Original Research Article

Unraveling the digital landscape: A study of web impact factor and link analysis of state law universities of India

Rajeev Manhas [1]*, **Shinderpal Kaur**[2]

[1]*University Library, Baba Farid University of Health Sciences Library, Faridkot, Punjab, India*
[2]*Government Medical College, Patiala, Punjab, India*

A B S T R A C T

Introduction: In the era of digital landscapes, a variety of web analytics tools can be used to assess the online presence and influence of higher education institutions, particularly universities. Using these tools to rank universities based on the extent of their online visibility. Using web analytics techniques like Google Page Rank (GPR) and Alexa Traffic Rank (ATR), the researchers in this study examined the State Law Universities of India and reported the rankings. The investigators also looked into how the rich files were used accordingly reported the ranking of the Indian State Law Universities.

Methodology: The researchers looked at the web impact factor of 24 State Law Universities in India that were approved by the University Grants Commission in New Delhi. The researchers used GPR, ATR, and Google Search Engine for link analysis and further to demonstrate the impact factor (web) based on the available literature on the topic.

Results and Conclusion: National Law University, Delhi is ranked #1 in the world in the Alexa Traffic Ranking according to the study's findings. The National Law School of India University, located in Karnataka, is ranked first for rich files and first in GPR.

For reprints contact: reprint@ipinnovative.com

1. Introduction

We are living in the age of a digital world, where the resources available in digital form and accessible through the web are the key source of information for academic and other research activities of any higher educational institution. The university websites are authentic and major information providing windows about universities' academic activities such as admission, requirement links, examination links, result links, circulations, etc. The current study's objective is to assess the web visibility of Indian law universities by looking at their online presence. The report also offers recommendations for raising awareness in order to have a greater impact and increase the level of online presence.

2. Review of Literature

Mehrotra (2024) conducted a study using tools like web impact factor (WIF), internal, external, and backlinks for every State Government University's website of Madhya Pradesh State of India and further provided ranking the websites as per WIF. The results indicate that Pandit S.N. Shukla University, Shahdol was on the top. According to the study, websites with higher WIF should be built by Madhya Pradesh State Government Universities using a sufficient number of backlinks.[1]

Nowkarizi et al. (2022) conducted a study to investigate web visibility and the collaboration rate of the websites of the IU (Iranian universities) within the purview of the Science, Research, and Technology Ministry. The websites

* *Corresponding author.*
  E-mail address: dr.rajeevmanhas@gmail.com (R. Manhas).

of Tehran, PN (Payame Nour), and Elmosanat were the most popular, according to the results. The Zabol Universities, Industrial JS (Jondi Shapoor), and MA (Mohaghegh Ardabili) received the highest WIF (web impact factors) for their websites. As per the results of the in-link analysis, the websites under investigation had collaborated in six groups, and five clusters were represented on a multidimensional scale.[2]

Meghwal et al. (2022) conducted a study to find the criteria to rank Indian universities' websites as per NIRF-2021. The parameter analysis of online impact factors, ATR, and other website metrics are all examined in this web metric analysis. Additionally, it was noted that every institution's website included a variety of tiny tools, such as SEO tools on their website. The website with the highest DA (Domain Authority) score of 62 was IISc University, and as per the study, it was in first position among all the universities, while the AVV (Amrita Vishwa Vidyapeetham) University website has the oldest domain. The survey further reported that, as per the NIRF rankings, there were three institutions at Karnataka State which were among the top 10 universities in India.[3]

Patel et al. (2021) carried out a study to find the top 15 ranking websites of Indian universities as per the NIRF. The study examined the websites of Indian universities covered by it and collected data using several technologies tools, including Alexa and Ahrefs SEO. The results of the study indicate that the website of AU (Anna University) has the greatest page ranking score, web traffic, backlinks, and referring domains. The study further indicates that as per ATR, the University of Delhi's website scored the highest rank, while Savitribai Phule Pune University's website scored the largest Indian ATR. The results further revealed that Bharathiar University's website scored first rank in all three WIFs (Web Impact Factors), i.e., the outward, internal, and basic.[4]

Lahkar and Sonitpur (2021) investigated the websites of 10 central universities located in India's northern region and determined each website's 3 distinct Web Impact Factors. The results of the study depicted the status of those websites that detect varying numbers of backlinks to and from the web pages. The study also compares the number of distinct links to the amount on a web page.[5]

Shayegan and Kouhzadi (2020) conducted an applied study in which a sample of 75 university websites were included. The investigators used a descriptive cross-sectional methodology and webometric methods to carried out this work. The results demonstrated that a few SEO (Search Engine Optimization) variables, including backlink count, AR (Alexa rank) and PR (page rank), directly and significantly affect university websites' rankings. As a result, several intriguing guidelines have been derived.[6]

Ahmadi and CheshmehSohrabi (2019) conducted a study using a descriptive methodology to compare the online status of five Islamic Azad University units using webometrics, ATR, and an estimated Sinium value. Results indicate that when it comes to webometrics databases, Alexa website traffic ratings, and anticipated website value, Shiraz units outperform other Islamic Azad University units. It is believed that national and international universities are of a higher caliber when they include features and components like the active presence of professors and researchers, promotion of graduate programs, credibility, up-to-date, user-friendly, open access to documents, appeal, etc. It receives high rankings for its web page accessibility, size, rank, tracking, traffic rating, and enhanced quality.[7]

Meisam, Somayeh, and Masoumeh (2019) examined the 41 websites of Iranian medical sciences universities by using the webometrics method. The results show that there are some universities that have a good quality of websites.[8]

Jeyshankan (2019) conducted a webometric of 125 Deemed universities in India. The results of study indicate and suggests that websites of some universities under study be improved to provide effective information to their users.[9]

Stephen (2019) in his study evaluated central universities of the North East Region, of India, using the ATR tool. The findings indicated that North Eastern Hill University and Tripura University are best-ranked with 8484 and 8,511 ranks, respectively.[10]

Parmar and Mandalia (2016) conducted a webometrics study to the analysis of the 43 state government universities' websites in Gujarat. The study revealed that one-third of university websites have '.ac.in' (31.57%) domain extension. It further revealed that there are some universities under study that are required to work on their websites to get ranks like Alexa Traffic Rank and furthermore to increase the usage of rich files for the purposes of effective communication.[11]

Dhanalakshmi and Rao (2016) investigated 228 PU (Private universities). The study revealed that domain names, internet. in, gov. in, and. nic. in sites are the least preferred by the PU, particularly after 2001. These PU websites' size ranges from 1 KB to 8529 KB. The IL (Internal Link), EL (External Link), and size of the website for these universities were obtained using the web optimization tool for the measurement of IL, EL, and size of the website for these universities. The websites of these universities are active and fairly extraordinary due to their nominal internal and exterior links, despite having many images. 228 PU are operating in 22 states in India, with Haryana state ranking first with a web impact factor (WIF) of 0.12. It is followed by Orissa, Tripura state, and Assam, which are ranked 2nd and 3rd respectively. Nagaland has the smallest amount of WIF with 0.0112.[12]

Kargar (2011) conducted a study on the websites of four universities. The findings showed a strong correlation between SEO variables and usability criteria; institutions with websites with inadequate usability and visibility

scores also had poor rankings. This indicates that usability improvement initiatives can significantly raise the university website's position. Further, it was revealed that a website's reputation can be enhanced by community and user count; hence a high traffic rank cannot be used as a factor for ranking a website. [13]

3. Scope of the Study

The scope of the present study is limited to twenty-four state law universities (SLU) in India (approved by the University Grants Commission, New Delhi) mentioned in Table 1. [14]

Table 1: State-wise distribution of law universities

University	URL
DSNLWAP	https://dsnlu.ac.in
NLWUJAA	http://.nluassam.ac.in
CNLWU	http:// cnlu.ac.in
HNLUC	https:// hnlu.ac.in
NLUD	https://nludelhi.ac.in
GNLUG	https:// gnlu.ac.in
HPNLUHP	https://shimlauniversity.online
NUSRLJ	http:// nusrlranchi.in
NLSIUK	https:// nls.ac.in
NUALSK	https:// nuals.ac.in
NLIUM	https:// nliu.ac.in
DNLUM	https:// mpdnlu.ac.in
MNLUM	mnlumumbai.edu.in
MNLUM	https:// nlunagpur.ac.in
MNLUM	https:// mnlua.ac.in
NLUO	https:// nluo.ac.in
RGNULP	https:// rgnul.ac.in
NLUR	http:// nlujodhpur.ac.in
DBRANLUH	http:// dbranlu.ac.in
TNNLUT	http:// tnnlu.ac.in
TDALUT	http:// tndalu.org
NULT	http://nalsarpro.org
DRMLNLUUP	http:// rmlnlu.ac.in
TWBNUJSWB	https://nujs.edu

4. Aims and Objectives of the Study

The current study is conducted to establish the following objectives:

1. Indian State Law Universities' rankings based on the GPR and ATR.
2. Rankings of the Indian State Law Universities based on the rich files.

5. Methodology

The present study used the ATR of each website for the study. GPR was calculated using the website https://checkpagerank.net/. [15] The researchers used the Google Search Engine to calculate the rich files of the universities under

study: e.g., site https: //nludelhi.ac.in/., file type: ppt: https://nludelhi.ac.in/file type: doc; https://nludelhi.ac.in/ file type: pdf.

5.1. Alexa Traffic Rank

ATR is also famously known as Alexa Rank. [16] It is used to know the popularity of a website to comparison other websites and the Global Rank of a website by Alexa Internet. It is calculated particular website traffic recorded of users, on daily-base and page viewers on a website from the last three months.

5.2. Google Page Rank

Google search engine provides results of web pages rank. It is an algorithm. It is a method of 'measuring' the significance of website pages. To know the popularity of websites it uses the counting method and examines the quality of links of a page.

Table 2: ATRs (State Law Universities)

University	ATR (as on 31-08-2020)	Rank
NLUD	160310	1
NLSIUK	190823	2
GNLUG	395660	3
RGNULP	446859	4
TWBNUJSWB	484495	5
NLIUMP	524773	6
NULT	612268	7
NUALSK	612869	8
NUSRLJ	731469	9
NLUR	751428	10
HNLUC	764093	11
NLUO	993206	12
DRMLNLUUP	1020957	13
NLUJAA	1125305	14
CNLUB	1184614	15
TNNLUTN	1350848	16
DSNLUAP	1480637	17
MNLUM	1527898	18
DBRANLUH	1663100	19
MNLUM	3219483	20
DNLUMP	3384681	21
HPNLUHP	5008192	22
MNLUM	9991504	23
TDALUTN	Not enough traffic data	24

It is evident from Table 2 that NLUD ranked at the top for Global ATR, NLSIUK state secured the 2nd position followed by GNLUG.

Table 3 indicates the status of Indian State Law Universities under study as per the GPR, cPR score, and external backlinks. To calculate the rankings of the universities' understudy, firstly, the researchers took into consideration the GPR; if the GPRs of the universities were the same, then the cPR score and external backlinks

Table 3: GPRs (State Law Universities)

University	Rankings of the Universities as per GPR (Scores are out of 10)	Rank
NLSIUK	GPR:5; cPR Score: 4.9; EB:11107	1
NLWD	GPR:4; cPR Score: 4.8; EB:309108	2
TWBNUJSWB	GPR:4; cPR Score: 4.6; EB:13663	3
GNLUG	GPR:4; cPR Score: 4.3; EB:187693	4
CNLUB	GPR:4; cPR Score: 4.0; EB:173,784	5
NLUR	GPR:4; cPR Score: 4.0; EB:10029	6
NLUJAA	GPR:4; cPR Score: 3.9; EB:171,191	7
HNLUC	GPR:4; cPR Score: 3.9; EB:7,279	8
NLIUMP	GPR:4; cPR Score: 3.9; EB:2963	9
RGNULP	GPR:4; cPR Score: 3.9; EB:- 00	10
DSNLUAP	GPR:4; cPR Score: 3.8; EB:169,606	11
DRMLNLUUP	GPR:4; cPR Score: 3.8; EB:5029	12
NLUO	GPR:3; cPR Score: 3.7; EB:2167	13
NUALSK	GPR:3; cPR Score: 3.6; EB:1826	14
NULT	GPR:3; cPR Score: 3.5; EB:4866	15
TNNLUTN	GPR:3; cPR Score: 3.2; EB:3368	16
MNLUM	GPR:3; cPR Score: 3.2; EB:1531	17
NUSRLJ	GPR:3; cPR Score: 3.2; EB:657	18
MNLUM	GPR:3; cPR Score: 3.2; EB:283	19
TDALUTN	GPR:3; cPR Score: 2.9; EB:2691	20
DNLUMP	GPR:2; cPR Score: 2.6; EB:1907	21
MNLUM	GPR:2; cPR Score: 2.5; EB:620	22
DBRANLUH	GPR:2; cPR Score: 2.0; EB:844	23
HPNLUHP	GPR: 0; cPR Score: 0.1; EB:00	24

were taken into consideration, and accordingly, ranks were calculated. The results of the study indicate that NLSIUK leads in this category, followed by NLUD and TWBNUJSWB.

Table 4 depicted the rankings of state law universities of India as per their rich files. To evaluate the rankings in this category, the researchers used only three types of rich files viz. Portable Document Format (.pdf), Document Files (.doc), and PowerPoint Presentation (.ppt). In this category, the NLSIUK is on the 1st position, followed by NUALSK and TWBNUJSWB.

6. Conclusion

The webometric study provides researchers with new content for research with the use of technology. There are more possibilities for future research in this area as this study is limited to only state law universities in India. The result of the study shows that NLSIUK leads to an impact factor. It is suggested that universities should improve their websites so that they can fulfill their users' needs and provide more informative and valuable content.

7. List of Abbreviations

1. DSNNLUAP: Damodaram Sanjivayya National Law University
2. NLWUJAA: National Law University and Judicial Academy
3. CNLUB: Chanakya National Law University
4. HNLUC: Hidayatullah National Law University
5. NLUD: National Law University
6. GNLUG: Gujarat National Law University
7. HPNLUHP: Himachal Pradesh National Law University
8. NUSRLJ: National University of Study and Research in Law
9. NLSIUK: National Law School of India University
10. NUALSK: National University of Advanced Legal Studies
11. NLIUM: National Law Institute University
12. DNLUM: Dharmashastra National Law University
13. MNLUM: Maharashtra National Law University
14. NLUO: National Law University
15. RGNULP: Rajiv Gandhi National University of Law
16. NLUR: National Law University
17. DBRANLUH: Dr. B.R. Ambedkar National Law University
18. TNNLUT: Tamil Nadu National Law University
19. TDALUT: Tamilnadu Dr. Ambedkar Law University
20. NULT: NALSAR University of Law
21. DRMLNLUUP: Dr. Ram Manohar Lohia National Law University
22. TWBNUJSWB: The West Bengal National University of Juridical Sciences
23. EB: External Backlinks

Table 4: State Law Universities and number of rich files

Name of the University	.pdf	.doc	.ppt	Total	Rank
NLSIUK	2930000	15800000	1290000	20020000	1
NUALSK	30000	13600	127000	170600	2
TWBNUJSWB	37100	20000	49700	106800	3
NLUO	8290	11800	45540	65630	4
HNLUC	44800	7150	6180	58130	5
NLUD	19600	14500	20000	54100	6
CNLUB	19200	22000	10500	51700	7
NLIUMP	13900	26300	9930	50130	8
GNLUG	11800	19800	14000	45600	9
HPLUHP	7630	8920	10400	26950	10
NLUR	7810	7510	5770	21090	11
DBRANLUH	18200	319	123	18642	12
DRMLNLUUP	6910	2210	6720	15840	13
MNLUM	12800	1610	610	15020	14
RGNULP	6610	5450		12060	15
NUSRLJ	3190	1650	1120	5960	16
DSNLUAP	2120	1030	736	3886	17
TDALUTN	1790	513	725	3028	18
NULT	929	893	1160	2982	19
NLUJAA	1170	840	260	2270	20
TNNLUTN	860	830	398	2088	21
MNLUM	694	1170	174	2038	22
MNLUM	726	369	61	1156	23
DNLUMP	515	156	74	745	24

8. Source of Funding

None.

9. Conflict of Interest

None.

References

1. Mehrotra B. Web impact factor and link analysis of state government universities in Madhya Pradesh. *Int J Creative Res Thoughts*. 2024;12(3):d162–74.
2. Nowkarizi M, Soheili F, Danesh F, Ryazipoor M, Mesrinejad F. Webometrics of Iranian universities dominated by the Ministry of Science, Research and Technology. *Iran J Inf Process Manag*. 2012;27(1):209–26.
3. Meghwal J, Joshi K, Chaparwal N, Rajput PS. NIRF ranking 2021: A webometric analysis of top 10 university websites of India. *Int J Res Libr Sci*. 2022;8(2):191–205.
4. Patel SS, Trivedi D, Bhatt A, Shanti C. Web visibility and research productivity of NIRF ranked universities in India: A webometric study. *Libr Philos Pract*. 2021;p. 5326.
5. Lahkar R. Web impact factor and link analysis of Central University websites of North Eastern States of India . *Libr Philos Pract*. 2021;.
6. Seyfabad MK, Fard MJ. An analysis of the impact of SEO on university website ranking. *Iran J Inf Process Manag*. 2019;34(4):1787–810.
7. Ahmadi O, CheshmehSohrabi M. Comparison of websites based on webometrics index, Alexa's traffic rating and estimated value of Sinium Case study: Islamic Azad University (IAU), five units. *Libr Philos Pract*. 2019;.
8. Dastani M, Panahi S, Sattari M. Webometrics analysis of Iranian universities about medical sciences' websites between September 2016 and March 2017. *Acta Inform Malays*. 2019;3(1):7–12.
9. Jeyshankar R. Webometric analysis of deemed university websites in India. *Libr Philos Pract*. 2019;p. 2266.
10. Stephen G. Webometric analysis of central universities in north eastern region, India. A study of using alexa internet. *Libr Philos Pract*. 2019;3041.
11. Parmar SD, Mandalia SH. Webometric analysis of universities in Gujarat. *Journal of Advancements in Library Sciences*. 2016;3(2):103–11.
12. Dhanalakshmi S, Rao PN. Web link structure analysis of private universities websites in India: A study. *Int J Libr Inf Sci*. 2016;5(3):54–76.
13. Kargar MJ. University website ranking from usability criteria perspective; A case study in Iran. *Int J Adv Comput Technol*. 2011;.
14. UGC approved state law universities. Available from: https://www.ugc.ac.in/stateuniversity.aspx.
15. PageRank. Available from: https://en.wikipedia.org/wiki/PageRank.
16. Alexa Internet. Available from: https://en.wikipedia.org/wiki/Alexa_Internet.

Author biography

Rajeev Manhas, Deputy Librarian and Head ⓘ https://orcid.org/0000-0002-3996-2421

Shinderpal Kaur, Assistant Librarian