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Webometrics Ranking (WR) of World Universities and National Institutional Ranking Framework (NIRF): A Comparative Study

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Abstract

Ranking institutions of a country, continent or the entire world is not an easy task. However, there are certain agencies that regularly undertake such an exercise. In this paper we have considered Webometrics Ranking (WR) and National Institutional Ranking Framework (NIRF) specific to India for our study. Various parameters have been compared citing their features. The methodology used by these rankings have been discussed such as WR depends on web presence and categorises institutions on the basis of Presence rank, Impact rank, Openness rank and Excellence rank whereas NIRF categorises on the basis of Graduation Outcomes, Learning Teaching & Resources, Outreach of students, Research and Professional Practice and Awareness. Indian Institute of Technology Bombay, Maharashtra tops the list in Webometrics Rankings whereas Indian Institute of Technology Madras, Chennai tops the list in NIRF rankings. An interpretation of these rankings along with their limitations have been given finally some conclusions have been drawn on the basis of the data.

Keywords: Excellence Rank, National Institutional Ranking Framework, Parameters, Rankings, Webometrics Ranking, Web Presence

1. Introduction

The distinctive aim of the Ranking is to encourage academic web presence. To attain this objective, publication of rankings is a powerful tool for arousing a change among the academia, which in turn enhances the commitment of scholars for achieving long term goals. The primary objective of ranking higher educational institutes is not only to evaluate their websites on the basis of design, usage, and popularity of their contents according to the number of visits received but also to focus on several other factors that lead to overall growth and development of the institute.

The "Webometrics Ranking of World Universities" is an initiative of the Cybermetrics Lab, a research group based on the Consjo Superior de Investigaciones Cientificas (CSIC), the largest public research body in Spain. The Ranking Web or Webometrics is the largest exercise in Academic Ranking of Higher Educational Institutions. Since 2004 every 6 months an independent, objective, free, open scientific exercise is performed by the Cybermetrics Lab for providing reliable, multidimensional, updated and useful information about universities from all over the world based on their web presence and impact.

The National Institutional Ranking Framework (NIRF) was approved by the Ministry of Human Resource and Development (MHRD), Government of India and launched on 29th September 2015.

2. Literature Review

Aguillo and others (2010) compared university rankings published by QS for the Times Higher Education Supplement, the Shanghai Jiao Tong University, the Higher Education and Accreditation Council of Taiwan and

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ranking by the Cybermetric Lab at CSIC. They compared the rankings based on certain similarity measures. They found out that reasonable similarities existed between the rankings even though separate methodologies were applied. The biggest difference was seen between rankings provided by the QS-Times Higher Education Supplement and the Ranking Web of the Webometric Lab. The highest similarities were observed between Taiwanese and Leiden rankings. On the whole similarities increased when the comparison was limited to European Universities.

Ruiz and others (2018) proposed a methodology to evaluate university performance. They analysed three basic dimensions, viz., research, teaching and technology transfer. They relied on double reference point method to build these composite indicators. An advantage of this technique is that the results can be easily interpreted in terms of university performance with respect to these levels. Hence this method was used to evaluate the performance of public universities within the Spanish region for the year 2008. The results show that the public universities in Spain were better in teaching block compared to research and technology transfer block. However, this application assisted in strategic decision making to discover field of improvements.

3. Objectives

The objectives of this paper are to:

1. differentiate WR and NIRF ranking on the basis of certain parameters.
2. highlight the various methodologies used by WR and NIRF for ranking higher educational institutions.
3. provide explanations on the parameters used in WR and NIRF.
4. explain certain restrictions on which rankings of higher educational institutions can be biased.

4. Methodology

The methodology applied by WR and NIRF have been briefly described.

4.1 Webometrics Ranking (WR)

Webometrics Ranking uses link analysis for evaluating higher educational institutions as it is a much better tool in comparison to global surveys as it not only includes bibliographic citations but also involves third parties involved in university activities.

Research output is also considered to be a major factor involved in Webometrics Ranking, which not only includes formal publications such as electronic-journals and repositories but also involves informal scholarly communication. Publication on the web is cheaper, thus it also helps in maintaining higher quality standards of peer review processes. It is easier to reach much larger audiences thus providing scientific knowledge access to researchers as well as institutions in developing countries. It also includes third parties such as cultural stakeholders, economic, industrial and political leaders belonging to the local community. Finally, it is expected to stimulate web presence of institutions and scholars to make visible their intellectual activities.

4.2 National Institutional Ranking Framework (NIRF)

NIRF rankings are based on certain parameters such as:

1. *Teaching, Learning & Resources*: Here there are certain sub-factors, such as the strength of students pursuing doctoral degree and post-doctoral research for which appropriate weight is given. Then the student-faculty ratio is considered focussing on the proportion of permanent faculty. Again, the number of faculty members with PhD degree and years of experience are taken into account. Finally, the amount of money allocated by the institute is compared with the amount utilised and on what basis.
2. *Research and Professional Practice*: Here the focus is on the number of publications contributed by the faculty and research scholars in addition to their quality. The number of patent applications filed, granted and licensed is checked. Finally, the number of projects taken up by the faculty and various executive development programs in which they are involved are noted.
3. *Graduation Outcomes*: Here the percentage of students who received placement through the university and their salary package are considered. Then the number of undergraduate students who have gone for higher studies in the same or different universities with better ranking is seen. Again, the number of students receiving PhD every year is also taken into consideration.
4. *Outreach of students*: In this parameter the number of foreign students admitted is checked. The ratio of women candidates in comparison to male candidates is considered. Again, the number of disabled students enrolled with the need for providing appropriate fa-

cilities so that they feel comfortable in the campus is considered.

5. *Awareness*: Here the investments in research in various discipline is checked to see if the investments are need oriented. The employers - teaching or non-teaching - must be keen to contribute positively to the overall development of the institution. Again, the perception of the public - what they have to say about this institution - is considered. Finally, the institute must be competitive in nature and ready to improve in all aspects.

5. Analysis

Table 1. Comparison between WR vs. NIRF based on certain factors

Sl. No.	Parameters	Webometrics Ranking (WR)	NIRF
1.	Launched on (year)	2004	2015
2.	Initiative taken by	Cybermetrics Lab	MHRD (Govt. of India)
3.	Country of Origin	Spain	India
4.	Area of coverage	World	India
5.	Methodology	Use web-based data extracted from commercial search engines	Use data based on certain defined parameters
6.	Publication frequency	Half yearly	Annual
7.	Current edition (released date)	Jan 2019	April 2019
8.	Total institutions ranked	3928	3127
9.	Web Address	http://www.webometrics.info/en	https://www.nirfindia.org
10.	Search interface	Present (advanced search)	Present (simple search)
11.	Copyright		Copyright © 2017, NIRF, MHRD
12.	Bilingual support	yes	no
13.	Language (s)	English & Spanish	English
14.	RSS Feeds	yes	no
15.	Real time search	yes	no
16.	Technical support Email	yes	yes
17.	Technical support Phone	no	yes

Source: secondary data

Table 2. Institutional rankings between WR vs. NIRF for the year 2019 (India only)

Ranking	Webometrics Ranking (WR)	NIRF
1.	Indian Institute of Technology Bombay Maharashtra	Indian Institute of Technology Madras, Chennai
2.	Indian Institute of Technology Madras, Chennai	Indian Institute of Science, Bangalore
3.	Indian Institute of Technology Kanpur,	Indian Institute of Technology Delhi, New Delhi
4.	Indian Institute of Technology Delhi, New Delhi	Indian Institute of Technology Bombay, Maharashtra
5.	Indian Institute of Science Bangalore, Karnataka	Indian Institute of Technology Kharagpur, West Bengal
6.	University of Delhi, New Delhi	Indian Institute of Technology Kanpur, Uttar Pradesh
7.	Indian Institute of Technology Kharagpur, West Bengal	Jawaharlal Nehru University, New Delhi
8.	Tata Institute of Fundamental Research	Indian Institute of Technology Roorkee, Uttarakhand

9.	Indian Institute of Technology Roorkee, Uttarakhand	Indian Institute of Technology Guwahati, Assam
10.	Anna University, Tamil Nadu	Banaras Hindu University, Uttar Pradesh

Source: secondary data

6. Interpretation

6.1 Comparison between WR *vs.* NIRF

WR has been in existence for long and was initiated eleven years before NIRF. WR is an initiative of a research laboratory whereas NIRF is a government initiative. WR relies mostly on web data whereas NIRF relies on various other factors as well. The search interface of WR provides advanced search features whereas NIRF provides only for simple search allowing search within that page only. WR is a creative commons platform, while NIRF is copyrighted by NIRF, MHRD. WR provides RSS Feeds feature while it is absent in NIRF. Another feature is the Real Time Search which means on demand data extraction and analysis producing a real time picture is supported by WR which is lacking in NIRF (Table 1).

6.2 Institutional Rankings by WR *vs.* NIRF

WR has a global coverage and NIRF covers only institutions in India. Therefore, we have considered the rankings only of Indian institutions for purposes of comparison. The top 10 institutions ranked by WR and NIRF are shown in the Table 2. Since the parameters adopted for ranking vary, there are differences between the two ranked lists. WR relies mostly on web such as the Presence rank, Impact rank, Openness rank and Excellence rank to compute the overall rank of an institution. However, NIRF basically focuses on the factors mentioned earlier to compute the rank of an institution. The scores obtained by various institutions on ranking from 1 to 10 are Indian Institute of Technology Madras, Chennai (83.88), Indian Institute of Science, Bangalore (82.28), Indian Institute of Technology Delhi, New Delhi (78.69), Indian Institute of Technology Bombay, Maharashtra (78.62), Indian Institute of Technology Kharagpur, West Bengal (74.31), Indian Institute of Technology Kanpur, Uttar Pradesh (69.07), Jawaharlal Nehru University, New Delhi (68.68), Indian Institute of Technology Roorkee, Uttarakhand (67.68), Indian Institute of Technology Guwahati, Assam (65.47), Banaras Hindu University, Uttar Pradesh (64.55).

7. Limitations of the Two Ranking Systems

1. *Mission of University*: Quantifying teaching performance is difficult and often considered as not viable. Evaluation of an institution based on surveys, ratios of students/scholars, employment results and variables other than quality of teaching should be avoided in ranking. NIRF ranks institutions via Teaching, Learning and Resources, Research and Professional Practice, Graduation Outcomes, Outreach, Inclusivity and Perception. On the other hand Webometrics ranks institutions on the basis of web presence. While it may not be perfect, the future clearly lies in adopting web-based data and institutions and ranking agencies need to accept this fact.
2. *Big numbers*: Quality of the data is not only dependent on the source used, but also on the numbers involved. This is the case with citation data, which is probably the most authoritative bibliometric tool that provides statistics. The link data on the other hand provides a much larger number. The web indicators provide an appropriate matter for displaying patterns and relating numbers obtained by institutions.
3. *Coverage-dependent*: There is certainly no debate about the fact that popular rankings are dependent on size. However, size does not mean only the total number of students, but NIRF also relies on resources such as the funds received, etc.
4. *Misleading naming practices*: Varying forms of name of the same institution used by different authors could affect web-based ranking process.

8. Conclusion

Acceptable ranking is possible if the web presence as well as several others parameters are taken into consideration to provide a reliable mirror of the university. However, in the 21st century the Web is has already proved to be the most widely used communication tool for scholarly publication. Distance learning also depends on the web. However, it is important to ensure that rankings are justified and take into consideration all relevant factors.

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