

Importance of Perception as a Parameter in University Rankings : A Critical Evaluation

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Abstract

Assigning ranks and grades (or stars) has been a common practice for ages to describe the characteristics of a product with the intention that it will significantly influence customers' buying behavior. What started as a marketing tool to compare and show supremacy over competitors' products, ranking and grading have now become institutionalized, involving many commercials at stake. Nowadays, ranking evaluation has altogether become separate diligence with stiff competition among different players. Such types of rankings and accreditations have also influenced the education sector. Though there are various international rankings (QS World University Rankings, Shanghai Ranking, Academic Ranking of World Universities, etc.) for the education sector, the Indian government also administers its ranking system to bring in a sense of competition and performance reviews among academic institutions of India. With this thought, the National Institution Ranking Framework (NIRF), also popularly known as 'India Rankings,' was started in 2015. The NIRF rankings of higher education institutions (HEIs) offering engineering education were considered for the study. Perception as an evaluation indicator has always been debated for its validity in the finalization of such rankings. This paper attempted to scientifically study the influence that the parameter 'perception' contributes to the overall ranking of HEIs.

Keywords : India Rankings, NIRF, HEIs, higher education system, higher education ranking

JEL Classification Codes : I230, I280, I290, I200

Paper Submission Date : April 20, 2021 ; **Paper sent back for Revision :** September 26, 2021 ; **Paper Acceptance Date :** October 15, 2021 ; **Paper Published Online :** November 20, 2021

In this competitive world, customers are eager to know the characteristics ratings of the products they use. Considering this issue, assigning ranks and grades (or stars) has been a common practice for a long time. These ranks are believed to influence the buying behavior or perception of any customer profoundly. What started as a marketing tool to compare and show supremacy over competitors' products, rankings and grading have now become institutionalized, involving many commercials at stake. The rankings and accreditations have also influenced the education sector (Bagga, 2017). While tracing the rise of influence of college rankings worldwide, the study of Hazelkorn (2015) concluded the following — what started in the early twentieth century as an academic exercise in the US became a commercial 'information' service for students in the 1980s and the progenitor of a 'reputation race' with geopolitical implications today.

According to Van Raan (2005), these rankings have garnered the attention of policymakers, the scientific world, and the public media. Over the years, rankings from various media houses and agencies have flooded the

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DOI : <https://doi.org/10.17010/pijom/2021/v14i11/166979>

Indian education sector. Virtually, each media house has come up with its ranking system. The desire of educational institutions to find a place in the ranking list and 'Race to Top' among institutions make ranking issues of magazines a unique and most sought-after event. These magazine issues also bring substantial revenue opportunities for publishing houses, owing to the mad rush among educational institutions to place their advertisements and find a place in the published ranking list. Rankings are always fraught with suspicions among the masses as there has been no consistency among various rankings published by different magazines. In India, too, all the significant newsweeklies (India Today, Outlook, The Week, etc.) rank B-schools, engineering & medical colleges, and other colleges - with poor (and poorly spelled out) methodologies, each pointing to a different conclusion (Gupta, 2010). Familiar readers and intellectual people have consistently raised concerns over the methodology adopted and parameters used by these ranking magazines (Clarke, 2002). Mostly, these rankings bring many surprises by their listing. These rankings have faced ire from various quarters as they lacked transparency in the methodology and solely depended on the data submitted by the institutes.

Taking the cue from international rankings like QS World University Rankings, Shanghai Ranking, and Academic Ranking of World Universities, the Indian government thought of publishing its ranking to bring competition and performance reviews among academic institutions. The internationalization of higher education in the globalized era has become an essential aspect for HEIs and governments alike (Ramanathan, 2018). This factor is also an essential parameter in the global rankings. The Indian government and administrators felt a need to implement a ranking framework that can improve the credibility of institutions to attract admissions from foreign nationals. Considering this, the National Institution Ranking Framework (NIRF) started 'India Rankings' in the year 2015 to assess the respective ranks of Indian institutions. Widespread publications of misleading and disguised institutes' rankings by different media houses have also prompted the government to develop India Rankings to provide fair, transparent, and reliable rankings.

India Rankings is still evolving and has faced a lot of suggestions and criticism from different quarters. To satisfy such a varied and diverse landscape of the Indian higher education system is not an easy task. While there may be all possible debates on the methodologies adopted for the ranking evaluation, rankings have been the modern era's buzzword. While there may be serious concerns regarding the legitimacy of publishing a ranking of HEIs, yet, college rankings appear to be here to stay and draw interests from various stakeholders (Altbach, 2011; Baidenko (2010) as cited in Sidorenko & Gorbatoeva, 2015; Davis, 2016; Van Rann, 2005). The Institute for Higher Education Policy (IHEP, 2007) in its paper echoed the same conclusion and stated that :

Higher education rankings are often controversial and heavily debated in local, national, and, increasingly, international contexts. Whether or not colleges and universities agree with the various ranking systems and league table findings, however, ranking systems clearly are here to stay. (p. 2)

Many studies have found research progression as one of the parameters towards the improved performance on rankings (Chugh et al., 2017; Davis, 2016; Gupta, 2010; Padalkar & Gopinath, 2015; Prathap, 2014; Reddy et al., 2016; Sahoo et al., 2017; Saisana et al., 2011; Yeravdekar & Tiwari, 2014) but, up to our knowledge, no study has examined the impact of *perception* as a parameter on the overall ranking of HEIs. Perception as an evaluation indicator in the rankings systems has always been debated for its validity in deciding the ranking leader board (Burlakanti et al., 2014; Khatri & Raina, 2019; Saji, 2020). This paper attempts to study the influence of perception as a parameter in the overall ranking of HEIs.

Objectives of the Study

The study considers the importance of various parameters in finalizing the overall ranking of the HEIs in general

and the parameter ‘perception’ in particular. With this broader research question, the following objectives of the study are defined:

- ✎ To assess the overall ranking scenario of the Top 100 HEIs relating to different parameters of India Rankings.
- ✎ To study the quantum of contributions of these parameters on India Rankings.
- ✎ To examine whether the distribution of HEIs follows a standard normal curve based on scores they have earned.
- ✎ To assess the influence of the parameter ‘perception’ in the overall scores obtained by the different HEIs.
- ✎ To reconstruct the ranking list excluding perception as a parameter.

The NIRF

India’s Ministry of Human Resource Development (MHRD) approved and launched the National Institutional Ranking Framework (NIRF) on September 29, 2015. The genesis of NIRF was to outline a rationale of methodology to rank institutions across the country. The ranking methodology was finalized after a core committee, set up by MHRD, provided detailed recommendations based upon broad understanding among the committee members. This committee identified and proposed the broad parameters to be used in the ranking process of HEIs (<https://www.nirfindia.org/About>).

To cover a large spectrum of the Indian higher education system, the committee proposed publishing ranking in various disciplines like engineering, management, pharmacy, architecture, and colleges and universities. The final framework identifies between 15–18 parameters organized in five major groups. The parameters broadly cover ‘Teaching, Learning, and Resources,’ ‘Research and Professional Practices,’ ‘Graduation Outcomes,’ ‘Outreach and Inclusivity,’ and ‘Perception.’

The NIRF Parameters

The detailed description of parameters used for the assessment under NIRF is presented in Table 1. Table 1 also demonstrates various sub-parameters under the broad groups with their marks allocations and respective weights.

Table 1. NIRF Framework Parameters

S. No.	Parameters	Marks
1.	Teaching, Learning, & Resources (TLR) Ranking Weight : 0.30 A. Student Strength including Doctoral Students (SS): 20 marks B. Faculty-student ratio with emphasis on permanent faculty (FSR): 30 marks C. Combined metric for Faculty with PhD (or equivalent) and Experience (FQE): 20 marks D. Financial Resources and their Utilization (FRU): 30 marks	100
2.	Research and Professional Practice (RP) Ranking Weight : 0.30 A. Combined metric for Publications (PU): 35 marks B. Combined metric for Quality of Publications (QP): 40 marks C. IPR and Patents: Published and Granted (IPR): 15 marks	100

	D. Footprint of Projects and Professional Practice (FPPP): 10 marks	
3.	Graduation Outcomes (GO)	100
	Ranking Weight : 0.20	
	A. Combined metric for Placement and Higher Studies (GPH): 40 marks	
	B. Metric for University Examinations (GUE): 15 marks	
	C. Median Salary (GMS): 25 marks	
	D. Metric for Number of Ph.D. Students Graduated (GPHD): 20 marks	
4.	Outreach and Inclusivity (OI)	100
	Ranking Weight : 0.10	
	A. Percentage of Students from other States/Countries (Region Diversity (RD)): 30 marks	
	B. Percentage of Women (Women Diversity (WD)): 30 marks	
	C. Economically and Socially Challenged Students (ESCS): 20 marks	
	D. Facilities for Physically Challenged Students (PCS): 20 marks	
5.	Perception (PR)	100
	Ranking Weight : 0.10	
	Perception : Employers & Academic Peer (PR): 100 marks	
Source : National Institutional Ranking Framework (2020).		

Research Methodology

The present study analyzes the NIRF ranking data of the HEIs under the category-Engineering Education. We identified engineering education as a focus area because this is a very sought-after course among students. India also boasts of having a lot of good institutions offering quality engineering education. Generally, there is a good number of government and private institutions which are competing fiercely with each other.

This study attempts to answer how the parameter ‘perception’ influences ranking scores of HEIs. Valcárcel (2017) described analytical research as a specific type of research that involves critical thinking skills and the evaluation of facts and information and helps find the missing link in a study, and tries to look at questions of “how” and “why.” As the study is based on secondary data sources and critically examines the data, the analytical research design is deemed appropriate for this study.

The latest India Rankings 2018 for engineering education published by NIRF are considered to conduct this study. Each year, NIRF publishes the names of the top 200 Indian HEIs offering courses in engineering. While looking carefully into the India Rankings 2018 list, it was found that NIRF has given detailed information (parameter-wise scores) of the first 100 HEIs only; whereas, the next 100 HEIs have been placed in two brackets of 101–150 rank band and 151–200 rank band in alphabetical order (<https://www.nirfindia.org/2018/EngineeringRanking.html>). Thus, the sample size for this study is the top 100 HEIs for which NIRF provides detailed parameter-wise scores.

There are two types of formats available on the NIRF website to describe the institutions’ performance. These formats are portable document format (PDF) and joint photographic experts group (JPEG). The PDF file contains data submitted (and supposedly checked by NIRF) by respective HEIs, and the JPEG file contains scores (as calculated by NIRF) obtained in different parameters by these HEIs under the leading group.

A normality test has been applied to test the distribution of the data. A correlation test is applied to calculate the correlation between the five main groups with the total score of the HEIs. Test of related samples has been applied to compare the ranking of HEIs under two different score scenarios: One, taking ‘Perception’ as one of the

parameters, and another is ranking 'Without taking Perception' as a parameter. Overall, India Rankings and respective scores have been scrutinized to conclude the Indian education scenario.

Analysis and Results

The final picture of the participants under different subjects/categories of institutions is summarized in Table 2 and Table 3. Table 3 categorizes discipline-wise participation and represents the numbers of HEIs, Centrally Funded Technical Institutions (CFTIs), and Centrally Funded Universities (CFUs).

The published data in the JPEG format on the NIRF website were first downloaded and converted into Microsoft Excel files. These data were then arranged in tabulated form to perform the analysis. Each HEI was arranged in the ranking order of NIRF 2018, and scores obtained by the respective HEIs under different parameters were written adjacent to them.

Table 4 presents the descriptive statistics of scores of the top 100 HEIs on five major groups. It is evident from the table that the highest mean value is for Teaching, Learning, and Resources (TLR) (62.2534), and the lowest is for Perception (PR) (20.6859). The second-lowest mean value is for Research Progression (RP) (29.2605). The parameters RP and PR have the highest standard deviations with the values 20.79 and 22.10, respectively. Range of scores corresponding to parameter RP is 94.36 (maximum score = 1.68 and minimum score = 96.04), and parameter PR is 100 (maximum score = 100 and minimum score = 0), respectively. From the statistics, it can be concluded that there are large variations in the scores among HEIs on these two parameters. Parameters RP and PR seem to be the significantly differentiating factors among HEIs.

Values of skewness reflect exciting characteristics. Only one parameter – Graduation Outcome (GO) has a nearly symmetric distribution with a skewness value of .08. The parameter TLR is moderately positive skewed (.49), and parameter OI is moderately negative skewed (–0.39). On the other hand, parameters RP and PR are

Table 2. Participation Numbers for Pre-Registration and New Registration

Description	Applied	Submitted
Pre-registration from AISHE Database	1,456	1,040
Pre-registration from NIRF (previous year)	1,476	1,369
Additional Volunteer Registrations	653	400

Source : National Institutional Ranking Framework (2018) (p.4).

Table 3. Participation Numbers for Overall, Disciplines, and Category-Specific Rankings

Category/ Discipline	Total No. of Institutes	CFTIs and CFUs
Overall	957	89
Engineering	906	61
Management	487	28
Pharmacy	286	5
Architecture	59	9
College	1,087	1
Medical	101	2
Law	7	14
Total	3,954	199

Source : National Institutional Ranking Framework (2018) (p.4).

Table 4. Descriptive Statistics for Various Parameters

S. No.		TLR	RP	GO	OI	PR
1	Mean	62.2534	29.2605	62.8799	51.2813	20.6859
2	Standard Error	1.065697	2.078637	0.983494	0.783876	2.210185
3	Median	61.185	26.445	62.23	51.995	12.805
4	Mode	63.79	#N/A	77.63	#N/A	2.6
5	Standard Deviation	10.65697	20.78637	9.834937	7.83876	22.10185
6	Sample Variance	113.5709	432.0733	96.72599	61.44616	488.4917
7	Kurtosis	0.220689	1.568424	0.289196	-0.34487	3.09576
8	Skewness	0.489079	1.257476	0.081868	-0.39374	1.818046
9	Range	54.25	94.36	53.37	36.55	100
10	Minimum	39.58	1.68	35.53	29.08	0
11	Maximum	93.83	96.04	88.9	65.63	100
12	Sum	6225.34	2926.05	6287.99	5128.13	2068.59
13	Count	100	100	100	100	100

Table 5. Tests of Normality

	Kolmogorov – Smirnov ^a			Shapiro – Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Teaching Learning	.079	100	.129	.981	100	.158
Research	.110	100	.004	.898	100	.000
Graduate Outcome	.040	100	.200*	.994	100	.926
Outreach	.064	100	.200*	.978	100	.099
Perception	.189	100	.000	.787	100	.000

Note. *. This is a lower bound of the true significance.

^a. Lilliefors Significance Correction.

highly and positively skewed with the respective values of 1.26 and 1.81. It indicates that the majority of the HEIs have lower scores on these two parameters.

Further, the normality test was performed on the data to check the normality of the distribution. SPSS output of the normality test is depicted in Table 5.

Normality test was performed on the respective parameters to judge whether the data followed the Gaussian distribution. Shapiro – Wilk test results suggest that the parameters TL ($p = .158$), GO ($p = .926$), and OI ($p = .099$) follow normal distribution at a significance level of $p = .05$. Hence, the scores of HEIs on these parameters follow a normal distribution. On the other hand, the parameters RP ($p = .000$) and PR ($p = .000$) do not follow normal distribution at a significance level of $p = .001$.

The correlation test was applied to assess how the respective parameters have contributed to the total score achieved by different HEIs and the degree of relatedness of each parameter with the total ranking scores. Table 6 presents the SPSS output of the correlation test. The Spearman rank correlation is taken as a statistical technique to test the association as data are not normal, and ranks have been analyzed for the association property.

Analysis of Tables 5 and 6 throw important light on the characteristics of different parameters. Parameters RP and PR appear to be the two most essential factors in the overall score of any HEIs. Though the importance of

Table 6. Spearman Rank Correlation Table

	(TLR)	(RP)	(GO)	(OI)	(PR)
Correlation Coefficient with	.668**	.854**	.644**	.157	.712**
Total Score					

Note. **. Correlation is significant at the 0.01 level (2-tailed) ; N = 100.

research activities can be understood as this parameter reflects the quality of the academic staff, perception getting so much importance is debatable. Despite weighing 10%, the parameter perception is the second most crucial factor for making or breaking the ranks.

Research publications reflect faculty members' knowledge by applying theory aspects to develop new findings through their research. A weight of 30% has been given to this parameter so that HEIs can understand the importance of research publications and motivate their faculty members to take up research and consultancy works. The high correlation achieved between RP and the ranking of the HEIs also proves this philosophy. NIRF takes data for this parameter from bibliometrics databases like Scopus and Web of Science. Data from these third-party sources are quantifiable and verifiable. However, perception emerging out as the second most significant contributor in the overall score of the HEIs, and that too on the weight of only 10%, raises concerns over the methodology of the NIRF rankings.

In the present study, we have tried to rework the rankings by calculating the overall scores of HEIs, removing perception as a parameter. Weight of 10% of the perception parameter is distributed equally among the other four parameters, and new scores are calculated for the respective parameters of HEIs. The new scores obtained by adding up the new respective scores of individual parameters are then arranged in descending order, and a new overall rank with the name – 'Overall Rank without Perception' is calculated.

The original ranks are then compared with the new ranks. Changes in the ranking positions have been depicted in Table 7. Parameter-wise ranking based on the original scores has also been identified to understand the overall scenario better.

The changes in the positions are in either direction. Some HEIs improve in their ranking, and some go down on the list. The last column of Table 7 also presents the individual change in the ranking list. The plus sign denotes improvements in the ranking, while the negative sign denotes decrement in the list.

Table 7. Original Rank vs. Overall Rank Without Perception

Parameters - wise Ranking (Based on Actual Scores)					Institute's Name	Overall	Overall	Change
TLR	RP	GO	OI	PR		NIRF Rank	Rank	in Rank
						(Actual)	without Perception	Position
1	2	3	4	1	Indian Institute of Technology Madras, Chennai	1	1	–
2	1	10	78	2	Indian Institute of Technology Bombay, Mumbai	2	2	–
6	3	4	17	3	Indian Institute of Technology Delhi, New Delhi	3	3	–
15	4	2	41	5	Indian Institute of Technology Kharagpur, Kharagpur	4	4	–
10	5	5	92	4	Indian Institute of Technology Kanpur, Kanpur	5	6	–1
16	7	1	27	9	Indian Institute of Technology Roorkee, Roorkee	6	5	+1
3	9	11	56	13	Indian Institute of Technology Guwahati, Guwahati	7	7	–

35	6	28	50	6	Anna University, Chennai	8	8	–
7	17	20	37	16	Indian Institute of Technology Hyderabad, Hyderabad	9	10	–1
22	10	14	43	33	Institute of Chemical Technology, Mumbai	10	9	+1
31	14	18	10	8	National Institute of Technology Tiruchirappalli, Tiruchirappalli	11	17	–6
61	8	9	100	20	Jadavpur University, Kolkata	12	13	–1
34	12	12	16	24	Indian Institute of Technology (Indian School of Mines) Dhanbad, Dhanbad	13	11	+2
5	21	24	30	40	Indian Institute of Technology Indore, Indore	14	12	+2
48	13	6	75	28	National Institute of Technology Rourkela, Rourkela	15	16	–1
79	11	37	19	10	Vellore Institute of Technology, Vellore	16	19	–3
27	26	23	15	11	Birla Institute of Technology & Science, Pilani	17	18	–1
4	22	45	20	38	Indian Institute of Technology Bhubaneswar, Bhubaneswar	18	14	+4
37	20	9	91	12	Indian Institute of Technology (Banaras Hindu University) Varanasi, Varanasi	19	20	–1
25	15	15	28	52	Thapar Institute of Engineering and Technology , Patiala	20	15	+5
53	25	19	53	15	National Institute of Technology Surathkal, Surathkal	21	26	–5
11	41	39	13	47	Indian Institute of Technology Ropar, Rupnagar	22	21	+1
9	61	51	12	14	Indian Institute of Space Science and Technology, Thiruvananthapuram	23	27	–4
13	31	36	62	47	Indian Institute of Technology Patna, Patna	24	22	+2
30	38	16	38	29	National Institute of Technology Warangal, Warangal	25	23	+2
18	28	62	51	44	Birla Institute of Technology, Ranchi	26	25	+1
14	51	66	47	22	Indian Institute of Technology Gandhinagar, Gandhinagar	27	32	–5
12	46	47	39	60	Indian Institute of Technology Mandi, Mandi	28	24	+4
24	56	78	59	7	PSG College of Technology, Coimbatore	29	44	–15
55	18	55	98	22	Indian Institute of Engineering Science and Technology, Shibpur, Howrah	30	35	–5
42	30	43	31	54	Visvesvaraya National Institute of Technology, Nagpur	31	28	+3
64	23	17	66	65	Jamia Millia Islamia, New Delhi	32	30	+2
50	33	44	21	45	Shanmugha Arts Science Technology & Research Academy, Thanjavur	33	31	+2
28	19	96	23	89	Amity University, Gautam Budh Nagar	34	29	+5
22	24	83	95	56	Aligarh Muslim University, Aligarh	35	34	+1
23	47	69	49	35	Sri Sivasubramaniya Nadar College of Engineering, Kancheepuram	36	36	–
69	32	33	7	80	Sathyabama Institute of Science and Technology, Chennai	37	33	+4
92	36	7	40	42	International Institute of Information Technology, Hyderabad	38	40	–2
26	65	75	5	26	Manipal Institute of Technology, Manipal	39	46	–7

46	49	67	72	17	Thiagarajar College of Engineering, Madurai	40	49	-9
76	39	21	65	32	Delhi Technological University, New Delhi	41	41	-
17	44	79	83	71	Jawaharlal Nehru Technological University, Hyderabad	42	37	+5
56	27	57	88	69	National Institute of Technology Kurukshetra, Kurukshetra	43	39	+4
8	96	13	18	71	National Institute of Industrial Engineering, Mumbai	44	38	+6
52	55	34	73	27	College of Engineering, Pune	45	48	-3
59	35	82	8	50	SRM Institute of Science and Technology, Chennai	46	42	+4
84	29	41	81	51	National Institute of Technology Durgapur, Durgapur	47	45	+2
83	40	40	69	36	Motilal Nehru National Institute of Technology, Allahabad	48	54	-6
20	68	61	22	96	Koneru Lakshmaiah Education Foundation University, Vaddeswaram	49	43	+6
73	50	58	90	18	National Institute of Technology Calicut, Calicut	50	63	-13
62	59	32	3	78	Kalinga Institute of Industrial Technology, Bhubaneswar	51	47	+4
71	34	68	71	65	Malaviya National Institute of Technology, Jaipur	52	50	+2
47	64	38	86	38	Pondicherry Engineering College, Puducherry	53	57	-4
29	67	76	34	73	Indian Institute of Technology Jodhpur, Jodhpur	54	51	+3
68	57	25	70	73	Maulana Azad National Institute of Technology, Bhopal	55	52	+3
58	72	26	9	63	International Institute of Information Technology Bangalore, Bengaluru	56	53	+3
49	52	50	97	65	National Institute of Technology Silchar, Silchar	57	55	+2
32	74	46	46	58	R. V. College of Engineering, Bengaluru	58	56	+2
97	16	84	85	67	Panjab University, Chandigarh	59	58	+1
36	76	53	25	60	M. S. Ramaiah Institute of Technology, Bengaluru	60	59	+1
85	42	59	76	58	Sardar Vallabhbhai National Institute of Technology, Surat	61	60	+1
45	73	90	55	22	Coimbatore Institute of Technology, Coimbatore	62	70	-8
19	45	100	82	89	Defence Institute of Advanced Technology, Pune	63	61	+2
78	58	52	48	82	National Institute of Technology Hamirpur, Hamirpur	64	62	+2
40	92	29	36	82	AU College of Engineering, Visakhapatnam	65	64	+1
95	54	22	93	60	Indraprastha Institute of Information Technology Delhi, New Delhi	66	65	+1
40	89	48	54	56	B. M. S. College of Engineering, Bengaluru	67	67	-
54	75	88	77	19	Kongu Engineering College, Perundurai	68	79	-11
44	85	74	52	47	Dayalbagh Educational Institute, Agra	69	69	-
94	60	70	44	32	Jaypee Institute of Information Technology, Noida	70	72	-2
93	37	89	58	96	Sri Venkateswara University, Tirupati	71	66	+5
82	63	93	32	34	Karunya Institute of Technology and Sciences, Coimbatore	72	76	-4
90	83	35	2	63	PEC University of Technology, Chandigarh	73	68	+5
72	66	65	89	80	Dr. B. R. Ambedkar National Institute of Technology, Jalandhar	74	71	+3

74	82	61	74	41	College of Engineering Trivandrum, Thiruvananthapuram	75	82	-7
60	86	85	60	38	Bannari Amman Institute of Technology, Sathyamangalam	76	90	-14
86	43	99	42	89	Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology, Chennai	77	75	+2
38	87	87	64	92	Siddaganga Institute of Technology, Tumkur	78	73	+5
42	81	98	79	54	B. S. Abdur Rahman Institute of Science and Technology, Chennai	79	85	-6
63	95	27	67	94	University College of Engineering, Hyderabad	80	74	+6
81	70	77	57	94	National Institute of Technology Raipur, Raipur	81	77	+4
65	91	73	61	50	Kumaraguru College of Technology, Coimbatore	82	92	-10
87	90	64	1	73	Bharati Vidyapeeth Deemed University College of Engineering, Pune	83	81	+2
96	71	86	35	30	Jaypee University of Information Technology, Solan	84	99	-15
51	100	71	6	92	Sagi Rama Krishnam Raju Engineering College, Bhimavaram	85	78	+7
98	48	80	63	96	Guru Gobind Singh Indraprastha University, New Delhi	86	80	+6
88	79	81	11	69	PES University, Bengaluru	87	86	+1
78	98	42	14	76	Army Institute of Technology, Pune	88	84	+4
75	93	56	29	84	C. V. Raman College of Engineering, Bhubaneswar	89	83	+6
100	69	31	80	44	Indian Institute of Information Technology Allahabad, Allahabad	90	98	-8
99	53	63	84	86	Pandit Dwarka Prasad Mishra Indian Institute of Information Technology, Design and Manufacturing (IIITDM) Jabalpur, Jabalpur	91	89	+2
80	62	97	87	83	National Institute of Technology Agartala, Agratala	92	94	-2
89	88	91	33	25	Government College of Technology, Coimbatore	93	100	-7
33	77	95	99	99	Shri Mata Vaishno Devi University, Katra	94	91	+3
91	80	30	94	76	Veermata Jijabai Technological Institute, Mumbai	95	95	-
57	78	92	68	86	Kalasalingam Academy of Research and Higher Education, Srivilliputtur	96	93	+3
70	94	54	45	99	University College of Engineering, Kakinada	97	87	+10
43	84	94	96	89	National Institute of Technology Meghalaya, Shillong	98	96	+2
67	99	49	26	99	New Horizon College of Engineering, Bengaluru	99	88	+11
66	97	72	24	76	NITTE Meenakshi Institute of Technology, Bengaluru	100	97	+3

Table 7 shows that the ranking of most of the HEIs goes through changes in their rank position when the modified ranking is calculated without 'Perception' as one of the parameters. The second last column of Table 7 presents a consolidated list of changes observed in the rank orders of HEIs. It is evident from the table that there are only 11 HEIs whose ranking is unaffected in both the ranking lists. The new ranking order sees the change of as far as 15 positions for a particular HEI.

Table 8 summarizes changes in the rank positions of various HEIs. There are 19 HEIs whose ranks changed by

two positions; 17 HEIs whose ranks changed by one position; and 12 HEIs witness change in their ranks by four positions. Two HEIs see a change in their ranks by 8, 11, 14, and 15 positions, and nine HEIs see a change in their ranks by three and five positions. Similarly, a change of six, seven, and 10 positions is witnessed by three HEIs. For 11 HEIs, there is no change in the ranking positions.

Overall, it can be seen that there is significant shuffling in the ranking list. Only 11 HEIs could retain similar ranking positions in both lists. Shuffling in the ranks is a clear indication of how vital the parameter PR is in the overall rankings of HEIs. The better score in this parameter has yielded better ranks. Those HEIs who could get good perception values have got higher rank positions.

Data are also analyzed to examine whether there exists a significant difference in the ‘Overall Score with PR’ and ‘Overall Score without PR.’ Wilcoxon signed ranks test is assumed to be an appropriate test for this related sample as data are not normal (Table 9). This test results in a significant difference in the rankings of the institutions when compared between ‘Overall Score with PR’ and ‘Overall Score without PR.’ Table 10 shows the

Table 8. Summary of Shift in Ranking Orders

S. No.	Change in the Ranking	Count
1	No change in the ranking.	11
2	Change in the ranking by one position (in either direction).	17
3	Change in the ranking by two positions (in either direction).	19
4	Change in the ranking by three positions (in either direction).	9
5	Change in the ranking by four positions (in either direction).	12
6	Change in the ranking by five positions (in either direction).	9
7	Change in the ranking by six positions (in either direction).	7
8	Change in the ranking by seven positions (in either direction).	5
9	Change in the ranking by eight positions (in either direction).	2
10	Change in the ranking by 10 positions (in either direction).	3
11	Change in the ranking by 11 positions (in either direction).	2
12	Change in the ranking by 14 positions (in either direction).	2
13	Change in the ranking by 15 positions (in either direction).	2

Table 9. Test of Normality on the Parameters – “Overall Score with PR” and “Overall Score without PR”

	Kolmogorov – Smirnov ^a			Shapiro – Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Overall Score with PR	.161	100	.000	.835	100	.000
Overall Score without PR	.133	100	.000	.864	100	.000

Note. ^a Lilliefors Significance Correction.

Table 10. Descriptive Statistics on the Parameters – “Overall Score with PR” and “Overall Score without PR”

	N	Mean	Std. Deviation	Minimum	Maximum
Overall Score with PR	100	47.22687	11.468757	35.847	88.954
Overall Score without PR	100	50.30016	10.534812	37.600	87.306

Table 11. Wilcoxon Signed Ranks Test and Test Statistics Results

		<i>N</i>	Mean Rank	Sum of Ranks
Overall Score without PR - Overall Score with PR	Negative Ranks	7 ^a	10.86	76.00
	Positive Ranks	93 ^b	53.48	4974.00
	Ties	0 ^c		
	Total	100		

Note.^a Total_Without_PR < Total.^b Total_Without_PR > Total.^c Total_Without_PR = Total.**Test Statistics^a**

	Total_Without_PR - Total
Z	-8.420 ^b
Asymp. Sig. (2-tailed)	.000

Note.^a Wilcoxon Signed Ranks Test.^b Based on negative ranks.

descriptive statistics. Table 11 shows a significant effect of scoring methodology on the ranks scored ($z = -8.42, p < .000$).

Findings and Suggestions

Two parameters, ‘Research Progression’ and ‘Perception’ among the five, have been found as dominating contributors in making the ranks of HEIs under the NIRF Ranking 2018. The results carry forward the findings of Chug et al. (2017) concerning the correlation between research progression (RP) and ranking order. The high correlation between RP and the overall rank is logical but the parameter PR having such a high correlation raises the question of the validity of the NIRF ranking methodology. This high correlation becomes an area of concern, particularly in a diverse nation like India, where the information gap among people is vast, and perception can be easily influenced by factors other than quality alone. On the issue of perception, the NIRF report comments the following :

By and large, our approach continues to give a lot of emphasis to collection and use of factual data, unlike several foreign rankings that put a large weight to perception – even in such matters as research. We believe that a data-based approach is more objective, especially in a large higher education system like India, where perception data alone can be quite misleading. As we shall see later, the resulting task is challenging, since a large amount of data needs to be collected, and also authenticated. (NIRF Report 2018, p. 17)

Despite the claim that India Rankings are more oriented towards factual data, the results show that perception has played a decisive role in determining the overall rank positions of the HEIs. Such significant influence of reputation or perception justifies the concerns of Davis (2016) as such dependency on reputation has prompted

criticism from the research community and some industry leaders, who claimed that rankings are a public relations competition that perpetuates unsubstantiated views of institutions and encourages peers to inflate the status of their schools in survey responses.

Vernon et al. (2018) also criticized subjective indicators like reputation and 'luxury' indicators, such as the award-winning faculty or alumni who are high-ranking executives. These indicators are not well suited for academic or research performance improvement initiatives.

Rankings must be evaluated without considering perception as a parameter. Perception is a psychological phenomenon and can be influenced by many other factors. Such dependency on perception has also prompted many HEIs to promote themselves heavily in media and other platforms to create a favorable perception among different stakeholders.

It can also be believed that the effect of perception is already incorporated in other parameters. Students generally take admission to a particular college based on the college's reputation and peer review reports. Helpful peer review and reputation can be assumed to result from a particular HEI's academic environment and career opportunities. Companies would also like to visit the campuses that have the reputation of performing well, and thus placements records of such HEIs will be high. All these things are very well counted for in the major groups like 'Teaching, Learning, and Resources (TLR)' and 'Graduation Outcome (GO).' Hence 'Perception' as one of the parameters can be avoided in HEIs' ranking methodology.

Despite these issues, the NIRF Ranking (or India Rankings) can be a step in the right direction as it motivates HEIs to compile their vital statistics properly. These statistics help institutes compare themselves with other players and the government in policy formulation. This study also highlights the importance of research and publications in the ranking of HEIs. More importantly, the NIRF provides publication details to the participating HEIs, and the institutions can utilize this information to their benefit.

Managerial Implications

A more comprehensive approach is needed by the government bodies and other stakeholders to design a ranking methodology for India. Additionally, that particular methodology has to be more transparent, objective, and verifiable. The ranking methodology should be such which can provide an accurate picture to HEIs about their performance and motivate them to do better. The study of Vernon et al. (2018) proposed that ideal ranking systems should limit the significance of peer reputation to no more than 10%; yet, the findings of this research conclude that detailed thinking is required to assess the utility of this parameter in the ranking evaluation of HEIs. With these findings, this study may be helpful for policymakers and administrators to evaluate the legitimacy of the ranking methodology.

Limitations of the Study and Scope for Further Research

This study is based on secondary data, and the rankings of the year 2018 have been considered for the analysis. Data of the successive years can further be analyzed to add more insights. Limited techniques of statistical methods have been used as per the objectives of the study. Future studies can use more advanced statistical techniques to analyze the data.

Authors' Contribution

Based upon her awareness, Dr. Shashi Singh envisaged the idea to evaluate the ranking of different higher educational institutions, as published by NIRF each year, and thus developed qualitative and quantitative design

to undertake this study. Dr. Shashi Singh did the preliminary work of developing the conceptual background of the paper after reviewing the literature of high repute, and she identified critical parameters around which study would be carried out. Dr. Ajay Singh implemented the statistical concepts and applied statistical software to do the analysis. He also helped in the paper writing along with the principal author.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

Funding Acknowledgement

The authors received no financial support for the research, authorship, and/or for the publication of this paper.

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