	28
9	Pes University, Bangalore	1
10	Jain University, Bangalore	1

Spam score report generated byDapachecker

Table 5 Web Impact Factor and Link Analysis

Table 5.1 Simple Web Impact Factor of top 10 Karnataka engineering institutions library website

Name Of Institutions	URL	TNWP (A)	TNIL (B)	SWIF (B/A)	Rank
International Institute of Information Technology Bangalore	https://www.iiitb.ac.in/library-collection	1	280	280	1
B.M.S. College of Engineering, Bengaluru	https://bmsce.ac.in/home/About-Library	1	205	205	2
R.V. College of Engineering, Bengaluru	https://www.rvce.edu.in/library	1	144	144	3
Manipal Institute of Technology, Manipal	https://manipal.edu/mit/mit-experience/library.html	2	121	60.5	4
M.S. Ramaiah Institute of Technology, Bengaluru	http://www.msrit.edu/facilities/library.html	1	43	43	5
PES University, Bangalore	http://library.eccampus.pes.edu:8080/opac/Default.aspx	1	42	42	6

Jain University, Bangalore	https://www.jainuniversity.ac.in/library-resource-center/	21	165	7.857	7
Siddaganga Institute of Technology, Tumkur	http://www.sit.ac.in/html/department.php?deptid=19	44	233	5.295	8
Visvesvaraya Technological university, Belgaum	http://library.vtu.ac.in/	639	173	0.270	9
National institute of technology Karnataka, Surathkala	https://library.nitk.ac.in/joomla/	99	202	2.040	10

TNWP-Total No. of Web Pages, TNL- Total No. Links, SWIF- Simple Web Impact Factor

Table 5.2 Inter Link Web Impact Factor of top 10 Karnataka engineering institutions library website

Name Of Institutions	Url	TNWP (A)	TNIL (B)	IWIF (B/A)	Rank
B.M.S. College of Engineering, Bengaluru	https://bmsce.ac.in/home/About-Library	1	194	194	1
International Institute of Information Technology Bangalore	https://www.iiitb.ac.in/library-collection	1	189	189	2
R.V. College of Engineering, Bengaluru	https://www.rvce.edu.in/library	1	133	133	3
Manipal Institute of Technology, Manipal	https://manipal.edu/mit/mit-experience/library.html	2	110	55	4
PES University, Bangalore	http://library.eccampus.pes.edu:8080/opac/Default.aspx	1	39	39	5
M.S. Ramaiah Institute of Technology, Bengaluru	http://www.msrit.edu/facilities/library.html	1	12	12	6
Siddaganga Institute of Technology, Tumkur	http://www.sit.ac.in/html/department.php?deptid=19	44	183	4.159	7
Jain University, Bangalore	https://www.jainuniversity.ac.in/library-resource-center/	21	107	5.095	8
National institute of technology Karnataka, Surathkala	https://library.nitk.ac.in/joomla/	99	107	1.080	9
Visvesvaraya Technological university, Belgaum	http://library.vtu.ac.in/	639	60	0.093	10

TNWP-Total No. of Web Pages, TNIL- Total No. Internal Links, IWIF- Internal Web Impact Factor

Table 5.3: External Link Web Impact Factor of top10 Karnataka engineering institutions library website

Name Of Institutions	Url	TNWP (A)	TNEL (B)	EWIF (B/A)	Rank
International Institute of Information Technology Bangalore	https://www.iiitb.ac.in/library-collection	1	91	91	1
M.S. Ramaiah Institute of Technology, Bengaluru	http://www.msrit.edu/facilities/library.html	1	31	31	2
B.M.S. College of Engineering, Bengaluru	https://bmsce.ac.in/home/About-Library	1	11	11	3
R.V. College of Engineering, Bengaluru	https://www.rvce.edu.in/library	1	11	11	4
Manipal Institute of Technology, Manipal	https://manipal.edu/mit/mit-experience/library.html	2	11	5.5	5
PES University, Bangalore	http://library.eccampus.pes.edu:8080/opac/Default.aspx	1	3	3	6

Jain University, Bangalore	https://www.jainuniversity.ac.in /library-resource-center/	21	58	2.761	7
Siddaganga Institute of Technology, Tumkur	http://www.sit.ac.in/html/department.php?deptid=19	44	50	1.136	8
National institute of technology Karnataka, Surathkala	https://library.nitk.ac.in/joomla/	99	95	0.959	9
Visvesvaraya Technological university, Belgaum	http://library.vtu.ac.in/	639	113	0.176	10

TNWP-Total No. of Web Pages, TNEL- Total No. External Links, EWIF- External Web Impact Factor

Table 2 gives details about Domain Authority and Page Authority of top 10 Karnataka engineering institutions library Websites ranked by NIRF. It shows that the Domain Authority of Manipal Institute of Technology, Manipal with 56 scores highest, followed by International Institute of Information Technology Bangalore with 46 and Anna University and Visvesvaraya Technological university, Belgaum with 44. On the other hand, the Page Authority of Manipal Institute of Technology, Manipal again scores highest with 42, followed by Visvesvaraya Technological university, Belgaum with 40 and M.S. Ramaiah Institute of Technology, Bengaluru with 34.Manipal Institute of Technology, Manipal occupies the top rank with a 4.2 score, followed by Visvesvaraya Technological university, Belgaum with a 4. and M.S. Ramaiah Institute of Technology, Bengaluru with a 3.4 score, occupying the third place in the Moz rank of top 10 Karnataka engineering institutions library websites

Table 3 depicts the ranking of the websites of Top 10 Karnataka Engineering Institutions Library websites on the basis of Total Internal Links, Total External Links and Total Links. The result visualized that the B.M.S. College of Engineering, Bengaluru leads with 194 (94.6%) Total Internal Links, followed by International Institute of Information Technology Bangalore with 189(67.5%) becomes second and Siddaganga Institute of Technology, Tumkur with 183(78.5%) becomes third. Visvesvaraya Technological university, Belgaum with 113(65.3%) of Total External Links has the highest, Followed by National institute of technology Karnataka, Surathkala with 95(47.0%) and International Institute of Information Technology Bangalore with 91(32.5%). International Institute of Information Technology Bangalore with 280(100%) Total Links scores the highest, followed by Siddaganga Institute of Technology, Tumkur with 233(100%) and B.M.S. College of Engineering, Bengaluru with 205(100%) Total Links.

Table 4 shows the spam score of top 10 Karnataka Engineering Institutions Library Websites Listed by NIRF during the period of 2022. Spam Score is a rating system released by Moz in 2015 that predicts the possibility of subdomain spam on a website. The Spam score is uses 17 flags to measure the spam score. It can take values from 0% to 100%: score of 0%-30% is considered a low Spam Score.score of 31%-60% is considered a medium Spam Score. **s**core of 61%-100% is considered a high spam score. It indicated that the library website of M.S. Ramaiah institute of technology, Bengaluru has the highest spam score of 61 which means the website is high spam, followed by Siddaganga institute of technology, tumkur spam score of 28 which means websites high spam. International institute of information technology Bangalore with 4 which means shows good, followed Manipal institute of technology, Manipal with 3, the rest of the library websites shows good status.

Table 5.1 explored the Simple Web Impact Factor of the websites of Top 10 Karnataka Engineering Institutions Library websites. In terms of Single Web Impact Factor (SWIF), International Institute of Information Technology Bangalore placed in top position 280 SWIF. With 205 SWIF, B.M.S. College of Engineering, Bengaluru placed second, whereas, R.V. College of Engineering, Bengaluru placed third rank with 144 SWIF and Manipal Institute of Technology, Manipal placed fourth rank with 60.5 SWIF.

Table 5.2 depicts the internal Web Impact Factor of the websites of Top 10 KarnatakaEngineering Institutions Library websites. In terms of Internal Web Impact (IWIF), the B.M.S. College of Engineering, Bengaluru took the top spot 194 IWIF. With 189 IWIF, International Institute of Information Technology Bangalore placed second whereas, R.V. College of Engineering, Bengaluru placed third with 133 IWIF and Manipal Institute of Technology, Manipal placed fourth with 55 IWIF.

Table 5.3 depicts the External Web Impact Factor of the websites of Top 10 KarnatakaEngineering Institutions Library websites. In terms of External Link Web Impact Factor (EWIF), International Institute of Information Technology Bangalore placed in the top position 91 EWIF. With 31 EWIF, M.S. Ramaiah Institute of Technology, Bengaluru placed second, whereas; B.M.S. College of Engineering, Bengaluru placed third with 11 EWIF and R.V. College of Engineering, Bengaluru placed fourth with 11 EWIF

8.Major Findings

1. According to this study,Manipal Institute of Technology, Manipal leads with the highest Domain Authority with 56 and Page Authority with42whereas, Visvesvaraya Technological University, Belgaumscored second highest Domain page with 44 andPageAuthority 40.
2. B.M.S. College of Engineering, Bengaluru leads with 194 (94.6%) Total Internal Links, followed by International Institute of Information Technology Bangalore and Siddaganga Institute of Technology, Tumkur with 189(67.5%) becomes second and with 183(78.5%) becomes third respectively. Visvesvaraya Technological university, Belgaum with 113(65.3%) of Total External Links has the highest, Followed by National institute of technology Karnataka, Surathkala with 95(47.0%) and International Institute of Information Technology Bangalore with 91(32.5%).International Institute of Information Technology Bangalore with 280(100%) Total Links scores the highest, followed by Siddaganga Institute of Technology, Tumkur with 233(100%) and B.M.S. College of Engineering, Bengaluru with 205(100%) Total Links.
3. The M.S. Ramaiah Institute of Technology Bengaluru has the highest spam score of 61 which means the website is high spam, followed by Siddaganga Institute of Technology Tumkur spam score 28 which means shows website high spam, International Institute of Information technology Bangalore with 4 spam score which means shows good, and the rest of the library website shows good status.
4. In terms of Single Web Impact Factor (SWIF), International Institute of Information Technology Bangalore placed in top position 280 SWIF. Followed by B.M.S. College of Engineering, Bengaluru with 205 SWIF andR.V. College of Engineering, Bengaluru with 144 SWIF.
5. In terms of Internal Web Impact (IWIF), the B.M.S. College of Engineering, Bengalurutook the top spot (194 IWIF), followed by International Institute of Information Technology Bangalorewith 189 IWIF and R.V. College of Engineering, Bengaluruwith133 IWIF.
6. In terms of External Link Web Impact Factor (EWIF), International Institute of Information Technology Bangalore placed in the top position (91 EWIF), followed by M.S. Ramaiah Institute of Technology, Bengaluruwith31 EWIF and B.M.S. College of Engineering, Bengaluru placed third with 11 EWIF.

9.Conclusion

The current study gives an idea about the Top 10 Karnataka Engineering Institutions Library Websites Listed ranked by National Institutional Ranking Framework (NIRF) for the year 2022. NIRF is a methodology for ranking of universities and colleges in India and functions as an autonomous body under an initiative by the Department of Higher Education. The paper investigates the URL, webpages, domain authority, internal and external link pages of Top 10 Karnataka Engineering Institutions Library Websites and calculates their web impact factor and ranks them orderly. The study found that International Institute of Information Technology, Bangalore Simple Web Impact Factor placed in top position 280 SWIF. In terms of Internal Web Impact (IWIF), the B.M.S. College of Engineering, Bengaluru took the top spot (194 IWIF) and External Link Web Impact Factor (EWIF), International Institute of Information Technology Bangalore placed in the top position (91 EWIF).

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