

A Webometric Study of NIRF Ranking 2023 top 10 University Websites of India

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Abstract

The current state of the technologies and applications has elevated the internet to a significant a channel for exchanging information and communicating. It offers a significantly improved interaction between the user and the information. The internet created the framework for global computer users communicating. This study is agreed for analysis of the university websites that make up India's NIRF (National Institutes rating Framework) rating for 2023. A checklist and webmetric analysis that looks at the domain, domain age, parameter analysis of web impact factors, and Alexa traffic rank of websites, among other things, were calculated. I also noticed that all university websites use a variety of tiny tools, such as SEO tools. Findings showed that the "Indian Institute of Science University" website had the greatest Domain Authority score of 62 and was in first place among all Universities. Its website, "Amrita Vishwa Vidyapeetham," had the oldest domain, having been registered on August 14, 1998. According to the report, three universities from Karnataka were among the top 10 universities in India. The top 10 universities in India according to the NIRF rankings in 2022 and 2023 have been the subject of webometrics analysis in the current study. The website of the best university was used in this analysis, and its domain registration date was also known. In which we discovered that Amrita Vishwa Vidhyapeetham University has the oldest domain registration. The websites of all universities were also researched, along with their links and whether or not they were user-friendly.

Keywords:- Website Analysis, Webometric Analysis, NIRF Ranking 2023, Domain and Page Authority, Web Impact Factor, Alexa Rank, Global Rank, Page Speed, Top 10 Universities, Website Checker, Webometric Tools.

Introduction

The internet is becoming a crucial medium for communication and information transmission thanks to technologies and apps. It offers a significantly improved interaction between the user and the information. The internet created the framework for global. Most likely, reading what the participants have written, perusing their images and videos, or listening to their recordings, as appropriate, is the simplest approach to learn more about an online

phenomenon. The nearby study covers the top 10 Universities websites of India listed in NIRF Ranking 2023. This research was structuring a webometric

analysis by focusing on top 10 Universities website with the help of webometrics indicators^[1,2,3]. Webometrics is a numerical analysis of any websites; it is the quantitative learn of web-related phenomena. Webometrics is a quantity of the web such as page content, parts of WebPages, links structures, internal and external link, search engine, user searching and browsing behaviour. Webometric ranking is the system of rating websites based on composite indicators of visibility and activity measures. For any nation academic websites were the vital internet communication tools^[6]. The

accomplishment of any university depends on the website, web to evaluate their educational and research performance. This study focuses on the webometric judgment by examining domain age, domain authority, page authority and total, internal and external links and page speed. Alexa traffic rank analysis and web impact factor analysis of top 10 universities websites India ranked by NIRF 2023.

Almind and Ingwersen (1997) are credited with coining the term

"webometrics." The words "web" and "metrics" were combined to form the term "webometrics." Metrics is the mathematical theory of measurement, and Web is the abbreviation for the World Wide Web. Webometrics was described as "the study of the quantitative aspects of the construction and use of information resources, structures, and technologies on the web drawing on bibliometrics and infometrics approaches" by Bjerneborn and Ingwersen in 2004^[10,11].

Material and Methods

We have selected search engine google for data collection because of its popularity, coverage and reliability. The list of NIRF ranking top 10 university and analysing data and collecting data websites had been extracted though the following:

- The National Institute Ranking Framework (NIRF) Website, Ministry of Education (MoE), Government of India. (<https://www.nirfindia.org/2023/Ranking.html>)

- All the data of five parameters for ranking through by NIRF.
- The tool use for this study is smallseotool, semrush and online SEO checker etc.
- Other tools using this study is gtmetrics, page speed insights etc.
- It's find out domain age, page speed, domain authority, page authority and total, internal and external links of websites.

A Study of NIRF India Rankings 2023 University: -

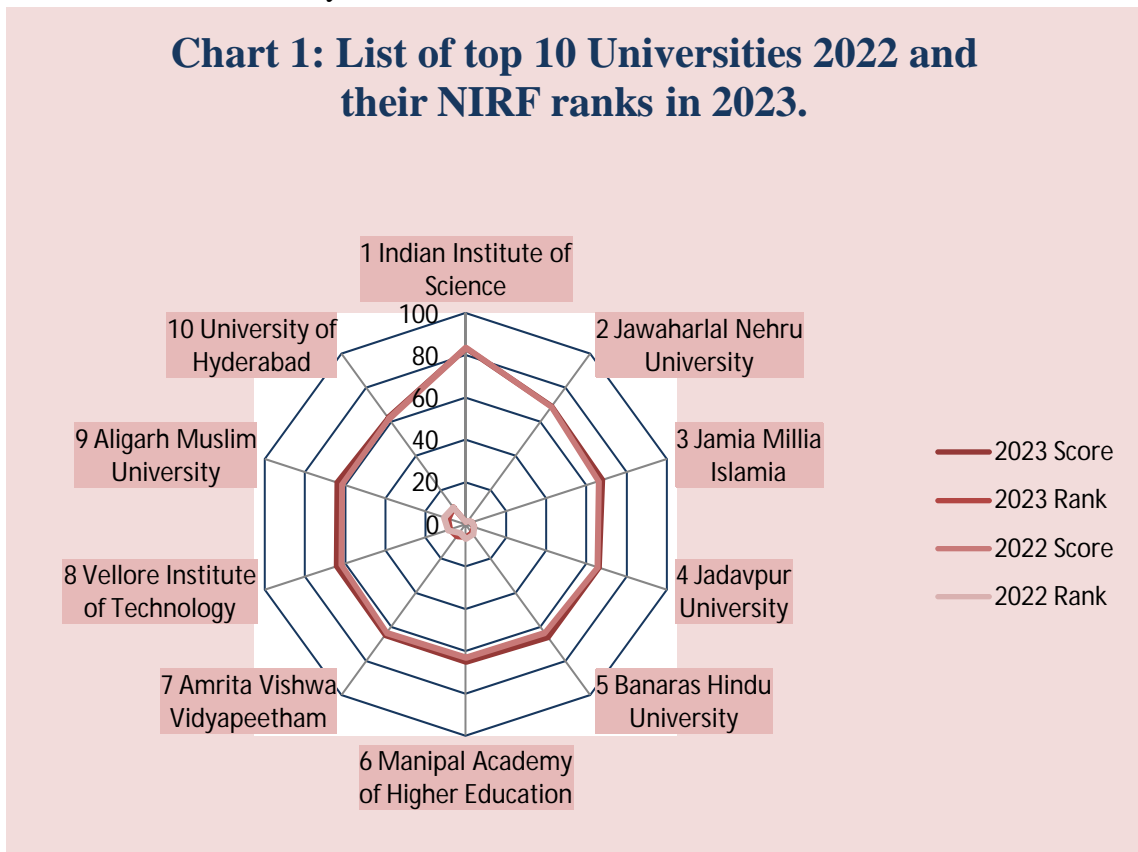
Table 1 List of top 10 Universities 2022 and their NIRF ranks in 2023.

Sr. No.	Name of University	States	2023		2022	
			Score	Rank	Score	Rank
1	Indian Institute of Science	Karnataka	83.16	1	83.57	1
2	Jawaharlal Nehru University	Delhi	68.92	2	68.47	2
3	Jamia Millia Islamia	Delhi	67.73	3	65.91	3
4	Jadavpur University	West Bengal	66.07	4	65.37	4
5	Banaras Hindu University	Uttar Pradesh	65.85	5	63.20	6
6	Manipal Academy of Higher Education	Karnataka	64.98	6	62.84	7
7	Amrita Vishwa Vidyapeetham	Tamil Nadu	64.67	7	63.40	5
8	Vellore Institute of Technology	Tamil Nadu	64.33	8	61.77	9
9	Aligarh Muslim University	Uttar Pradesh	63.88	9	61.43	11
10	University of Hyderabad	Telangana	62.09	10	61.71	10

The **table 1** provides a list of the top 10 universities in India for the year 2022 and their corresponding ranks in the National Institutional Ranking Framework (NIRF) for 2023. The Indian Institute of Science, located in Karnataka, secured the first position in both years with scores of 83.57 in 2022 and 83.16 in 2023. Jawaharlal Nehru University in Delhi

maintained its second position with scores of 68.47 in 2022 and 68.92 in 2023. Jamia Millia Islamia, Jadavpur University, and Banaras Hindu University ranked third, fourth, and fifth, respectively, in 2023. The table also indicates changes in rankings between the two years, reflecting the performance of the universities.

Chart 1: List of top 10 Universities 2022 and their NIRF ranks in 2023.



Peer Perception: -

• Academic Peers and Employers

Table 2 NIRF Ranking Parameter Analysis

Sr. No.	Top 10 University	Teaching, Learning & Resources (TLR)	Research and Professional Practice (RPC)	Graduation Outcomes (GO)	Outreach and Inclusivity(OI)	Perception (PR)
1	Indian Institute of Science	82.43	88.45	80.57	59.23	98.56
2	Jawaharlal Nehru University	73.55	46.56	94.89	73.64	65.51
3	Jamia Millia Islamia	69.38	49.83	93.85	83.41	48.48
4	Jadavpur University	67.63	53.66	90.61	56.79	58.76

5	Banaras Hindu University	72.77	49.18	99.64	61.50	31.80
6	Manipal Academy of Higher Education	72.87	54.02	77.97	66.10	47.08
7	Amrita Vishwa Vidyapeetham	73.39	50.35	73.93	72.47	55.00
8	Vellore Institute of Technology	55.66	63.59	80.43	62.55	61.99
9	Aligarh Muslim University	68.87	46.88	94.55	60.04	42.48
10	University of Hyderabad	70.46	44.54	83.27	66.58	42.78

Table 2 presents an analysis of the NIRF ranking parameters for the top 10 universities in India. The table highlights five key parameters: Teaching, Learning & Resources (TLR), Research and Professional Practice (RPC), Graduation Outcomes (GO), Outreach and Inclusivity (OI), and Perception (PR). The Indian Institute of Science tops the list with high scores across all parameters, particularly excelling in Perception (PR) with a score of 98.56. Jawaharlal Nehru University ranks

second, displaying strength in Graduation Outcomes (GO) and Teaching, Learning & Resources (TLR). Jamia Millia Islamia, Jadavpur University, and Banaras Hindu University secure the third, fourth, and fifth positions, respectively, each demonstrating varying strengths across the parameters. The table provides an insightful overview of the universities' performance in these key areas, enabling comparisons and assessments of their overall rankings.

Data Analysis and Interpretations

Data analysis and interpretation is the process of assigning meaning to the collected information and formative the conclusions, significance, and implications of the findings. The steps involved in data analysis are a function of the type of

information collected; however, returning to the purpose of the assessment and the assessment questions will provide a structure for the organization of the data and a focus for the analysis.

List of Universities and their websites addresses & domain registration date: -

Table 3 List of NIRF ranking 2023 top 10 universities and their websites address & domain registration date.

Sr. No .	Name of Universities	Abbreviation	Website Address	City	Domain Registration Date
1	Indian Institute of Science	IISc	https://iisc.ac.in/	Bangalore, Karnataka	05-08-2015
2	Jawaharlal Nehru University	JNU	https://www.jnu.ac.in/	New Delhi	28-02-2004
3	Jamia Millia Islamia	JMI	https://www.jmi.ac.in/	New Delhi	21-12-2002
4	Jadavpur University	JU	http://www.jaduniv.edu.in/	Jadavpur Kolkata	30-03-2010

5	Banaras Hindu University	BHU	https://www.bhu.ac.in/	Varanasi	31-07-2003
6	Manipal Academy of Higher Education	MAHE	https://manipal.edu/mu.html	Karnataka	27-09-1999
7	Amrita Vishwa Vidyapeetham	AVV	https://amrita.edu/	Coimbatore Tamil Nādu	14-8-1998
8	Vellore Institute of Technology	VIT	http://www.vit.ac.in/	Vellore TamilNadu	14-06-2011
9	Aligarh Muslim University	AMU	https://www.amu.ac.in/	Aligarh, UP	31-10-2003
10	University of Hyderabad	UOH	https://uohyd.ac.in/	Hyderabad	02-06-2011

Table 3 provides a comprehensive list of universities along with their website addresses and domain registration dates. The table includes the name of the universities, their abbreviations, website addresses, city locations, and the dates when their domains were registered. Each university's website serves as a platform for information dissemination, academic resources, and connectivity with the university community. The table covers prominent institutions such as the Indian Institute of Science (IISc), Jawaharlal

Nehru University (JNU), Jamia Millia Islamia (JMI), Jadavpur University (JU), Banaras Hindu University (BHU), Manipal Academy of Higher Education (MAHE), Amrita Vishwa Vidyapeetham (AVV), Vellore Institute of Technology (VIT), Aligarh Muslim University (AMU), and the University of Hyderabad (UOH). By providing their website addresses and domain registration dates, the table facilitates access to further information about each university and their online presence.

Universities Websites Domain Extensions

Table 4 University Websites Domain Extensions

Sr.No.	Domain Extensions	No. of Universities	Percentage %
1	.ac.in	7	70%
2	.edu.in	3	30%

Figure 1 University Websites Domain Extensions

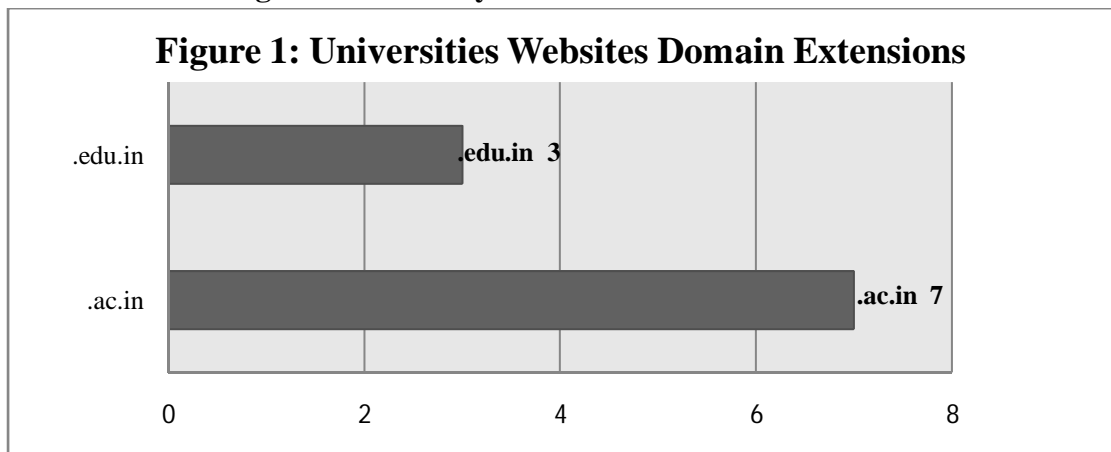


Table 4 and figure 1 highlights the domain extensions used by the university websites listed. It presents two domain extensions: ".ac.in" and ".edu.in." The ".ac.in" extension is utilized by seven universities, representing 70% of the total, while the ".edu.in" extension is used by three universities, accounting for 30% of the total. Domain extensions play a

significant role in identifying the nature and purpose of a website, with ".ac.in" commonly associated with academic institutions in India and ".edu.in" also being used by educational organizations. This table provides a quick overview of the distribution and prevalence of these domain extensions among the universities listed.

Domain and Page Authority of Institutes websites

Table 5 Domain and Page Authority of Institutes websites

Sr. No.	Name of Universities	Domain Authority	Page Authority	Total Back links	Quality Back links
1	Indian Institute of Science	63.00	56.00	511k	487k
2	Jawaharlal Nehru University	60.00	60.00	50k	33k
3	Jamia Millia Islamia	51.00	56.00	166k	18k
4	Jadavpur University	43.00	54.00	76k	73k
5	Banaras Hindu University	52.00	58.00	59k	73k
6	Manipal Academy of Higher Education	57.00	54.00	21k	15k
7	Amrita Vishwa Vidyapeetham	55.00	58.00	1968k	1888k
8	Vellore Institute of Technology	51.00	55.00	570k	540k
9	Aligarh Muslim University	54.00	57.00	110k	48k
10	University of Hyderabad	47.00	53.00	13k	2k

Table 5 provides information on the domain authority, page authority, total back links, and quality back links of the listed university websites. Domain authority measures the overall strength and credibility of a website's domain, while page authority assesses the strength and relevance of individual pages. The table presents the domain authority, page authority, total back links, and quality back links for each university. Indian Institute of Science has the highest domain authority of

63.00, followed closely by Jawaharlal Nehru University with a domain authority of 60.00. Amrita Vishwa Vidyapeetham has the highest number of total back links and quality back links at 1968k and 1888k respectively, indicating a significant level of online presence and referral links. The table provides insights into the online authority and link profiles of the universities' websites, indicating their overall online reputation and visibility.

Page Speed of Universities websites

Table 6 Page Speed of Universities websites

Sr. No.	Top 10 university	Page speed		Mobile responsive
		Mobile	Desktop	
1	Indian Institute of Science	37	47	Yes
2	Jawaharlal Nehru University	40	45	Yes
3	Jamia Millia Islamia	53	85	Yes
4	Jadavpur University	85	89	Yes
5	Banaras Hindu University	75	34	Yes
6	Manipal Academy of Higher Education	52	55	Yes
7	Amrita Vishwa Vidyapeetham	-	52	Yes
8	Vellore Institute of Technology	48	61	Yes
9	Aligarh Muslim University	8	35	Yes
10	University of Hyderabad	56	92	Yes
t – statics		0.017		
P value		0.360052		

t- Test is a small sample test and it was developed by **William Gosset in 1908**. It is also called **Welch t-test** Analysing *t*-statics is (0.017) and the *p*-value is (0.360052). It is the result is significant at $p < .05$. The calculated *t*-value is 0.017 the table value at an alpha level of .05(5%) and the *p*-value is greater than α , i.e. 0.05 at 5% level of

significance, it is the statistical verification to concede the null hypothesis. It concludes that there is no significant difference in the speed of the website whether it is used on mobile or desktop.

Universities Website and their Alexa ranks (Global and India ranks):-

Table 7 Universities Website their Alexa and Global ranks

Sr. No.	Name of Universities	Alexa Rank (Global)	Global Rank
1	Indian Institute of Science	29989	6
2	Jawaharlal Nehru University	22508	2
3	Jamia Millia Islamia	36786	8
4	Jadavpur University	43051	9
5	Banaras Hindu University	24382	4
6	Manipal Academy of Higher Education	24878	5
7	Amrita Vishwa Vidyapeetham	23722	3
8	Vellore Institute of Technology	11174	1
9	Aligarh Muslim University	65601	10
10	University of Hyderabad	34056	7

Table 7 provides information on the website rankings of the listed universities based on their Alexa Rank (Global). The Alexa Rank is a measure of a website's popularity and traffic, with lower ranks indicating higher global visibility. The table includes the names of the universities along with their corresponding Alexa Rank and Global Rank. Vellore Institute of Technology secures the top position with an Alexa Rank of 11174 and a Global Rank of 1, indicating a high level of global

popularity and traffic to its website. Jawaharlal Nehru University follows closely in the second position, while Jamia Millia Islamia, Jadavpur University, and Manipal Academy of Higher Education occupy the subsequent ranks. The table allows for a quick comparison of the universities' online presence and provides insights into their relative global popularity based on their website rankings.



Web Impact Factor and Link Analysis of Institutes Websites

Table 8 Shows the web impact factor and link analysis of top 10 university websites of India

Sr. No.	Name of Universities	Web page	Total Links	Internal Links	External Links	SWIF	IWIF	EWIF
1	Indian Institute of Science	303000	309	261	48	0.001103	0.000932	0.000171
2	Jawaharlal Nehru University	53000	29	27	2	0.000547	0.000509	0.000037
3	Jamia Millia Islamia	130000	720	692	28	0.005538	0.005323	0.000215
4	Jadavpur	489000	121	101	20	0.000247	0.000206	0.000040

	University							
5	Banaras Hindu University	3000	401	389	12	0.133666	0.129666	0.004
6	Manipal Academy of Higher Education	145000	211	182	29	0.001455	0.001255	0.0002
7	Amrita Vishwa Vidyapeetham	40000	337	218	19	0.00842	0.0054	0.000475
8	Vellore Institute of Technology	56000	245	209	36	0.0043	0.003732	0.000642
9	Aligarh Muslim University	8000	168	104	64	0.021	0.013	0.008
10	University of Hyderabad	104000	224	195	29	0.0021538	0.001875	0.000278

Table 8 presents the web impact factor (WIF) and link analysis for the top 10 university websites in India. The table includes information on total links, internal links, external links, as well as the WIF values: Site Web Impact Factor (SWIF), Inbound Web Impact Factor (IWIF), and Outbound Web Impact Factor (EWIF). Among the universities, the Indian Institute of Science has the highest number of total links with 303,000, followed by Jadavpur University with 489,000. Banaras Hindu University has the lowest number of total links at 3,000. Internal links are higher than external links for most universities,

Results and Discussion

1. Indian Institute of Science (IISc) in Karnataka secured the first position in both 2022 and 2023 in the National Institutional Ranking Framework (NIRF) with consistently high scores.
2. Jawaharlal Nehru University (JNU) in Delhi maintained its second position in both years, displaying strength in Graduation Outcomes (GO) and Teaching, Learning & Resources (TLR).
3. Jamia Millia Islamia (JMI), Jadavpur University (JU), and Banaras Hindu University (BHU) secured the third,

indicating a greater emphasis on linking within their own websites. In terms of the web impact factor; Jamia Millia Islamia has the highest SWIF at 0.005538, followed by Aligarh Muslim University with 0.021. These values suggest a relatively high impact of these universities' websites within the web ecosystem. Banaras Hindu University has the highest IWIF at 0.133666, indicating a strong influence in terms of inbound links. The University of Hyderabad has the highest EWIF at 0.008, reflecting its significant outbound linking activity.

- fourth, and fifth positions, respectively, in 2023.
4. The analysis of NIRF ranking parameters showed that Indian Institute of Science excelled across all parameters, particularly in Perception (PR).
5. Each university's website serves as a platform for information dissemination, academic resources, and connectivity with the university community.
6. The domain extensions used by the university websites listed were mainly ".ac.in" (70%) and ".edu.in" (30%).

7. Domain authority varied among the universities, with Indian Institute of Science and Jawaharlal Nehru University having the highest domain authorities.
8. Amrita Vishwa Vidyapeetham had the highest number of total back links and quality back links, indicating a significant online presence and referral links.
9. Vellore Institute of Technology had the highest Alexa Rank (Global), indicating a high level of global popularity and traffic to its website.
10. The web impact factor analysis revealed varying total links, internal links, and external links among the universities.
11. Jamia Millia Islamia had the highest Site Web Impact Factor (SWIF), indicating a relatively high impact of its website within the web ecosystem.
12. Banaras Hindu University had the highest Inbound Web Impact Factor (IWIF), indicating a strong influence in terms of inbound links.
13. The University of Hyderabad had the highest Outbound Web Impact Factor (EWIF), reflecting its significant outbound linking activity.

The discussion of the findings revolves around the performance, online presence, and impact of the top university websites in India^[4,5]. It highlights the significance of rankings, website characteristics, and web ecosystem influence in assessing the universities' overall reputation and visibility. The first notable finding is the consistent top performance of the Indian Institute of Science (IISc) in both years of the National Institutional Ranking Framework (NIRF). This indicates the institution's sustained excellence in various parameters evaluated by the ranking system. Jawaharlal Nehru University (JNU) also maintained its position as the second-best university, demonstrating its strengths in Graduation Outcomes and Teaching, Learning & Resources. The analysis of NIRF ranking parameters offers deeper insights into the universities' performance across different domains. Indian Institute of Science stands out with high scores across all parameters, particularly excelling in Perception. This suggests that the institution enjoys a strong reputation and positive perception among stakeholders, including academicians, researchers, and industry professionals.

JNU, on the other hand, showcases strengths in Graduation Outcomes and Teaching, Learning & Resources, highlighting its commitment to providing quality education and academic resources.

The discussion then shifts to the online presence of the universities through their websites. Each university's website serves as a vital platform for information dissemination, academic resources, and community connectivity. The inclusion of website addresses and domain registration dates in Table 3 enables easy access to further information about each university. The analysis of domain extensions used by the university websites reveals that ".ac.in" is the dominant extension, commonly associated with academic institutions in India. The presence of ".edu.in" extensions also reflects the usage by educational organizations. This information helps identify the nature and purpose of the websites and provides a quick overview of the prevalence of these domain extensions among the universities listed.

The examination of domain authority, page authority, total back links, and quality back links provides insights into the online reputation and visibility of

the universities' websites. Indian Institute of Science and Jawaharlal Nehru University emerge as leaders in domain authority, reflecting the strength and credibility of their website domains. Amrita Vishwa Vidyapeetham stands out with the highest number of total back links and quality back links, indicating a significant level of online presence and referral links. Website rankings based on Alexa Rank (Global) further contribute to the understanding of the universities' online presence. Vellore Institute of Technology secures the top position, suggesting a high level of global popularity and traffic to its website. Jawaharlal Nehru University follows closely, indicating its strong online visibility. These rankings allow for quick comparisons and provide insights into the relative global popularity of the universities based on their website rankings.

Lastly, the web impact factor analysis sheds light on the linking patterns and influence of the university websites within the web ecosystem. The varying

Conclusion

In conclusion, the analysis of the top university websites in India provides valuable insights into their performance, online presence, and impact. The findings highlight the consistent top performance of the Indian Institute of Science (IISc) and Jawaharlal Nehru University (JNU), showcasing their excellence in the National Institutional Ranking Framework (NIRF) across different parameters. The examination of NIRF ranking parameters demonstrates the strengths of each university, with IISc excelling across all parameters and JNU displaying notable performance in Graduation Outcomes and Teaching, Learning & Resources. These rankings reflect the universities' commitment to providing quality education, research, and resources to their students. The analysis of domain extensions reveals the prevalence of

number of total links, internal links, and external links among the universities indicates different linking strategies. Jamia Millia Islamia displays the highest Site Web Impact Factor, suggesting a relatively high impact of its website within the web ecosystem. Banaras Hindu University excels in Inbound Web Impact Factor, indicating a strong influence through inbound links. The University of Hyderabad showcases the highest Outbound Web Impact Factor, reflecting its significant outbound linking activity. Overall, the discussion highlights the multifaceted nature of evaluating universities in the digital age. Rankings, website characteristics, online presence, and web ecosystem influence all contribute to assessing the universities' performance and reputation. The findings provide valuable insights for stakeholders, prospective students, and researchers interested in understanding the top university websites in India and their impact on the wider academic community.

".ac.in" and ".edu.in" extensions among the university websites, highlighting their academic and educational nature. This information helps identify the purpose and nature of the websites, facilitating easy access to further information about each university.

The assessment of domain authority, back links, and online visibility provides insights into the reputation and visibility of the university websites. IISc and JNU emerge as leaders in domain authority, while Amrita Vishwa Vidyapeetham stands out with a significant online presence and referral links. The website rankings based on Alexa Rank (Global) indicate the global popularity and traffic to the university websites, with Vellore Institute of Technology securing the top position. The analysis of web impact factors offers insights

into the linking patterns and influence of the university websites within the web ecosystem. Jamia Millia Islamia, Banaras Hindu University, and the University of

Hyderabad exhibit varying strengths in different impact factors, reflecting their impact through website presence and linking strategies.

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