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Contributions of National Institutional Ranking Framework (NIRF) ranked IIT's in ResearchGate and Databaeses: A study

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Contributions of National Institutional Ranking Framework (NIRF) ranked IIT's in ResearchGate and Databaeses: A study

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Abstract

This paper examines the publications of IITs, which have been available and indexed in ResearchGate, Web of Science, Scopus and Indian Citation Index databases. The data for the study have been taken out from two websites there are National Institutional Ranking Framework (NIRF) and ResearchGate. A total number of 47,380 publications have been indexed in Web of Science, Scopus and Indian Citation Index databases and 46,729 publications are available in the ResearchGate. The study found that more number of publication are available in ResearchGate.

Keywords: NIRF, Web of Science, Scopus, Indian Citation Index, ResearchGate, IITs, Institutional Ranking.

1. Introduction

A compact definition of ranking is that it is an established approach, with corresponding methodology and procedures, for displaying the comparative standing of whole institutions or of certain domains of their performance. The majority of 'rankings' and all 'league tables' attempt to reflect the quality of institutions and/or study programme in an ascendancy of the types and domains for which the listing is being done

2. National Institutional Ranking Framework (NIRF)

The National Institutional Ranking Framework (NIRF) was approved by the MHRD and launched by Honorable Minister of Human Resource Development on 29th September 2015.This framework outlines a methodology to rank institutions across the country. The methodology draws from the overall recommendations broad understanding arrived at by a Core Committee set up by MHRD, to identify the broad parameters for ranking various universities and institutions. The parameters broadly cover "Teaching, Learning and Resources," "Research and Professional Practices," "Graduation Outcomes," "Outreach and Inclusivity," and "Perception".

3. ResearchGate

ResearchGate was founded in 2008 by IjadMadisch, who aims to transform the way researchers are doing their research. Started in Boston and now based in Berlin, Germany, and backed by several U.S.venture capital firms, ResearchGate now has more than +14 million members, with an average of seven researchers signing upper minute (ResearchGate, 2015). The success of ResearchGate has enabled researchers to disseminate their ideas and share their publications free of charge to facilitate collaboration among researchers from all over the world. Through ResearchGate, members' can use the platform to maintain their own publications, ask and answer research-related questions, and follow their researchers to receive their publication updates.

4. Databases

The data pertaining to publications of IIT institutions in four databases such as Web of Science, Scopus, Indian Citation Index and ResearchGate under various categories there are publications, citations, reads and Top 25% highly cited papers have been taken.

5. Review of Literature

Moed, H. F. (2017)[1] described the users insight into the value and limits of world university rankings, a comparative analysis is conducted of five ranking systems: ARWU, Leiden, THE, QS and U-Multi rank. It links these systems with one another at the level of individual institutions, and analyses the overlap in institutional coverage, geographical coverage, how indicators are calculated from raw data, the skewness of indicator distributions, and statistical

correlations between indicators. Four secondary analyses are presented investigating national academic systems and selected pairs of indicators. It is argued that current systems are still one-dimensional in the sense that they provide finalized, seemingly unrelated indicator values rather than offering a dataset and tools to observe patterns in multi-faceted data. By systematically comparing different systems, more insight is provided into how their institutional coverage, rating methods, the selection of indicators and their normalizations influence the ranking positions of given institutions. Sivakumaren, K. S. (2017)[2] examined the publications of Indian Institute of Management (IIMs), which have been indexed in Web of Science, Scopus and Indian Citation Index databases**.** The data for the study have been extracted from the website of National Institutional Ranking Framework (NIRF) under publications. A total of 939 publications have been indexed in these databases and over all 1996 citations have been received for its publications. Among 939 publications, 203 papers have been highly cited by others. It is found from the results that more number of publications have indexed in Scopus (65.50%), it is followed by Web of Science(20.55%) and Indian Citation Index(13.95%).Generally, it is observed that old institutes have been produced a good number of publications than the institutes established in recent years. Muscanel, Muscanell, Utz & Utz (2017)[3] examined the usage and utility of ResearchGate (RG), which is a social networking site where scientists disseminate their work and build their reputations. The authors employed an online survey approach to target scientists who have an active RG account. The study found that most academics who have an RG account did not use it very heavily. Users did not perceive many benefits from using the site, and RG use was not related to career satisfaction or informational benefits, but was related to productivity and stress. Study also suggested that RG needs to increase user engagement. Yu, Wu, ALhalabi, Kao & Wu (2016)[4] focused on research, ResearchGate metrics and firstly compared with those that Research Excellence Framework (REF) and Quacquarelli Symonds (QS) World University Rankings to assess the quality of UK universities and global universities respectively. 300 ResearchGate members from the supply chain management field were selected. The study utilized correlation analysis to examine whether ResearchGate metrics demonstrate effectiveness on the researcher level in comparison with SciVal metrics. ResearchGate score can be an effective indicator for measuring individual researcher performance. Aithal, P.S., Shailashree, V.T., & Suresh Kumar, P.M (2016)[5] The institutions of higher education in India are in need of infusion of quality and clarity on the approach of building world-

class educational institutions in the Indian context and environment. Recently, the Ministry of Human Resource Development, Govt. of India has identified various criteria and parameters that have global appeal e.g. research output, research impact, learning environment, etc. This framework called National Institutional Ranking Framework. This paper has analyzed "National Institutional Ranking System" for higher educational institutions as a novel performance evaluation system using our recently developed analyzing framework called ABCD technique. Based on four constructs Advantages, Benefits, Constraints and Disadvantages, this system consider all determinant issues in key areas through analyzing the major issues and identifying the critical constituent elements. Mandhirasalam, M (2016)[6] ranking of Higher Education Institutions (HEIs) in the world is a common practice among many organizations across the globe. Unfortunately no Indian institutions figure in the top 200 of many global rankings. To encourage is in India to develop their ability to compete in the international level, the MHRD launched the 'National Institutional Ranking Framework (NIRF)' in 2015. This paper reports the salient features and various parameters of NIRF in brief and analyses the ranking positions of engineering institutions in Tamil Nadu in detail. This paper analyses only the rankings of engineering institutions among the five categories of institutions which are ranked separately in the 'NIRF India Rankings 2016'. Taylor, P., & Braddock, R. (2007)[7] described some of the theoretical and methodological issues underlying international university ranking systems and, in particular, their conceptual connection with the idea of excellence. It then turns to a critical examination of the two best-known international university ranking systems the Times Higher Education Supplement (THES) World University Rankings and the Shanghai Jiao Tong Academic Ranking of World Universities. It assessed the various criteria used by the two systems and argued that the Jiao Tong system, although far from perfect, is a better indicator of university excellence. Based on our assessments of these two systems, it suggested how an ideal international university ranking system might look, concluding with some comments on the uses of ranking systems. Clarke, M. (2005)[8] described two recent efforts to rank the quality of higher education institutions in Australia and New Zealand. After a brief discussion of goals, methods, and results, the author evaluated each ranking using the following questions: Does this methodological approach achieve its objective? Can other countries use the methodology by extension? What can we learn about a country's higher education system using this approach? The aim is to provide readers with a framework for thinking critically about

rankings, and about the role they might play in measuring and influencing higher education quality on a global scale.

6. Objectives

The following are the major objectives of this study

- To identify the NIRF ranking publications of Indian Institute of Technology that are available and indexed in ResearchGate,Web of Science, Scopus and Indian Citation Index databases.
- To find out the citations/reads received for the publications of Indian Institute of Technology.
- To examine the top 25% highly cited papers of the institutions.

7. Methodology

The data were collected from two websites there are NIRF and ResearchGate (https://www.nirfindia.org)[9] and (https://www.researchgate.net/)[10] during November 2017. The NIRF Institutions have been categorized in to fiver groups there are Universities, Management, Engineering, Colleges and Pharmacy. The study measured only the "Engineering" Institutes. There are 1007 institutes have been listed under "Engineering" domain. Out of 1007 institutes, 18 Indian institute of Technology alone have been taken up for this study. The data concerning to publications of these institutes in four databases such as Web of Science, Scopus, Indian Citation Index and ResearchGate under various categories there are publications, citations, reads and Top 25% highly cited papers have been take out and analyzed the simple calculation was used to arrive percentage using MS-Excel Sheet.

8. Data Analysis and Findings

Table 1 and Figure 1 shows that 46,729 (49.65%) publications of IITs were available in the "ResearchGate" and 24132 (25.64%) publications were indexed in "Web of Science" and 22629 (24.05%) publications were indexed in "Scopus". "Indian Citation Index" has indexed 619 (0.66%) publications of IITs. It is found that the more number of publications are available in "ResearchGate" website, which is followed by "Web of Science", "Scopus" and "Indian Citation Index".

Table 1

Publications of IITs

S. No.	Source	No. of Publications	%	No. of Citations & Reads	%	Top 25% Highly Cited Papers	%
1	Web of Science	24132	25.64	89010	29.12	4468	45.37
2	Scopus	22629	24.05	92203	30.16	5381	54.63
3	Indian Citation Index	619	0.66	35	0.01	0	0.00
4	ResearchGate	46,729	49.65	124,467	40.71	0.00	0.00
	Total	**94109**	**100**	**305715**	**100**	**9849**	**100**

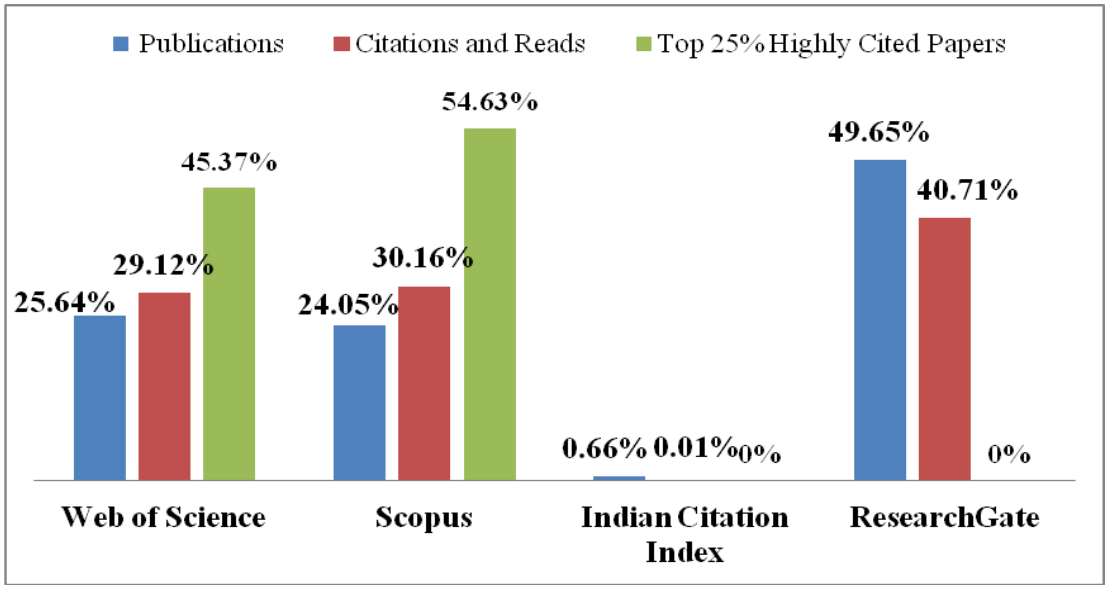

Figure: 1 Publications of IITs

8.1 Publications of IITs in Web of Science

The study has evaluated the publications of IITs, which have been indexed in the "Web of Science" database. The data were arranged and analyzed simple calculations method. Table 2 exposes that more number of publications of "IIT, Kharagpur" 3646 (15.11%) publications with 14353 (16.13%) citations and 730 (16.34%) highly cited papers have been indexed in WoS. It is followed by "IIT, Madras" 3205 (13.28%) publications with 10522 (11.82%) citations and 546 (12.22%) highly cited papers, "IIT, Bombay" 3186 (13.20%) publications with 10869 (12.21%) citations and 544 (12.18%) highly cited papers and "IIT, Delhi" 3168 (13.13%) publications with 13346 (14.99%) citations and 592 (13.25%) highly cited papers. The publications of remaining institutes were indexed less in numbers and it ranges from 148 (0.61%) to 2271 (10.14%).

Table 2

Publications of IITs in Web of Science

S. No.	Name of the Institutions	No. of Publications	%	No. of Citations	%	Top 25% Highly Cited Papers	%
1	IIT Madras	3205	13.28	10522	11.82	546	12.22
2	IIT Bombay	3186	13.20	10869	12.21	544	12.18
3	IIT Kharagpur	3646	15.11	14354	16.13	730	16.34
4	IIT Delhi	3168	13.13	13346	14.99	592	13.25
5	IIT Kanpur	2271	9.41	7591	8.53	399	8.93
6	IIT Roorkee	2446	10.14	10219	11.48	477	10.68
7	IIT Guwahati	1688	6.99	6010	6.75	304	6.80
8	IIT Hyderabad	634	2.63	2149	2.41	115	2.57
9	IIT Indore	400	1.66	1572	1.77	114	2.55
11	IIT Bhubaneswar	424	1.76	1780	2.00	82	1.84
12	IIT Patna	384	1.59	905	1.02	66	1.48
13	IIT Ropar	288	1.19	1528	1.72	76	1.70
14	IIT (Indian School of Mines)	964	3.99	3500	3.93	193	4.32
15	IIT Mandi	265	1.10	1063	1.19	54	1.21
16	IIT Gandhinagar	188	0.78	379	0.43	20	0.45
17	IIT (Banaras Hindu University), Varanasi	827	3.43	2975	3.34	140	3.13
18	IIT Jodhpur	148	0.61	248	0.28	16	0.36
	Total	**24132**	**100**	**89010**	**100**	**4468**	**100**

8.2 Publications of IITs in Scopus

The study has assessed the publications of IITs, which have been indexed in the "Scopus" database. It is found that 3376 (14.92%) publications of "IIT, Kharagpur with 14991 (16.26%) citations and 865 (16.08%) highly cited papers in Scopus database. It is followed by "IIT, Bombay" 3209 (14.18%) publications with 12435 (13.49%) citations and 694 (12.90%) highly cited papers, "IIT, Madras" 3191 (14.10%) publications with 10178 (11.04%) citations and 691 (12.84%) highly cited papers. The publications of remaining institutes were indexed less in numbers and it ranges from 94 (0.42%) to 2103 (9.29%).

Table 3

Publications of IITs in Scopus

S. No.	Name of the Institutions	No. of Publications	%	No. of Citations	%	Top 25% Highly Cited Papers	%
1	IIT Madras	3191	14.10	10178	11.04	691	12.84
2	IIT Bombay	3209	14.18	12435	13.49	694	12.90
3	IIT Kharagpur	3376	14.92	14991	16.26	865	16.08
4	IIT Delhi	3075	13.59	13170	14.28	752	13.98
5	IIT Kanpur	2103	9.29	8229	8.92	492	9.14
6	IIT Roorkee	2434	10.76	11978	12.99	630	11.71
7	IIT Guwahati	1668	7.37	6637	7.20	374	6.95
8	IIT Hyderabad	542	2.40	1793	1.94	121	2.25
9	IIT Indore	370	1.64	2014	2.18	119	2.21
11	IIT Bhubaneswar	298	1.32	1458	1.58	81	1.51
12	IIT Patna	391	1.73	1247	1.35	75	1.39
13	IIT Ropar	283	1.25	1703	1.85	100	1.86
14	IIT (Indian School of Mines)	990	4.37	3940	4.27	240	4.46
15	IIT Mandi	169	0.75	649	0.70	38	0.71
16	IIT Gandhinagar	231	1.02	627	0.68	38	0.71
17	IIT (Banaras Hindu University), Varanasi	205	0.91	959	1.04	57	1.06
18	IIT Jodhpur	94	0.42	195	0.21	14	0.26
	Total	**22629**	**100**	**92203**	**100**	**5381**	**100**

8.3 Publications of IITs in Indian Citation Index

It is found from Table 4 that "IIT, Madras" 122 (19.71%) publications with 9 (25.71%) citations in Indian Citation Index, which is followed by "IIT, Roorkee" 110 (17.77%) publications with 7 (20.00) citations and "IIT, Delhi" 84 (13.57%) publications with 10 (28.57%) citations and "IIT, Kharagpur" 69 (11.15%) publications with 0 citation in Indian Citation Index. It is also found that "IIT, Mandi" were not published any of its papers in Indian Citation Index. The publications of remaining institutes were indexed less in numbers and it ranges from 1 (0.16%) to 60 (9.69%).

Table 4

Publications of IITs in Indian Citation Index

S. No.	Name of the Institutions	No. of Publications	%	No. of Citations	%
1	IIT Madras	122	19.71	9	25.71
2	IIT Bombay	60	9.69	2	5.71
3	IIT Kharagpur	69	11.15	0	0.00
4	IIT Delhi	84	13.57	10	28.57
5	IIT Kanpur	34	5.49	0	0.00
6	IIT Roorkee	110	17.77	7	20.00
7	IIT Guwahati	26	4.20	1	2.86
8	IIT Hyderabad	14	2.26	2	5.71
9	IIT Indore	1	0.16	0	0.00
11	IIT Bhubaneswar	6	0.97	0	0.00
12	IIT Patna	5	0.81	0	0.00
13	IIT Ropar	3	0.48	0	0.00
14	IIT (Indian School of Mines)	46	7.43	4	11.43
16	IIT Mandi	0	0.00	0	0.00
16	IIT Gandhinagar	1	0.16	0	0.00
17	IIT (Banaras Hindu University), Varanasi	34	5.49	0	0.00
18	IIT Jodhpur	4	0.65	0	0.00
	Total	**619**	**100**	**35**	**100**

8.4 Publications of IITs in ResearchGate

It is found from Table 5 that "IIT, Delhi" 9,336 (19.98%) publications with 17,488 (14.05%) reads is the highest number of publications in ResearchGate, which is followed by "IIT, Ropar" 7,284 (15.59%) publications with 2251 (1.81%) reads, "IIT Kharagpur" 6,808 (14.57%) publications with 19,480 (15.65%) reads and "IIT, Madras" 6,177 (13.22%) publications with 13,871 (11.14%) reads in ResearchGate. The publications of remaining institutes were published less in numbers and it ranges from 16 (0.03%) to 5358 (11.47%).

Table 5

Publications of IITs in ResearchGate

S. No.	Name of the Institutions	No. of Publications	%	No. of Reads	%
1	IIT Madras	6177	13.22	13871	11.14
2	IIT Bombay	5180	11.09	13915	11.18
3	IIT Kharagpur	6808	14.57	19480	15.65
4	IIT Delhi	9336	19.98	17488	14.05
5	IIT Kanpur	5358	11.47	9087	7.30
6	IIT Roorkee	3443	7.37	17306	13.90
7	IIT Guwahati	1848	3.95	8510	6.84
8	IIT Hyderabad	205	0.44	2689	2.16
9	IIT Indore	73	0.16	2053	1.65
11	IIT Bhubaneswar	66	0.14	1450	1.16
12	IIT Patna	90	0.19	1751	1.41
13	IIT Ropar	7284	15.59	2251	1.81
14	IIT (Indian School of Mines)	644	1.38	5655	4.54
16	IIT Mandi	31	0.07	1495	1.20
16	IIT Gandhinagar	30	0.06	1562	1.25
17	IIT (Banaras Hindu University), Varanasi	140	0.30	5308	4.26
18	IIT Jodhpur	16	0.03	596	0.48
	Total	**46729**	**100**	**124467**	**100**

9. Conclusion and Recommendations

National Institute of Ranking Framework system has emerged in India to evaluate the Indian Institutions in Indian Institutions in terms of their quality. In NIRF IIT has placed in top ranking based on its quality parameters. In these quality parameters the most dominative factor is research publications. In India IIT institutions are doing well in terms of publications. The study found that the ResearchGate publications are more when compared to other commercial databases. Hence this study recommends that to reach the research publications of any institutions to the public, the open access is the best way. Study also recommends that in NIRF the evaluation criteria to be included for h index of individual, department and Institution.

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