Top 100 Ranked Indian Institutions by NIRF 2021 in Engineering: An Interesting Analysis of Individual/Combined Metrics

Dr. Sivaperumal S., Dr. A. Abudhahir
Electronics and Communication Engg., Presidency University, Bengaluru, Karnataka, India

Abstract— **This paper analyses scores of the top 100 institutions ranked by the National Institutional Ranking Framework (NIRF-2021), Ministry of Education, Government of India in the Engineering category. It considered all five major parameters: Teaching, Learning & Resources, Research and Professional Practice, Graduation Outcome, Outreach and Inclusivity and Perception. Albeit the methodology has been publicly available, the participating institutions could not verify their scores for the ten sub-parameters (metric/combined metric) out of 17 even after the announcement of rankings every year. Of the ten, perception is one such parameter that carries 10% weight. The NIRF defines the functions for nine sub-parameters based on the data submitted by the participating institutions. Having done the extensive analysis in this work, it is found that there are quite a few cases where the function, representing the relationship between the data and score, is neither monotonically increasing nor decreasing. Hence, this paper compares the percentage change in average scores of the top 10, 25, 50 and 100, and bottom 10 and 50 ranked institutions on various parameters/sub-parameters to the extent possible and, in a few cases, reveals the nonlinear-multimodal function correlating the data and the scores. Finally, this work concludes with a few recommendations for the institutions to perform well in NIRF rankings in future and provides suggestions to NIRF to rank the institutions based on their size, years of existence and funding support by the government.**

Keywords — **Engineering Education, Rankings, Quality Education, Ranking Parameters**

JEET Category—**Choose one: Research, Practice, or Op-Ed. (Please note, Op-Eds are by invite only. Refer to the Paper Submission and Review Guidelines for more details.)**

I. INTRODUCTION

As India is one of the most important countries on the earth when it comes to education and, more importantly, sourcing international students to other countries. India is home to 1043 universities and 42,343 colleges. India is the third-largest public-funded higher education system. As per the AICTE, there are 5926 Engineering & Technical Institutions with a total intake of 23,66,656 during the AY 2021 – 22. Ministry of Education, Government of India, has been taking various initiatives to improve the quality of education and increase the Gross Enrolment Ratio. In addition to the Accreditations such as NAAC and NBA, the Ministry has come out with one important step of ranking the Institutions since 2016, the National Institutional Ranking Framework (NIRF). This framework focuses on all-around quality improvement of Institutions. From four Categories of Ranking in 2016 to 11 Categories of ranking in 2021, the framework has been getting revisions in its methodology and emphasis on the accuracy of the data has been improving year on year.

Engineering Ranking, one of the essential categories in NIRF, has been in the limelight and brought the attention of international ranking & accreditation agencies and international institutions. This work aims to comprehensively analyse the top 100 institutions in the Engineering category as NIRF 2021. This analysis includes all the 17 sub-parameters.

II. OVERALL ANALYSIS OF TOP 100 ENGINEERING INSTITUTIONS

This part gives an overall analysis of Institutions ranked in the Top 100 in the NIRF 2021 (Engineering).

In the top 100 ranked Institutions, the state of Tamil Nadu tops with 16 Institutions, followed by Karnataka with 8 Institutions. Only 2 Institutions from the State of Andhra Pradesh (AP) secured positions in the Top 100 out of 431 Engineering Technology Institutions. The first institution from the State of AP is 51st Ranked. Of the top 20 Institutions, five are from the State of Tamil Nadu.

The highest mark difference between the two institutions, ranked one after another, is 5.15. A further interesting observation is that the difference in score between the Institutions ranked 1st and 11th is 26. At the same time, the score difference between the institutions ranked 11th & 21st is around 6. This score difference reduces while the ranking increases. Hence, it is clear that there is tight competition between the institutions down the ranking.

The following table gives an idea of the category & type of institutions that are featured in the Top 100.

As indicated in the NIRF Report 2021, Centrally funded

institutions dominate the ranking, with 48 institutions in the top 100 and 44 institutions of National Importance (INI).

In each Sub-Parameter analysis, the average of all 100, top 10, top 25, top 50, last 50 and last ten are also presented towards understanding the marks secured by a different band of institutions.

TABLE I
TYPE AND CATEGORY OF INSTITUTIONS

Category based on funding / Institute Type	Central Govt.	Private Funded	Public-Private Partner-ship	State Govt.	Total
College	0	8	0	4	12
Deemed University	2	17	2	2	23
Institutions of National Importance	44	0	0	0	44
Universities	2	10	0	9	21
Total	**48**	**35**	**2**	**15**	**100**

III. TEACHING, LEARNING & RESOURCES (TLR)

For this parameter, the weightage in the total score is 30. This parameter includes four sub-parameters, namely Student Strength (6), Faculty-Student Ratio (9), Faculty Qualification & Experience (6) and Financial Resource & its Utilisation (9).

In this parameter, 15 Central Funded Institutions are securing the top 15 places, including 14 IITs and 1 IISER. The critical observation is that the Top Private deemed university, ranked 12th is the 72nd place in this parameter. Similarly, top-ranked State University, ranked 17th is at 91st place in this parameter.

TABLE II
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN TLR

	Score
Average of Top 10	82.81
Average of Top 25	74.86
Average of Top 50	71.48
Average of Top 100	66.03
Average of Last 10	58.02
Average of Last 50	60.58

A. Student Strength including PhD students (SS) (20 marks)

This sub-parameter caries a total mark of 20 and calculated by functions. 15 marks are for number of students at Under Graduate & Post Graduate Level and 5 marks for the number of Scholars at Doctoral Studies.

In this Sub-Parameter, the first two institutions ranked are private deemed universities ahead of three IITs, and both are declared as Institutes of Eminence (IoE). The institute which has scored the highest mark in Student Strength is KIIT, referred to as SS1, and the second-highest is VIT, referred to as SS2. The total intake (NT) of SS1 in UG is less than half of SS2. Similarly, in PG, the intake of SS1 is 29 times less than

the intake of SS2. In this case, PG includes the 5 Year Integrated Programmes also. Another important observation is that the total actual student strength of SS1 at the UG Level is more than the total intake, and lateral entry may be the reason. In PG, only 50% of seats filled in SS1. The overall observation is that the mark depends on the Intake of the Institution (UG, PG and PhD) and the ratio of enrolment with respect to the intake. In that case, SS2 has the highest intake and has an excellent ratio of enrolment without considering Lateral entry. Similarly, the lowest score is 4.31 (21.55%) by the Defence Institute of Advanced Technology, which is a Centrally funded deemed to be university. Seventeen institutions scored less than 10 (50%) under this sub-parameter, and 16 of them are Government Funded Institutions, including 11 INI.

TABLE III
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN STUDENT STRENGTH

	Score (20)	% of score
Average of Top 10	16.93	84.66
Average of Top 25	15.56	77.82
Average of Top 50	14.61	73.07
Average of Top 100	12.90	64.52
Average of Last 10	11.34	56.71
Average of Last 50	11.20	55.97

B. Faculty-Student Ratio with emphasis on permanent faculty (FSR) (30 marks)

FSR score is calculated based on the number of faculty members against the intake at UG & PG and the number of scholars in PhD. As many as 14 Institution has scored 30 of 30 in this sub-category, including three private institutions. As per the methodology, all these 14 Institutions have an FSR of 15:1 or better, including the Institutions, ranked at 95 & 100. By calculating, the least FSR is 32.26 among the Top 100 institutions. Some of the critical observations are that the institution ranked ninth overall at 83rd position with an FSR of 21.48.

TABLE IV
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN FSR

	Score (30)	% of score
Average of Top 10	27.01	90.02
Average of Top 25	25.22	84.08
Average of Top 50	25.43	84.75
Average of Top 100	24.86	82.86
Average of Last 10	24.40	81.35
Average of Last 50	24.29	80.97

Similarly, the Top Private Institution, ranked 12th, is at 84th position with an FSR of 22.48. The institution may have good FSR as per the Statuary Commissions, but the PhD is also considered for FSR calculation. As per FSR Score, the last ten institutions are Government Funded Institutions.

C. Combined Metric for Faculty with PhD (or equivalent) and Experience (FQE) (20 marks)

The score of this sub-parameter is calculated against the faculty Required or Actual faculty, whichever is higher. Hence, if the institution has not scored well in FSR, the score of FQE is also getting affected. The highest score in FQE is 19.48, and the lowest remains at 8.02. Therefore, IITs take top places as per the FQE Score.

TABLE V
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN FQE

	Score (20)	% of score
Average of Top 10	16.84	84.21
Average of Top 25	15.72	78.62
Average of Top 50	15.30	76.52
Average of Top 100	14.26	71.30
Average of Last 10	12.48	62.40
Average of Last 50	13.21	66.07

D. Financial Resources and their Utilisation (FRU) (30 Marks)

The score calculation of FRU is based on the Average Annual Capital Expenditure per student and Average Annual Operational (or Recurring) Expenditure per student during the last three years. 75% weightage is given to recurring expenditure.

Obliviously, the Government Institutions scored well in FRU. As per the FRU score, the first 36 Institutions are government-funded institutions. Interestingly, all private institutions have scored less than 50% of the score (15 out of 30) in FRU.

TABLE VI
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN FRU

	Score (30)	% of score
Average of Top 10	22.03	88.11
Average of Top 25	18.35	73.38
Average of Top 50	16.13	64.53
Average of Top 100	14.01	56.02
Average of Last 10	9.80	39.19
Average of Last 50	11.88	47.52

IV. RESEARCH AND PROFESSIONAL PRACTICE (RP)

For this parameter, the weightage in the total score is 30. This parameter includes four sub-parameters, namely Combined metric for Publications (10.5), Combined metric for Quality of Publications (12), IPR & Patents: Published & Granted (4.5) and Footprint of Projects and Professional Practice (3)

RP is one of the vital parameters with the highest weightage, same as the weightage of Teaching, Learning & Resources. More importance is given to the Quality and Quantity of Publication. The significant observation is that there is a significant correlation between the institutes' rank and the position with respect to the score of RP, which means that the institutes' rank and the rank only based on RP mark are very close for most of the institutions. The most significant difference between these ranks is 59 by Panjab University, which is ranked 89th, but in RP, the institute is at 30th position, which is 59 positions ahead. Another surprise is that IIST (ISRO's deemed university) has the largest lag in RP position (68th) against its rank (40th). Also, the difference between the Highest and Lowest RP scores is more than 93.4%, which is the largest among all the parameters. The difference between the Institutions at 1st and 11th positions as per the RP mark is close to 36%, which is again most prominent among all the parameters. Only 23 institutions scored more than 50%, including just five private institutions.

Another important observation is that, out of the top 25 institutions as per the RP mark, 24 institutions secured a position in Research Ranking. The institution, which is in the eighth position as per RP, did not find a spot in the Top 50 Research Institution.

TABLE VII
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN
RESEARCH AND PROFESSIONAL PRACTICE

	Score
Average of Top 10	76.67
Average of Top 25	61.20
Average of Top 50	50.00
Average of Top 100	35.12
Average of Last 10	15.95
Average of Last 50	20.23

A. Combined metric for Publications (PU) (35 marks)

TABLE VIII
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN PU

	Score (35)	% of score
Average of Top 10	29.48	84.21
Average of Top 25	24.71	70.61
Average of Top 50	20.89	59.68
Average of Top 100	14.73	42.09
Average of Last 10	6.68	19.09
Average of Last 50	8.58	24.50

The PU is the second-highest scoring sub-parameter with a contribution of 10.5 out of 100 marks. The least score in PU among the 100 is just 0.79 out of 35, which is just more than 2% of the mark.

In PU, only 34 institutions scored at least 50% of the mark, which is 17.5. On the other hand, five institutions did not even manage secure 10% of the mark, which is 3.5, in this vital parameter.

JEET

B. Combined metric for Quality of Publications (QP) (40 marks)

The QP is the highest-scoring sub-parameter with a 12.5 contribution to the total. It is a good sign to note that the quality of the publication is given higher weightage against the Metric of Publication (PU). In QP, only 27 institutions scored at least 50% of the mark, which is 20.

The observation on the positions based on PU and QP is Siksha ` O' Anusandhan has taken 18 position lead in QP (40th) against PU (58th), which is the highest, and at the same time, Visvesvaraya Technological University lags 19 positions in QP (57th) with respect to its position of PU (38th)

TABLE IX
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN QP

	Score (40)	% of score
Average of Top 10	31.99	79.97
Average of Top 25	26.86	67.16
Average of Top 50	22.44	56.09
Average of Top 100	15.87	39.67
Average of Last 10	7.79	19.48
Average of Last 50	9.30	23.24

C. IPR and Patents: Patents Published and Granted (IPR) (15 marks)

TABLE X
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN IPR

	Score (15)	% of score
Average of Top 10	9.10	60.67
Average of Top 25	5.54	36.93
Average of Top 50	3.90	26.00
Average of Top 100	2.63	17.53
Average of Last 10	1.15	7.67
Average of Last 50	1.36	9.07

In this Sub-Parameter, 28 Institutions scored "Zero" marks, and Only ten institutions managed to score 50% of the mark, which is 7.5. The critical observation is that many institutions did not focus on this parameter. As a result, the difference between their ranking and position with respect to IPR for many institutions is large. The highest lead is by Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology with 71 positions ahead in IPR (22nd) position against their ranking (93rd). At the same time, the most considerable lag is 50 by the National Institute of Technology Warangal with IPR position of 73rd against their ranking of 23rd.

An interesting observation is that 23 institutions lead at least ten places in the position of IPR with respect to their ranking. More interestingly, 19 are private institutions. It clearly shows that private institutions take much effort, maybe spend more money, in the at-least filing of patents. On the other hand, 37 institutions lag at least ten places in their position of IPR with respect to their Rankings, and 30 are Government Institutions.

D. The footprint of Projects and Professional Practice (FPPP) (10 Marks)

Only 9 Institutions managed to score at least 50% of marks in FPPP, which is 5. The top 36 Institutions based on the FPPP are Government Institutions, and only five private institutions are in the top 50 institutions as per the FPPP positions. The top-ranked private institution, Vellore Institute of Technology, ranked 12th, could secure only 89th position based on the FPPP score.

The highest mark scored by Thiagarajar College of Engineering (score of 1.66) was the highest by a private institution (it is noted that this is also a Government Aided Institution). 44 Institutions had scored less than 10% mark, which is 1. Of the 25 least scoring institutions in FPPP, 21 are private institutions. Private institutions are struggling to get Funding for Research Projects and Consultancy Projects.

TABLE XI
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN FPPP

	Score (10)	% of score
Average of Top 10	6.10	61.03
Average of Top 25	4.09	40.87
Average of Top 50	2.78	27.79
Average of Top 100	1.89	18.88
Average of Last 10	0.33	3.28
Average of Last 50	1.00	9.96

V. GRADUATION OUTCOME (GO)

For this parameter, the weightage in the total score is 20. This parameter includes four sub-parameters, namely Combined metric for Placement and Higher Studies (8), Metric for University Examinations (3), Median Salary (5) and Metric for Number of Ph.D. Students Graduated (4).

TABLE XII
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN GRADUATION OUTCOME

	Score
Average of Top 10	82.01
Average of Top 25	74.48
Average of Top 50	69.79
Average of Top 100	63.37
Average of Last 10	53.94
Average of Last 50	56.96

As many as 88 institutions scored more than 50% of marks in this parameter, the highest among all the parameters. Only one institution scored less than 40.

In the top 50 institutions based on the mark of GO, only ten private institutions are found.

JEET

A. Combined Metric for Placement and Higher Studies (GPH) (40)

This Sub-parameter is different because the institute's position as per the mark of this parameter has a drastic deviation from the institute's rank. This is the only parameter where the 1st Ranked institution is placed beyond 50 as per the score of GPH. For example, the institute, which is ranked 96th, has secured a place in the Top 10 as per the mark of GPH.

TABLE XIII
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN GPH

	Score (40)	% of score
Average of Top 10	32.20	80.49
Average of Top 25	30.77	76.94
Average of Top 50	30.41	76.03
Average of Top 100	28.64	71.59
Average of Last 10	26.49	66.22
Average of Last 50	26.86	67.16

B. Metric for University Examinations (GUE) (15 marks)

The GUE is the only Quantitative sub-parameter in which the average score of all the 100 institutions is more than 93%; more importantly, 99 institutions scored more than 60% marks, and only one institution had scored less than 50% of the mark; surprisingly it is a private deemed university, Vel Tech Rangarajan Dr.Sagunthala R&D Institute of Science and Technology.

57 Institutions scored full marks in GUE, which means that all of them have an average graduation percentage in the last 3 Academic years is more than 80%, including the institutions ranked 99th & 100th.

TABLE XIV
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN GUE

	Score (15)	% of score
Average of Top 10	14.57	97.15
Average of Top 25	14.44	96.29
Average of Top 50	14.45	96.30
Average of Top 100	14.40	96.03
Average of Last 10	14.04	93.63
Average of Last 50	14.36	95.75

C. Median Salary(GMS) (25 marks)

One of the parameters is calculated in terms of function based on the value of the Top Institution. An important observation about the mark of GMS is that the top 2 Institutions are IIITs which are Public-Private Partnership (PPP) Institutions, and third also an IIIT but Institutions of National Importance. All the three institutions, which top this sub-parameter, are ranked beyond 50. The average Median Salary of the Institution which scored high in GMS is Rs.19.77 Lacs. The function may be

defined based on this value. 97 Institutions scored more than 40% of the marks, which is 10.

TABLE XV
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN MS

	Score (25)	% of score
Average of Top 10	20.41	81.62
Average of Top 25	17.88	71.53
Average of Top 50	16.28	65.14
Average of Top 100	14.91	59.64
Average of Last 10	12.04	48.15
Average of Last 50	13.53	54.14

D. Metric for Number of PhD Students Graduated (GPHD) (20 Marks)

Based on the mark of this sub-parameter, GPHD, the top institution, has produced 343 Full-Time PhD. Students (average over last 3 AY) and No part-time candidates. Only one institution in the top 100, ranked 100th, has not produced any PhD Students.

Only 18 Institutions managed to score more than 50% of the mark in GPHD, which is 10. Only 3 Colleges managed to secure positions in the Top 75 Institutions as per GPHD Score, which is obvious.

TABLE XVI
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN GPHD

	Score (20)	% of score
Average of Top 10	14.83	74.15
Average of Top 25	11.38	56.91
Average of Top 50	8.65	43.23
Average of Top 100	5.42	27.12
Average of Last 10	1.37	6.84
Average of Last 50	2.20	11.00

VI. OUTREACH AND INCLUSIVITY (OI)

For this parameter, the weightage in the total score is 10. This parameter includes four sub-parameters, namely Percentage of Students from other States/Countries (Region Diversity RD) (3), Percentage of Women (Women Diversity WD) (3), Economically and Socially Challenged Students (ESCS) (2) and Facilities for Physically Challenged Students (PCS (2).

Totally 85 Institutions scored more than 50% of the marks in this parameter, with the highest score of 7.7 and the lowest being 3.9 out of 10. In the top 50 Institutions as per OI, only one state University and college each got the position. Otherwise, this parameter is dominated by the Private / Deemed Universities and Institutions of National Importance.

TABLE XVII
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN
OUTREACH AND INCLUSIVITY

JEET

	Score
Average of Top 10	60.26
Average of Top 25	57.17
Average of Top 50	57.17
Average of Top 100	55.98
Average of Last 10	54.78
Average of Last 50	55.68

A. Percentage of Students from other States/ Countries (Region Diversity RD) (30 marks)

This sub-parameter considerably influences the position of the institutions with respect to the parameter "OI". Similar to the OI Positions, the Colleges (both Government and Private) and State Universities are being pushed to the bottom of the table as per the position based on the marks of RD due to its limitations in admitting Students outside their home state.

The least performing State University in this Category is Anna University (which is ranked 18th), which could score only 0.77 out of 30 with 97th position.

TABLE XVIII

AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN RD

	Score (30)	% of score
Average of Top 10	20.22	67.40
Average of Top 25	16.73	55.76
Average of Top 50	15.71	52.36
Average of Top 100	13.51	45.02
Average of Last 10	11.31	37.69
Average of Last 50	12.30	40.98

B. Percentage of Women (Women Diversity WD) (30 marks)

Two Institutions are scoring full marks in this sub-parameter. One of them is Only for Women, and the other Institution is Siksha ` O' Anusandhan (Deemed University).

The lowest score in WD is by IIT (Indian School of Mines), Dhanbad, with 7.07 out of 30. Using the data provided on women students, only 4.9% of faculty are Women.

TABLE XIX

AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN WD

	Score (30)	% of score
Average of Top 10	13.97	46.57
Average of Top 25	15.50	51.68
Average of Top 50	17.15	57.15
Average of Top 100	18.93	63.10
Average of Last 10	20.71	69.05
Average of Last 50	20.32	67.72

The last 20 Institutions, as per the score of WD, are unfortunately Government Institutions and more specifically, 18 are Centrally Funded Institutions, including 5 IITs which are Ranked in the Top 10. At the same time, the top 5 Institutions as per WD are Private Institutions.

The average marks Top 10, 25, 50, 100 are increasing. However, higher the institute's rank, they are not scoring well in WD.

C. Economically and Socially Challenged Students (ESCS) (20 marks)

The ESCS is the lowest scoring sub-parameter, where only three institutions could score more than 50% of marks, which is 10 out of 20. On the other hand, only 30 institutions score more than 25% of marks (5 out of 20), including only two private Institutions (Vel Tech Rangarajan Dr Sagunthala R & D Institute of Science - 29th Position and Technology & Kalasalingam Academy of Research and Higher Education – 30th position).

The critical observation is top 25 institutions, as per ESCS, are Government Funded Institutions and specifically top 22 are centrally funded.

TABLE XX

AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN ESCS

	Score (20)	% of score
Average of Top 10	6.27	31.33
Average of Top 25	5.30	26.49
Average of Top 50	4.50	22.51
Average of Top 100	3.82	19.10
Average of Last 10	3.14	15.69
Average of Last 50	3.07	15.33

D. Facilities for Physically Challenged Students (PCS) (20 Marks)

TABLE XXI

AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN PCS

	Score (20)	% of score
Average of Top 10	19.80	99.00
Average of Top 25	19.64	98.20
Average of Top 50	19.82	99.10
Average of Top 100	19.72	98.60
Average of Last 10	19.62	98.10
Average of Last 50	20.00	100.00

Only 5 Institutions are not scoring full marks in this Sub-Parameter, and all the five are Government Funded Institutions, including IIT Bombay, which is ranked third. This is a qualitative parameter, where the institutions are expected to have more than 80% of buildings and toilets that suit Physically Challenged Students and the Ramps.

VII. PERCEPTION (PR)

For this parameter, the weightage in the total score is 10. This parameter does not have any sub-parameters. This parameter is purely based on survey conducted among the employers and the academic peers.

The top 10 institutions as per this Parameter is Government Funded institutions. Under this parameter, the top private institution is PSG College of Technology scored 57.14 marks out of 100, positioned at 12th place as per PR and ranked at 53rd. Only 12 institutions scored more than 50% of the marks, while 37 institutions scored more than 25%. Manipal University Jaipur did not score any mark in this parameter but still ranked 84th.

TABLE XXII
AVERAGE SCORES OF INSTITUTIONS RANKED IN DIFFERENT BANDS IN PR

	Score
Average of Top 10	77.74
Average of Top 25	53.95
Average of Top 50	37.35
Average of Top 100	25.38
Average of Last 10	13.41
Average of Last 50	9.12

VIII. RESULTS AND RECOMMENDATIONS

NIRF provides a comprehensive quality assessment of Indian Institutions. Out of 17 Sub-parameters, seven are directly calculated with formula, and nine are based on function. This function is defined based on the data collected. If the function is also published during the ranking release, this framework will further bring complete transparency, and every institution will be able to calculate its score (s).

The number of years of existence of the Institution may also be considered because institutions with more than 60 years old and 6 years old are taken on a same scale. Also, NIRF could also be done separately for Public Funded & Private Funded Institutions because few of the parameters such as Research are dominated by the Public Institutions.

It is also clear evident that, 57% of marks could be scored, if the Institution could concentrate on 6P's (Publications, Placements, Perception, Patent, Projects and Ph.D.).

The Institutions aiming to be included in NIRF and aiming to improve their ranking could strategize their regular academic and non-academic activities.

As per the current survey and literatures, there were no such as study on the Ranking Frameworks are undertaken both in the National and International Level. This work will pave way to other researchers to think of studying the other Category Rakings under NIRF, detailed analysis of individual parameters and international rankings. These type of study will be useful for the institutions to understand various ranking frameworks and the importance specific parameters.

On the other side, these kind of Analysis could help the aspiring students and faculty members to understand about the Institutions performance in various parameters.

REFERENCES

Websites and various Reports of various statutory organisations and Ministries
National Assessment and Accreditation Council (NAAC) - http://naac.gov.in/index.php/en/
All India Survey on Higher Education (AISHE)
National Institutional Ranking Framework (NIRF) - https://www.nirfindia.org/nirfpdfcdn/2021/flipbook/index.html#p=1 / https://www.nirfindia.org/2021/EngineeringRanking.html
All India Council for Technical Education (AICTE) - https://facilities.aicte-india.org/dashboard/pages/dashboardaicte.php
University Grants Commission (UGC) - https://www.ugc.ac.in/oldpdf/Consolidated%20list%20of%20All%20Universities.pdf
Ministry of Education - https://www.education.gov.in/en/documents_reports?field_documents_reports_tid=All&field_documents_reports_category_tid=All&title=&Apply=Apply
https://en.wikipedia.org/wiki/Higher_education_in_India