

**ENGINEERING INSTITUTIONS IN INDIA: AN
ANALYTICAL STUDY OF RANKING CONDUCTED
BY NATIONAL INSTITUTIONAL RANKING
FRAMEWORK (NIRF)**

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The present study aims to analyse the performance of self-financing engineering colleges and compare them with five selected institutions based on the data collected from the NIRF 2018 ranking. In this article, the performance of self-financing engineering colleges has been discussed in comparison with selected institutions. The result shows that there is no appreciable difference between self-financing Engineering Colleges and selected institutions except in the number of full time- research scholars. It is also evidenced that the autonomous institutions are performing well.

Keywords: National Institutional Ranking Framework, Self-financing Engineering Colleges, Higher Educational Institutions in India

INTRODUCTION

In the contemporary scenario, National Institutional Ranking Framework (NIRF) is the latest topic among the academic community of Indian higher education institutions because there will be funding cuts and penalties for those who are not part of this national level ranking framework. The NIRF ranking will lead to competition among the institutions and it may help to get better ranking and improve their quality and standards in education and research. Further, it leads to competing with international educational institutions across the globe. The latest NIRF ranking (NIRF, 2018) presents the list of top 100 academic institutions under the three major headings: overall, discipline-specific (Engineering, Management, Pharmacy, Medical, Architecture, and Law) and category-specific (universities and colleges). NIRF ranking of academic institutions is based on the five major parameters: (1) Teaching, Learning & Resources (2) Research & Professional Practice (3) Graduation Outcome (4) Outreach Inclusivity, and (5) Perception. There are four sub-parameters also under the major parameters. The present study is an attempt to analyze the ranking performance of self-financing engineering and technology institutes in India in comparison with selected institutions of national importance in the engineering and technology field.

REVIEW OF LITERATURE

Ioannidis et al. (2007) compared Shanghai Jiao Tong University and the Times Higher Education World University Rankings and found that both the systems are composite suffering from lack of scientific credibility which would harm science and education. Similarly, Buéla-Casal et al. (2007) compared four international rankings and observed a growing international convergence on the measurement of academic quality based primarily on research and production and on academic reputation. Aguillo et al. (2010) compared the five world university rankings (Shanghai Jiao Tong University, Times Higher Education Supplement, Web Ranking of World Universities by the Cybermetrics Lab, Higher Education and Accreditation Council of Taiwan and Centre for Science and Technology Studies at Leiden University) using a set of similarity measures and found that there are reasonable similarities between the rankings, even though each applied a different methodology. The authors noticed high similarities between citation-based measures. The ranking was perceived as giving insights on the strengths, weaknesses, opportunities, and challenges of institutions (Aithal et al. 2016). Mukherjee (2017) examined the ranking of central universities in India in NIRF ranking through Research and Professional Practices (RPP) criteria of NIRF ranking. It was found that NIRF ranking in India gave maximum importance to RPP and institutions were ranked based mainly on the number of publications found in international databases. Through this study, the author argued that using only figures in calculating academic ranking sometimes leads to inaccurate results. Mathew and Cherukodan (2018)

examined the correlation between scholarly output and institutional ranking and found that the scholarly output of universities is a significant factor in the NIRF ranking. Banker et al. (2016) analyzed the NIRF ranking by Category-A institutions in India and found that there has been a significant difference in the ranking score obtained from the different parameter set by ranking framework among different Universities, Engineering, Management and Pharmacy Institutes in India. Similarly, Prathap (2017) analyzed the top 20 engineering institutions in 2016 and found that NIRF is unable to capture various random multiplicative processes involved in finding a performance score. Allam (2016) explored the performance of Aligarh Muslim University in NIRF 2016 in terms of strengths and weaknesses and found that AMU is lagging in many parameters of NIRF in comparison with the other institutions of higher education.

OBJECTIVES OF THE STUDY

The objectives of the study are:

1. To analyze the ranking conducted by NIRF for engineering institutes in India.
2. To study the different ranking parameters considered for ranking by NIRF.
3. To find out a significant difference in ranking among the engineering institutes in India.

METHODOLOGY

Information about the top 100 institutions in the category of engineering NIRF 2018 (<https://www.nirfindia.org>) has been collected and exported into the spreadsheet for further analysis. Data pertaining to the number of the faculty with a Ph.D., number of scholars pursuing the Ph.D.

(both full time and part time), the number of publications in the Web of Science and SCOPUS, number of patents etc. were identified for depth analysis. The category of institutions, geographical distributions, funding type and rankings self-engineering colleges were analyzed. Thereafter, data of top-ranked self-financing colleges were compared with five selected institutions (Indian Institute of Technology Madras, Anna University, Vellore Institute of Technology, PSG College of Technology, Pondicherry Engineering College).

RESULTS AND DISCUSSIONS

In this study, the ranking performance of self-financing engineering colleges has been discussed and compared with selected institutions (top rankings in each category of an institute of national

Table 1 – Distribution of Engineering Colleges by type

Type of Institution	No. of Institutions
Institutes of National Importance (IIT, NIT, etc.)	37
Deemed Universities	20
Self-Financing Engineering Colleges	12
State Universities	8
Government Engineering Colleges	7
Institutions with PPP	4
Government Aided Engineering Colleges	3
State Private Universities	3
Central Universities	2
Constituent Colleges	2
Government Funded Institution	1
Institution run by Army Welfare Education Society	1

importance, a state university, deemed to be university, aided engineering colleges and government engineering colleges) where 37% of institutions are of national importance such as IIT, NIT, etc. Self-financing engineering colleges are ranked third next to the deemed to be universities. Self-Financing Engineering Colleges which occupied the third rank are shown in table 1.

The table 2 describes that 19 % of Engineering institutions are from Tamil Nadu and

Table 2 - Distribution of Engineering Colleges by state

State	No. of Institutions
Tamil Nadu	19
Karnataka	11
Maharashtra	9
Uttar Pradesh	8
Delhi	5
Telengana	5
Punjab	5
Andhra Pradesh	5
West Bengal	4
Madhya Pradesh	3
Odisha	3
Rajasthan	3
Kerala	3
Himachal Pradesh	3
Assam	2
Jharkhand	2
Gujarat	2
Uttarakand	1
Bihar	1
Haryana	1
Puducherry	1
Chhattisgarh	1
Tripura	1
Jammu & Kashmir	1
Meghalaya	1
Total	100

almost 50% of the institutions are from four states namely Tamil Nadu, Karnataka, Maharashtra and Uttar Pradesh.

There are twelve self-financing engineering colleges and these colleges are from Karnataka (6), Tamil Nadu (4), and one from Andhra Pradesh and Odisha. It is noted that all these engineering colleges are autonomous institutions including Sri Sivasubramaniya Nadar the College of Engineering in Tamil Nadu which is recently conferred autonomous status by UGC. Among these colleges, the New Horizon College of Engineering Karnataka is new to the NIRF edition. Kumaraguru College of Technology of Tamil Nadu is maintaining the same rank, four colleges

(Sri Sivasubramaniya Nadar the College of Engineering in Tamil Nadu, Bannari Amman Institute of Technology of Tamil Nadu and C. V. Raman College of Engineering of Odisha and NITTE Meenakshi Institute of Technology of Karnataka) have improved from the 2017 ranking and the remaining colleges which have lost their ranks are shown in table 3. According to NIRF 2018, about 31% of engineering faculty acquired a doctoral degree in engineering. It can be observed from table 3 that four self-financing engineering colleges (Kongu Engineering College (30%), Sagi Ramakrishnan Raju Engineering College (21%), C. V. Raman College of Engineering (22%) and NITTE Meenakshi

Table 3 – List of self-financing Engineering Colleges and their rank

NIRF 2018	Name of College	State	% Faculty with PHD	WoS	SCO PUS	Ratio (W/ S)	Pursuing Ph.D. (Full Time)	Pursuing Ph.D. (Part Time)	Patents Granted	Perception of the Institution
26	Sri Sivasubramaniya Nadar College of Engineering	TN	73	717	852	0.84	217	298	0	6
58	R. V. College of Engineering	KA	41	368	469	0.78	12	147	0	22
60	M. S. Ramaiah Institute of Technology	KA	41	294	320	0.92	22	241	0	21
67	B. M. S. College of Engineering	KA	49	186	221	0.84	39	261	0	23
68	Kongu Engineering College	TN	30	316	474	0.67	8	177	0	99
76	Bannari Amman Institute of Technology	TN	32	225	424	0.53	34	145	0	42
78	Siddaganga Institute of Technology	KA	35	187	208	0.90	26	123	0	4
82	Kumaraguru College of Technology	TN	33	170	305	0.56	3	80	0	29
85	Sagi Ramakrishnam Raju Engineering College	AP	21	42	28	1.50	0	30	0	4
89	C. V. Raman College of Engineering	OR	22	133	155	0.86	0	0	0	7
99	New Horizon College of Engineering	KA	40	44	40	1.10	19	73	0	0
100	NITTE Meenakshi Institute of Technology	KA	23	90	89	1.01	21	34	0	12

Institute of Technology (23%)) are having less than the average percent of faculty with doctoral degree. Among these colleges, Sri Sivasubramaniya Nadar College of Engineering has the highest percentage (73%) of faculty with PhD and it is higher than its affiliating university (Anna University – 64%) and Government Aided Engineering College (PSG College of Technology – 47%). There is no difference in ratio between the number of publications in Web of Science and SCOPUS among these colleges

except Sagi Ramakrishnan Raju Engineering College which is laboring hard to publish articles in the journals of Web of Science and Scopus.

The table 4 shows the self-financing colleges which have lost their grade from the top 100 in 2017 ranking to 101-150 during 2018. Among the ten engineering colleges, seven colleges are non-autonomous colleges which reveal that autonomous colleges are performing better than non-autonomous colleges and furthermore most of the colleges are from Tamil Nadu.

Table 4 – List of self-financing Engineering Colleges lost their rank

NIRF 2017	NIRF 2018	College	Type	State
64	101-150	Shri Ramdeobaba College of Engineering and Management	Non-Autonomous	Maharashtra
67	101-150	G. H. Raison College of Engineering	Autonomous	Maharashtra
73	101-150	Mepco Schlenk Engineering College	Autonomous	Tamil Nadu
78	101-150	PSNA College of Engineering and Technology	Non-Autonomous	Tamil Nadu
84	101-150	R.M.K. Engineering College	Non-Autonomous	Tamil Nadu
90	101-150	Chaitanya Bharathi Institute of Technology	Non-Autonomous	Telangana
95	101-150	BMS Institute of Technology & Management	Non-Autonomous	Karnataka
96	101-150	Sri Sai Ram Engineering College	Non-Autonomous	Tamil Nadu
97	101-150	ST. Joseph's College of Engineering	Non-Autonomous	Tamil Nadu
99	101-150	K.S. Rangasamy College of Technology	Autonomous	Tamil Nadu

The table 5 describes that there is no patent grant received from the selected colleges in the last three years. It is found that Sri Sivasubramaniya Nadar the College of Engineering outnumbers the other counterparts in terms of the number of

research scholars. Among these colleges, there is no research student in the C. V. Raman College of Engineering and there is no full-time scholar in Sagi Ramakrishnam Raju Engineering College. In general, these colleges attract more part-time

research scholars than full-time scholars. Among the five selected institutions, Indian Institute of Technology Madras and Anna University maintained the same rank while PSG College of Technology has improved its rank, Vellore Institute of Technology and Pondicherry Engineering College have slipped from their ranks. The entire faculty members in IITM have a doctoral degree and it may be due to the qualification requirement for the entry-level post of Assistant Professor. IITs have different recruitment norms with the different pay structure. Rest of them have the percentage

between 47% and 76% of faculty with Ph.D. According to the recent regulation of AICTE and UGC, Post Graduate degree in engineering or Post Graduate in science/humanities with UGC NET / SLET or Ph.D. is essential for the entry-level post of Assistant Professor for the recruitment in universities or engineering colleges. IITM and Anna University have enrolled a lower number of part-time research students and the full time scholars of these two institutions have got patents in the last three years. Among these five institutions, only Vellore Institute of Technology (Deemed to be University) is self-financing.

Table 5 - Selected Institutions and their ranks

NIRF 2017	NIRF 2018	Institute	Type	Funding	State	% of Faculty with Ph.D.	WoS	Scopus	Ratio (W / S)	Pursuing Ph.D. (Full Time)	Pursuing Ph.D. (Part Time)	Patents Granted	Perception of the Institution
1	1	Indian Institute of Technology Madras	Institute of National Importance	Central Govt.	TN	100	3785	4286	0.88	1975	36	54	779
8	8	Anna University	State University	State Govt.	TN	64	3234	5217	0.62	1174	991	12	350
13	16	Vellore Institute of Technology	Deemed to be University	Self-financing	TN	65	2868	5089	0.56	1310	1341	0	180
33	29	PSG College of Technology	Autonomous	Govt. Aided	TN	47	518	915	0.57	77	235	0	258
38	53	Pondicherry Engineering College	Government Engineering College	State Govt.	PDY	76	403	587	0.69	134	213	0	42

CONCLUSION

The present study reveals some interesting results such as more than 40% of engineering institutions are located in the region of South India and nearly 40% of institutions are of national importance which are funded by the Government of India. Though these 12 self-financing engineering colleges have a lesser number of publications in the Web of Science as well as in Scopus, they rank among the top 100 institutions. Sri Sivasubramaniya Nadar College of Engineering

has a higher proportion of faculty with Ph.D. than its affiliating university (Anna University). It is concluded that autonomous institutions perform well in terms of research. The analysis shows that there is no significant difference between self-financing engineering colleges and selected institutions except in the number of full-time research scholars.

REFERENCES

1. Aguillo, I., Bar-Ilan, J., Levene, M., & Ortega, J. (2010). Comparing university rankings. *Scientometrics*, 85(1), 243-256.

2. Aithal, P. S., Shailashree, V., & Kumar, P. M. (2016). The study of new National Institutional Ranking system using ABCD framework. *International Journal of Current Research and Modern Education (IJCRME)*, 1, 389-402.
3. Allam, M. (2016). An Analysis of the Performance of Aligarh Muslim University in National Institutional Ranking Framework (NIRF) -2016. *European Academic Research*, 4 (5), 4318-4356.
4. Bankar, B.P., Pawar, K.B. & Dandele, S.T. (2016). An analytical study of ranking conducted by National Institutional Ranking Framework (NIRF) of Ministry of Human Resource Development for different category-a institutes of Higher & Technical education in India In the year 2016. *International Journal of Engineering Science Invention Research & Development*, 3 (5), 289-298.
5. Buéla-Casal, G., Gutiérrez-Martínez, O., Bermúdez-Sánchez, M. P., & Vadillo-Muñoz, O. (2007). Comparative study of international academic rankings of universities. *Scientometrics*, 71(3), 349-365.
6. Ioannidis, J. P., Patsopoulos, N. A., Kavvoura, F. K., Tatsioni, A., Evangelou, E., Kouri, I. et al. (2007). International ranking systems for universities and institutions: a critical appraisal. *BMC medicine*, 5(1), 30.
7. Mathew K, S., & Cherukodan, S. (2018). Impact of scholarly output on university ranking. *Global Knowledge, Memory and Communication*, 67(3), 154-165.
8. Mukherjee, B. (2017). Ranking Indian universities through research and professional practices of national institutional ranking framework (NIRF): a case study of selected Central universities in India. *Journal of Indian Library Association*, 52(4).
9. Prathap, G. (2017). Making scientometric sense out of NIRF scores. *Current Science*, 112 (6), 1240-1242.

