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Ranking and Research Trend : A Comparative Study of Research Output of Top Ten NIRF Ranked Engineering Institutions of India Based on Scientometric Indicators

Abstract

The first decade of 21st century has witnessed an unprecedented increase of Higher Education Institutions (HEI) in India. In the first decade itself 19493 new colleges and 257 universities were established, bringing the total number of colleges and universities to 31,324 and 493 respectively by the end of 2009-2010 (UGC, 2010) as against 11831 colleges and 236 universities till the year 1999-2000 (UGC, 2000). This sudden surge in the number of institutions attracted many debate on the quality of higher education in the country. Apart from the mandatory accreditation of courses/institutions by government established bodies, in 2015 government of India instituted the National Institutional Ranking Framework (NIRF) to evaluate and judge the annual performance of HEIs through pre defined criteria. This paper reports a comparative study of the scientific publications of national ranked engineering institutions five years on both the sides of launching of NIRF. The study aims to check the trend of research and to find out the relationship between the ranking of institutions in terms of research output and the overall ranking as per NIRF. The study uses scientometric indicators to rank the engineering institutions based on research output and its impact. In order to calculate this, the data of scholarly output of the institutions under study and the citations received to these publications subsequently has been retrieved from WoS. The current study evaluates four primary aspects of research output i.e. productivity, research impact, funding to these research and international collaboration.

Key words - Scholarly Publishing, Research Paradigm, Institutional Ranking, NIRF, Scientometric Indicators, Productivity

Introduction

For over a decade university ranking has been a topic of much discussion because of the globalisation of education leading to urge for quality education in the top ranked institutions. Ranking has been widely considered as an important tool for evaluating the performance,

competitiveness, and success of academic institutions (Zare Banadkouki et al., 2018) (Tijssen & Winnink, 2018) though it has different meaning to different stake holders. In recent years university rankings have gained much interest and importance from a wide range of stakeholders including students, parents, policy makers and more importantly funding agencies (Shehatta & Mahmood, 2016) which is very crucial for a developing country like India to attract international agencies for collaborative research and funding. In a very short period of time the ranking of institutions has gained the foreground in the policy arena of higher education (Goglio, 2016). Recent years have seen an increase in the number and variety of university rankings (Ash & Urquiola, 2020). This proliferation has a direct relation with the increasing interest on the university rankings system.

The success and pervasiveness of university ranking has itself brought lot of debate, majority of which are pointing out to the methodological limitations. Nonetheless, there is a body of literature highlighting the drawback of the whole ranking system and rightly pointing out the methodological problems associated with the framework of the rankings system (Fernández-Cano et al., 2018) (Jeremic et al., 2011). Even in the Times World University Ranking 2021 edition the top seven Indian Institute of Technology had boycotted their participation voicing concern over its transparency (Nanda, 2020), (ToI, 2020). In spite of this criticism the influence of ranking of institutions is apparently increasing. This is evident from the media coverage on the issue after the release of the list by Times world ranking 2021 in the recent past. (ET, 2020), (TIE, 2020).

Each country has its own history and vision of higher education system which plays a great role in their functioning and ultimately in the ranking. Perhaps this widely acclaimed ranking culture and the methodological drawback of the international university ranking systems are the reason why Government of India launched the National Institutional Ranking Framework (NIRF) in the year 2015 in spite of so many accreditation agencies in place to monitor the quality of higher education in the country.

University rankings are usually developed using some specific indicators that are considered relevant in relation to different aspects of academic activities. Different ranking systems follow different methodology and use different indicators to rank the participating institutions. However it is quite apparent that in the present competitive academic culture, distinction and publication go hand in hand both for academicians and academic institutions. Quantity of research publication in reputed journals is one of the globally accepted indicators

considered for various academic purposes including institutional ranking. Eventually the quality mandate of the University Grants Commission of India emphasises much on the quality publications by the faculties in overall improvement of quality of education as well as in achieving higher global ranks.(UGC, 2018)

National Institutional Ranking Framework (NIRF) : An overview

The National Institutional Ranking Framework (NIRF) was approved by the Ministry of Human Resource Development and launched on 29th September 2015 to rank institutions across the country. Taking into consideration the difference between institutions in regard to their objectives, functions and even in the programmes and approaches there are separate rankings for different types of institutions depending on their areas of operation. In the 2020 ranking process the institutions were grouped under ten broad headings namely Overall, Universities, Colleges, Engineering, Management, Pharmacy, Medical, Law, Architecture and Dental. It ranks institutions based on five parameters which broadly cover “Teaching, Learning and Resources,” “Research and Professional Practices,” “Graduation Outcomes,” “Outreach and Inclusivity,” and “Perception”. In the engineering category a total of 1071 institutions participated in the 2020 ranking (NIRF, 2020).

Summary of Ranking Parameters and Weightages-2020 (Engineering)

S. N.	Parameter Marks	Marks	Weightage
1	Teaching, Learning & Resources	100	0.30
2	Research and Professional Practice <ul style="list-style-type: none"> • Combined Metric for Publications, • Combined Metric for Quality of Publications • IPR and Patents: Patents Published and Granted • Footprint of Projects and Professional Practice 	100 ➤ 35 ➤ 40 ➤ 15 ➤ 10	0.30
3	Graduation Outcomes	100	0.20
4	Outreach and Inclusivity	100	0.10
5	Perception	100	0.10

As evident from the above NIRF ranking parameter framework, research has been given much importance in terms of inclusion of research productivity metrics from the perspective of both quantity as well as quality.

Review of Literature

The wide popularity of the university ranking over the years has created huge amount of literature focusing on the several aspects of the ranking. Some of the studies highlighting the correlation between the scholarly publishing and ranking are discussed here. (Frenken et al., 2017) through an empirical study have analyzed university research performance in terms of research excellence, internationalization, and innovation. Through regression analysis the study has reported a university's research performance using three performance indicators from a set of structural variables such as size, age, geography, disciplinary orientation, and country location. The study reports that the factors driving university research performance are threefold, i.e. size of the university, size of the city where it is located and the type of university. It further reveals that technical universities, which make up 12% of the universities worldwide, tend to outperform generic universities in terms of citation impact and university-industry relationships. The study suggests that benchmarking without considering the size, type and mission of the university can be misleading. And hence rankings can be a useful tool to benchmark a university against relevant peers, and to learn from well-performing universities in the peer group, as well as from the regional and national systems in which they function. (Bornmann & Glänzel, 2018) have reported that university rankings are widely used to assess the performance of universities. The comparison of two universities in terms of bibliometrics indicators frequently faces the problem of assessing the differences as meaningful or not. Through a letter to the editor the authors have proposed some benchmarks which can be used for supporting the interpretation of institutional differences. (Kivinen et al., 2017) through a study tried to find out to what extent the top universities in scientific publishing are the same universities that occupy the top positions in global university rankings. In the study the top 200 lists of universities in scientific publishing were compiled based on the contribution rates in four fields: biological, physical, social and life sciences. Out of some 4000 academic institutions included in InCites, the study identified 437 top publishing universities in at least one field and analysed the extent to which those universities are covered in six global university rankings' top 200 listings. (Vișu et al., 2016) investigated the problem of university classification and its relation to ranking practices in the policy context of an official evaluation of Romanian higher education institutions and their study programs. The study first discussed the importance of research in the government-endorsed assessment process and analyzed the evaluation methodology and the results it produced. The study reported that the Romanian classification of universities

was totally hierarchical in its conception and therefore produced hierarchical results due to its close association with the ranking of study programs and its heavy reliance on research outputs. The study further explored the differences between university categories by using a dataset on the research performance of 1385 faculty members working in the fields of political science, sociology and marketing. The study reported that alternative assessment of research productivity—measured with the aid of h-index and with g-index only provides empirical support for a dichotomous classification of Romanian institutions.

Scope and Limitation

The institutions which are selected for the present study are shown in Table-1. While calculating the rank of the institutions based on research output, the age, size, vision and mission of the institutions are not taken into consideration.

Table-1: Details of Institutions under Study

S.N.	Name of the Institution	Abbreviation	Rank as per NIRF 2020	URL
1.	IIT Madras	IITM	1	https://www.iitm.ac.in/
2.	IIT Delhi	IITD	2	https://home.iitd.ac.in/
3.	IIT Bombay	IITB	3	https://www.iitb.ac.in/
4.	IIT Kanpur	IITK	4	https://www.iitk.ac.in/
5.	IIT Kharagpur	IITKGP	5	http://www.iitkgp.ac.in/
6.	IIT Roorkee	IITR	6	https://www.iitr.ac.in/
7.	IIT Guwahati	IITG	7	https://www.iitg.ac.in/
8.	IIT Hyderabad	IITH	8	https://iith.ac.in/
9.	NIT Tiruchirappalli	NITT	9	https://www.nitt.edu/
10.	IIT Indore	IITI	10	https://www.iiti.ac.in/

Objectives

The main objectives of the study are to find out whether overall ranking of the institutions have direct correlation with the research output or not and secondly to check the impact of ranking culture on the trend of scientific research. For this, the study aims to find out the

research performance of these institutions on the following aspects during the period of study:

- The growth of research output during the period of study.
- Quality of research output through citation counts.
- International collaboration and;
- Funding for research.

Methodology

A multi step methodology was followed for the present study. In step one a systematic review of NIRF was conducted to understand the weightage of research performance in the ranking of institutions and top ten institutions under the category of engineering were identified.

In the second step bibliographic data of the institutions under study were retrieved from the Web of Science database by using separate search string for each institute between dates 28 October 2020 to 31 October 2020. The field “organisation enhanced” was chosen to deal with the variations in the name of institutions to ensure accuracy of the data. All the three databases SCI-EXPANDED, SSCI and A&HCI were considered and data for both time spans i.e. 2010-2014 and 2015-2019 were downloaded separately. The study used scientometric techniques to rank the institutions on the basis of research outputs.

Assessing scholarly publications by scientometric indicators has two main aspects: impact and quantity (Vinkler, 2013). Keeping this in view in the third step data was analysed along four major dimensions i.e. growth of publications, citations and h-index, funding and international collaboration by using the scientometric indicators to find out the research output of top 10 engineering institutions in India. A comparative study of findings of both the time span i.e. 2010-2014 and 2015-2019 was carried out to find out the impact of NIRF in the trend of research. Simple arithmetic formulas like percentage, average, proportion were used for data normalisation and calculations.

In the fourth step score points were calculated to rank the institutions based on research performance. For the calculation of points under each category, the lowest score was given one point and proportionately points for other institutions were calculated. The objectives of the study were broadly two dimensional. One was to find out the trend of research after the introduction of NIRF and secondly to investigate the impact of research on the ranking of

institutions. For the first objective two sets of data for five year each were considered and the trend of research was studied comparatively. And to address the second objective data of 2015 – 2019 were analysed and calculated and points were assigned for each indicator. Based on the total score ranking as per research performance was calculated.

Analysis and Interpretation

Table – 2 : Year wise growth of publication during 2010 - 2014

Name of the Institution	2010	2011	2012	2013	2014	Total	% of Growth
IITM	931	971	905	954	1067	4828	48.3
IITD	862	827	888	1020	1134	4731	47.3
IITB	803	855	937	1046	1165	4806	48.1
IITK	695	738	746	805	885	3869	38.7
IITKGP	1168	1081	1156	1252	1355	6012	60.1
IITR	582	623	727	759	909	3600	36
IITG	428	494	522	596	689	2729	27.3
IITH	28	64	94	144	207	537	5.37
NITT	194	229	252	290	324	1289	12.9
IITI	6	15	65	132	191	409	4.09

Table – 3: Year Wise Growth of Publication during 2015 – 2019 and Comparison

Name of the Institution	2015	2016	2017	2018	2019	Total	% Of Growth	Difference in Growth	Points Based on % of Growth	Rank
IITM	1242	1394	1669	1886	2171	8362	83.6	35.3	4.14	2
IITD	1170	1360	1559	1570	1836	7495	75	27.6	3.71	4
IITB	1290	1421	1644	1768	1957	8080	80.8	32.7	4.00	3
IITK	981	1090	1162	1218	1258	5709	57.1	18.4	2.83	6
IITKGP	1517	1671	1729	1868	2151	8936	89.4	29.2	4.42	1
IITR	1025	1190	1226	1233	1409	6083	60.8	24.8	3.01	5
IITG	695	892	1038	1228	1331	5184	51.8	24.6	2.57	7
IITH	256	290	380	503	592	2021	20.2	14.8	1.00	10
NITT	341	389	423	483	728	2364	23.6	10.8	1.17	8
IITI	212	334	424	522	659	2151	21.5	17.4	1.06	9

The year wise growth of research output during the two time spans (2010-2014, 2015-2019) is shown in table - 2 and table - 3. IITKGP had the highest number of publications in both the

time span followed by IITM, IITB and IITD. IITI had the lowest publications in the 2010-2014 time spans while IITH had the lowest productivity in the 2015-2019 spans. Although the 2010-2014 time span shows a mixed trend where three out of ten institutions have exhibited a fluctuating trend, in the second span all the institutions have a increasing trend in the number of research output. IITM had the highest percentage of growth rate in the second span in comparison to the first span. NITT had recorded the lowest comparative growth rate. The quantitative research output analysis is a reflection of the massive research oriented performance of these premier technological institutions.

Table – 4 : Average Citation and h-index During 2010-2014

Name of the Institution	Total Publications	Total Citations	Average Citations Per Article	h-index
IITM	4828	23953	4.96	19
IITD	4731	23190	4.90	19
IITB	4806	26637	5.54	21
IITK	3869	19507	5.04	19
IITKGP	6012	29456	4.90	21
IITR	3600	18120	5.03	17
IITG	2729	14245	5.22	17
IITH	537	1915	3.57	10
NITT	1289	6168	4.79	13
IITI	409	2547	6.23	10

Table – 5 : Average Citation and h- index During 2015-2019 and Comparison

Name of The Institution	Total Publications	Total Citations	Average Citations Per Article	h-index	Difference Between Average Citation	Points Based on Average Citations	Rank	Difference Between h-index	Points Based on h-index	Rank
IITM	8362	82082	9.82	74	4.85	1.15	6	55	1.57	3
IITD	7495	71748	9.57	71	4.67	1.12	8	52	1.51	5
IITB	8080	85140	10.54	80	4.99	1.24	4	59	1.70	1
IITK	5709	54331	9.52	66	4.47	1.12	9	47	1.40	6
IITKGP	8936	87375	9.78	72	4.88	1.15	7	51	1.53	4
IITR	6083	67770	11.14	76	6.11	1.31	3	59	1.62	2
IITG	5184	52166	10.06	66	4.84	1.18	5	49	1.40	7
IITH	2021	29085	14.39	56	10.83	1.69	1	46	1.19	9
NITT	2364	20164	8.53	47	3.74	1.00	10	34	1.00	10
IITI	2151	24633	11.45	57	5.22	1.34	2	47	1.21	8

Table - 4 and table - 5 reveal the impact of research which is calculated based on the number of citations received. The h-index for institutions during 2015-2019 is retrieved from WoS database whereas for the period 2010-2014 it has been calculated manually from the downloaded citation data. The data reflects that the publications of IITH and IITI have an exemplary impact in terms of citation received and ranked first and second respectively. Research publications by the top ranked institutions have exhibited a poor impact as IITK has secured the ninth rank followed by NITT which is placed in the last rank. h-index which is another important indicator of quality of research shows a different picture. Interestingly IITH which is ranked one in terms of average citation is placed in the ninth place as per the data of h index. IITB has the highest h-index followed by IITR, IITM and IITKGP. It is evident from the results of table - 4 and table - 5 that quantum of research output can prove to be a crucial parameter in deciding ranking based citation impact and h-index and can be a key factor in ascertaining the position of an institution in comparison to the rest of the world. On one hand citation reception is a promising component in judging the standing of an institution whereas h-index equally consolidates the proliferation and the recognition of an institution based on its research profile.

Table – 6 : International Collaboration During 2010-2014

Name of the Institution	Total Publications	International Collaboration	Frequency of Papers Written in Collaboration	Average Paper Per Country
IITM	4828	64	2688	42.00
IITD	4731	69	1195	17.32
IITB	4806	79	5631	71.28
IITK	3869	69	1351	19.58
IITKGP	6012	62	1635	26.37
IITR	3600	74	1001	13.53
IITG	2729	57	2863	50.23
IITH	537	40	261	6.53
NITT	1289	41	176	4.29
IITI	409	43	2312	53.77

Table – 7 : International Collaboration During 2015 -2019

Name of the Institution	Total Publications	International Collaboration	Frequency of Papers Written in Collaboration	Average Paper Per Country	Difference	Points	Rank
IITM	8362	100	24319	243.19	-201.19	19.69	1
IITD	7495	97	2671	27.54	-10.22	2.23	7
IITB	8080	109	9175	84.17	-12.9	6.82	3
IITK	5709	114	2426	21.28	-1.7	1.72	9
IITKGP	8936	98	3060	31.22	-4.85	2.53	6
IITR	6083	115	2476	21.53	-8	1.74	8
IITG	5184	89	4255	47.81	2.42	3.87	5
IITH	2021	71	3606	50.79	-44.26	4.11	4
NITT	2364	55	679	12.35	-8.05	1	10
IITI	2151	65	7911	121.71	-67.94	9.85	2

Table - 6 and table - 7 exhibits the total number of countries collaborated with the institutions under study for research. At some places the frequency of papers written in collaboration is more than the total number of papers as in many cases multiple countries are collaborated for a single paper. From the data it is clearly visible that although the total publications have been increased in the period 2015 – 2019 than the period 2010 -2014, the international collaboration is not showing a positive correlation. Except IITG, in case of rest of the institutions, growth of collaboration is in fact negative. In both the time span IITI and NITT have been in the second and tenth position respectively. While in 2010-2014 period IITB is in the first place, in 2015 -2019 IITM is ranked one in international collaboration. Collaboration in research is itself an indication of the recognition and acceptability to the research and can usher a way ahead to an enhanced research standing and hence can influence substantially to the overall ranking.

Table -8: Funding for Research

Name of The Institution	Total Publications During 2010-2014	Funded Research	Frequency of Funder	Average of Funder Per Paper	Total Publications During 2015-2019	Funded	Total Frequency of Funder	Average of Funder Per Paper	Points	Difference Between Both Time Spans
IITM	4828	2352	5955	1.23	8362	5013	50020	5.98	9.41	4.75
IITD	4731	2390	4392	0.93	7495	4289	8332	1.11	1.75	0.18
IITB	4806	2887	12665	2.64	8080	5343	25705	3.18	5.01	0.55
IITK	3869	2379	4702	1.22	5709	3570	7873	1.38	2.17	0.16
IITKGP	6012	3174	6021	1	8936	4870	9370	1.05	1.65	0.05
IITR	3600	1823	2957	0.82	6083	3579	6322	1.04	1.64	0.22
IITG	2729	1658	6681	2.45	5184	3142	10320	1.99	3.13	-0.46
IITH	537	344	669	1.25	2021	1406	10139	5.02	7.9	3.77
NITT	1289	519	795	0.62	2364	986	1502	0.64	1	0.02
IITI	409	314	4244	10.38	2151	1578	14499	6.74	10.61	-3.64

Funding is a crucial factor for the research and it is more important in a developing country like India. Table - 8 depicts the number of papers funded, frequency of paper funded and the average paper per funder. It can be seen that except IITG and IITI all other institutions have shown a positive growth in the number of research paper funded. The highest increase in the rate of funding is by IITM followed by IITH, IITB and IITR.

Table – 9 : Funder wise Contribution During 2010 - 2014

Name of The Institution	Total Publications	Funded	Percentage of Paper Funded	Total Funder	Average of Paper Per Funder
IITM	4828	2352	48.72	1298	1.81
IITD	4731	2390	50.52	1159	2.06
IITB	4806	2887	60.07	1861	1.55
IITK	3869	2379	61.49	1212	1.96
IITKGP	6012	3174	52.79	1416	2.24
IITR	3600	1823	50.64	808	2.26
IITG	2729	1658	60.75	702	2.36
IITH	537	344	64.06	242	1.42
NITT	1289	519	40.26	247	2.10
IITI	409	314	76.77	318	0.99

Table – 10 : Funder wise Contribution During 2015 - 2019

Name of The Institution	Total Publications	Funded	Percentage Of Paper Funded	Total Funder	Average of Paper Per Funder	Difference Between Both Period	Points	Rank
IITM	8362	5013	59.95	3969	1.26	-0.55	1.58	7
IITD	7495	4289	57.22	2760	1.55	-0.51	1.94	5
IITB	8080	5343	66.13	4558	1.17	-0.38	1.47	8
IITK	5709	3570	62.53	2520	1.42	-0.55	1.77	6
IITKGP	8936	4870	54.50	2939	1.66	-0.58	2.07	4
IITR	6083	3579	58.84	1951	1.83	-0.42	2.29	1
IITG	5184	3142	60.61	1879	1.67	-0.69	2.09	3
IITH	2021	1406	69.57	1756	0.80	-0.62	1.00	9
NITT	2364	986	41.71	565	1.75	-0.36	2.18	2
IITI	2151	1578	73.36	1342	1.18	0.19	1.47	8

Funder wise contribution is shown in table - 9 and table - 10. It can be seen that in the period 2010 -2014 IITG could attract more funders followed by IITR, IITK and NITT. During 2015 – 2019, IITR has scored the rank one followed by NITT, IITG and IITKGP. The funder wise contribution has witnessed a negative trend as all institutions except IITI which has shown 0.19 growths in the second time span. In regard to average paper per funder IITR has scored the first rank followed by NITT, IITG and IITKGP. Research funding analysis revealed that though attracting funding to research initiatives is itself an indication of the quality status quo of any organization but the span after 2015 has not shown encouraging funding statistics to claim that research plays most important role in getting good NIRF ranking.

Table – 11 : Ranking Based on Research Performance

Name of The Institution	Growth of Publication	Average Citation	h-index	Funder Wise Record	Average Funder Per Paper	International Collaboration	Total	Rank As Per NIRF	Rank Based on Research Performance
IITM	4.42	1.15	1.53	2.07	1.41	19.69	12.47	1	1
IITD	3.71	1.12	1.51	1.94	1.94	2.23	11.99	2	6
IITB	3.01	1.31	1.62	2.29	1.56	6.82	11.88	3	2
IITK	4.14	1.15	1.57	1.58	0.72	1.72	10.60	4	8
IITKGP	4.00	1.24	1.70	1.47	0.67	2.53	10.41	5	4
IITR	2.57	1.18	1.40	2.09	0.96	1.74	10.10	6	7
IITG	2.83	1.12	1.40	1.77	0.81	3.87	9.54	7	5
IITH	1.17	1.00	1.00	2.18	1.00	4.11	8.33	8	9
NITT	1.06	1.34	1.21	1.47	0.67	1.00	7.10	9	10
IITI	1.00	1.69	1.19	1.00	0.46	9.85	6.25	10	3

The table - 11 presents a comparative analysis of research performance in relation to NIRF rank, particularly in terms of average values. In the ranking based on research parameters also IITM has maintained the first rank while IITB and IITKGP have moved one position up in the research ranking than NIRF ranking, IITG has climbed two steps and ranked fifth as compared to seventh in the NIRF rank. IITK and IITD have dropped four levels in research based ranking whereas IITR, IITH and NITT have slipped down to one position. However one institution which has taken a great leap forward, moving up 7 ranks than NIRF ranking is IITI which has been placed at third position in the research based ranking is the tenth NIRF ranked institute. Thus if ranking is determined based on the research performance exclusively then a marginal deviation was found from the NIRF ranking results. This indicated that NIRF ranking system assimilates research performances of an institution to a limited extent even though research profile ensures a consolidated higher rank for any educational institution.

Findings and Conclusion

The current study highlights four important dimensions of research of top ten NIRF ranked engineering institutions i.e. productivity, impact, funding and international collaboration

through scientometric indicators. The strong focus on research performance in rankings is based on an underlying assumption of correlation between quality of research and ranking. Although research performance measures are the most weighted indicators in the NIRF ranking methodology, the ranking based on research performance showed variation to a great extent. Based on the research performances some institutions have scaled up a few spots, while some others showed a remarkable decline in their position in the ranking system devised on the basis of overall research performance parameters. Only one institution has maintained the same slot in both the ranking system. i.e. IITM who has maintained the first position. Notably the upward and downward trend of research impact has an equal distribution with five institutions on both the sides. Out of the five institutions which failed to maintain the increasing trend, two institutions namely IITD and IITK were the second and fourth ranked institutions in the NIRF 2020. IITH and IITI become the first and second newly opened IITs to break into the top ten under the NIRF ranking methodology and the research trend of IITI is remarkable. With the scores being highly skewed, it seems that a high-scoring institution in the domains associated with research does not automatically guarantee a high position in the ranking system. It is undeniably inspiring to see that HEIs in India are showing increasing interest and responding to the rankings framework. Research based ranking reveals the need for shifting from the stereotype ranking pattern to a more global competitive method of evaluation based on research proficiency of the premier technological institutes. The numbers of participating institutions under NIRF ranking have been increasing with every passing year. But the basic question is often overlooked: 'What is going to be served by ranking and for whom are they important?' (Kehm, 2014). Normally rankings of institutions are addressed to a generic recipient, a sort of 'one size fits all'. In reality there are multiple audiences for rankings, each one having different needs, expectations and each one attributing a different value to information attached to rankings. (Goglio, 2016). Given to this it is suggested to justify the provision of each parameter by displaying the ranking under each head based on which the overall ranking is decided. This will enable the stakeholders to judge the performance of the institutions from multiple dimensions. Secondly, a country-specific ranking is undoubtedly helpful in the domestic context to ensure competitiveness among the institutions considering the factors associated with our higher education system. However it isn't clear if it will help the institutions to be globally competitive. Hence in a nutshell the study suggests a multi dimensional ranking framework to reduce the gap and enable the system to address the information need of all stakeholders from the NIRF ranking.

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