Students Opinions of quality Management in Engineering Colleges: An Empirical Investigation

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ABSTRACT: This paper mainly presents the perception of students in engineering education towards quality in management and leadership, infrastructure and learning resources, and teaching learning process and evaluation. Data were collected from 450 engineering students from 7 engineering colleges in Vizianagaram and Srikakulam Districts of Andhra Pradesh, India through structured questionnaire and used scale values for investigation and conclusions. This study brings to light the possible constrains to be faced by the various stakeholders and regulatory bodies. A well-structured questionnaire has prepared to collect the data and analyzed it with SPSS. ANOVA was employed to find out the consequence of variance between variable. The study brings to light the possible constraints to be faced by the stakeholders.

Keywords: Quality Management, Quality, Technical Education, Perception, Students.

I. INTRODUCTION

Technical Education holds a key role in the development of the nation by creating skilled workforce, increasing productivity of industry and life style of the people. India is witnessing a technical age. There is a huge requirement for skilled workforce with the result the demand of technical education is at its peak in India. Hence, Quality Technical education is seen as the most employable education compared to traditional general education in India. Quality technical institutions play an important role in the economic development of a country by providing technically sound manpower which places India in the community of prosperous nations [1].

Globalization process has acted like catalyst in technical education of India and raised demand in information technology sector [2].The initiative has been taken not only by government but also by private stake holders to form strong and sound technical institutes in India. As the quantity increases, we need to keep a sound track of quality as well [3]. One should not look at the technical education system as profit making business. Sometimes this kind of approach dilutes the quality of the institute which is harmful in longer run.

The definition of quality depends upon the role of the people defining it there are as many definitions as there are people writing about quality. The definition According to Garvin [4] a thing said to have the positive attribute of conformance to specified standards. Similarly quality has been defined as value for money [5], Fitness for use [6], conformance to requirements [7], delighting the customer [8] and the routine optimization of product and process prior to manufacture [9]. According to the International Organization for Standardization, (ISO9000) quality is the entirety of advantage and feature of a product that afford on its capacity to satisfy stated or implied needs [10]. Flynn *et al.*, (1994) defined Quality Management as "an integrated approach to achieving continuous improvement of procedures and disorder prevention at all levels of the organization, in order to meet or exceed customer expectation" [11]. It encompasses all activities and functions concerned with the attainment of quality [12]. The quality of engineering education has direct influence on development of Indian economy. The growth in number of institutions cannot guarantee the quality in engineering education [13].

There is a need for continuous improvement of institutional initiatives including practices of assessment of quality and quality assurance mechanisms. It is expected that the study will further enhance the concept of quality in technical education from stakeholders' perspectives. A better understanding of definitions of quality in technical education will help shape quality assurance mechanisms in institutions offering technical education. The information to be of technical education generated from the proposed study will be significant for the administrators and policy makers. It shall enable them to understand the issues associated with the process and implementation of the system in general and in the application of a quality assurance system for the assessment process in particular. They would have more than raw data on which future policies and practices could be based and further improved because this data has been systematically collected and analyzed and its meaning extracted to make sense of the position.

The study conveys to light the possible constraints to be faced by the stakeholders and regulatory bodies of technical institutions. It is anticipated that through the results and recommendations from the study, the relevant authorities will realize that there are a number of important practical considerations which can contribute to the success of the implementation of quality assurance measures. It might help increase the effectiveness of teaching learning process among administrators as well as other stakeholders involved.

The conclusions of this study will not only improve the data in this area but it may also inspire further research studies in institutions located in India and particularly in Andhra Pradesh.

II. OBJECTIVES OF THE STUDY

– The key objective of the study is to know the opinions of students towards quality in engineering education colleges.
– To identify key factors influencing the quality of engineering colleges.

III. RESEARCH METHODOLOGY

A. Sample Selection
The study has been conducted in 7 engineering colleges situated in Srikakulam and Vizianagaram Districts Andhra Pradesh, India. The study conducted on 450 engineering students of 3rd and 4th year course of various branches as a random selection from the 7 selected engineering colleges. Survey conducted with the help of well-structured questionnaire. The questionnaire consists of some key quality factors i.e. Management & Leadership, Infrastructure & Learning Resources, and Teaching Learning Process & Evaluation which are considered as the major indicators of quality management in engineering colleges.

B. Data Analysis
Tabulation, Analysis and Interpretation of Data and Information Collected data and information was collated, analyzed and interpreted using necessary Statistical and Mathematical tools. Tables and Diagrams have been made so as to make the study clear, logical and meaningful. Primary data were entered using the software called SPSS and after processing of data the required tables were generated. f- test and t- test were performed to test the results.

IV. RESULTS

The Table 1 explains the response of sample students regarding the quality in management and leadership aspect at their studying institute.
It is found that out of the sample students has given First rank to the placements are being provided through campus recruitment with a scale of 1940 in which 46 percent responded it is good, 28.2 percent opined it very good. Second priority is given to the 'involvement of the students in laboratory and workshop practices' with a scale of 1876 in which more than half of the students (54.0%) responded it is good, one fourth of the students (33.6) felt it is very good.

Table 1: Perceptions of the students about the quality in management and leadership at their studying institute.

S. No.	Statements	Very poor	poor	Average	Good	Very good	Total
	Scale Value (SV)	1	2	3	4	5	
1.	Institution has clear vision, mission and policy statement related to quality	5 (1.1)	10 (2.2)	59 (13.1)	252 (56.0)	124 (27.6)	450 (100.0)
	Frequency x Scale Value (F x SV)	5	20	177	1008	620	1830-VIII
2.	Culture and discipline of institution	4 (0.9)	10 (22)	42 (9.3)	250 (55.6)	144 (32.0)	450 (100.0)
	Frequency x Scale Value (F x SV)	4	20	126	1000	720	1870-III
3.	Overall Ranking & Ratings of the Institution in various Magazine Ratings/ Present position of the Institution in various Agency Ratings and Rankings	1 (0.2)	13 (2.9)	61 (13.6)	264 (58.7)	111 (24.7)	450 (100.0)
	Frequency x Scale Value (F x SV)	1	26	183	1056	555	1821-IX
4.	Implementation of the ISO / TQM concepts in the institution	5 (1.1)	9 (2.0)	81 (18.0)	242 (53.8)	113 (25.1)	450 (100.0)
	Frequency x Scale Value (F x SV)	5	18	243	968	565	1799-X
5.	Involvement of the students in laboratory and workshop practices	5 (1.1)	9 (2.0)	42 (9.3)	243 (54.0)	151 (33.6)	450 (100.0)
	Frequency x Scale Value (F x SV)	5	18	126	972	755	1876-II
6.	Counseling, advices and guidance at every stage of your studies	6 (1.3)	7 (1.6)	63 (14.0)	218 (48.4)	156 (34.7)	450 (100.0)
	Frequency x Scale Value (F x SV)	6	14	189	872	780	1861-IV
7.	Motivation in co-curricular and extra-curricular activities (like NNS, NCC, YRC, Sports, cultural and other club Activities)	8 (1.8)	15 (3.3)	61 (13.6)	209 (46.4)	157 (34.9)	450 (100.0)
	Frequency x Scale Value (F x SV)	8	30	183	836	785	1842-VII
8.	Scholarships / Rewards offered by the Institution for meritorious students	11 (2.4)	17 (3.8)	66 (14.7)	233 (51.8)	123 (27.3)	450 (100.0)
	Frequency x Scale Value (F x SV)	11	34	198	932	615	1790-XI
9.	The institution conducts seminars / workshops / conferences regularly for students	2 (0.4)	13 (2.9)	65 (14.4)	230 (51.1)	140 (31.1)	450 (100.0)
	Frequency x Scale Value (F x SV)	2	26	195	920	700	1843-VI

No.	Statement						
10.	The institution encourages in participating seminars / workshop / conferences to the students	4 (0.9)	4 (0.9)	59 (13.1)	246 (54.7)	135 (30.0)	450 (100.0)
	Frequency x Scale Value (F x SV)	4	8	177	984	675	1848-V
11.	Placements are being provided through campus recruitment	29 (6.4)	13 (2.9)	74 (16.4)	207 (46.0)	127 (28.2)	450 (100.0)
	Frequency x Scale Value (F x SV)	29	226	222	828	635	1940-I
12.	Placement activities in the institution can equip the students to face various tests such as attitude, aptitude and English comprehensive tests etc.	25 (5.6)	13 (2.9)	62 (13.8)	227 (50.4)	123 (27.3)	450 (100.0)
	Frequency x Scale Value (F x SV)	25	26	186	908	615	1760-XIII
13.	Courses in Soft skills / Personality Development programs offered by the Institution	26 (5.8)	11 (2.4)	60 (13.3)	230 (51.1)	123 (27.3)	450 (100.0)
	Frequency x Scale Value (F x SV)	26	22	180	920	615	1763-XII
14.	Internship programmes, Industrial visits and training facilities	36 (8.0)	19 (4.2)	90 (20.0)	205 (45.6)	99 (22.0)	450 (100.0)
	Frequency x Scale Value (F x SV)	36	38	270	820	495	1659-XIV
	Total score for Management and Leadership						25502
	Maximum Possible Score	5 (Maximum score points) x 450 (number of respondents) x 14 (number of statements)					31500
	Percentage of score of Management and Leadership	Total score for product display/Maximum Possible Score x 100					80.95

The 3rd place is given to the statement 'culture and discipline of institution' with a score of 1870 from this more than half of the sample students (55.6%) responded it is good, more than one fourth of students (32.0%) felt it is very good. On the other hand the 4th rank is given for 'counseling, advices and guidance at every stage of your studies' with a score of 1861 in that total score 48.4 percent opined it is good, 34.7 percent responded it is very good.

'The institution encourages in participating seminars / workshop / conferences to the students' perceived with a score of 1848 in which 54.7 percent of sample students expressed that is good, 30.0 percent opined it very good and respondents have given fifth position to this statement. The 6th rank is given to the 'institution conduct seminars/ workshops/ conference regularly for students' perceived with a score of 1843 in which 51.1 percent concluded that it is good, 31.1% responded it is very good.

The statement 'Motivation in co-curricular and extra-curricular activities (like NNS, NCC, YRC, Sports, cultural and other club Activities)' perceed with a score of 1842 in which 46.4 percent of sample students opined that it is good, 34.9 percent said it is very good and gave 7th position to this statement.

'The institution has clear vision, mission and policy statement related to quality' has perceived with 1830 in that more than half of the students (56.0%) students opined it is good, 27.6 percent said it is very good and given 8th position to this statement.

The 9th rank is given to 'overall ranking & ratings of the institution in various magazine ratings/ present position of the institution in various agency ratings and rankings' is perceived with 1821 in that 58.7 percent opined it is good, 24.7 percent of students felt it is very good. The 10th priority is given to the statement 'Implementation of the ISO / TQM concepts in the institution' in that (53.8%) opined it is good, 25.1 percent of believed it is very good with the score of 1799.

On the other hand 11th position is given to 'scholarships/rewards offered by the institution for meritorious students' in which 51.8 percent of students are opined that it is good, 27.3 percent felt it is very good. 'The courses in soft skills/ personality development programs offered by the institution' is perceived with 1763 in that 51.1 percent of sample students opined it is good, 27.3 percent responded it is very good and gave 12th position to this statement. The statement 'placement activities in the institution can equip the students to face various tests such as attitude, aptitude and English comprehensive tests etc.' is perceived with a score of 1760 and the students gave 13th rank to this statement, 50.4 percent opined it is good, 27.3 percent felt it is very good.

Finally the last rank (14th rank) is given to the 'internship programmes, Industrial visits and training facilities' with a score of 1659 in which 45.6 percent of sample students opined that it is good, 22.0 percent felt it is very good. While the total score of student's perception on management and leadership is 25502 and the average score is 1822.

The Table 2 shows that the perceptions of the sample students about quality in 'infrastructure and learning resources' available at their studying institute.

It is observed that 1st rank is given to the statement 'Open access for learning resources (like Laboratories, Workshop, Labs, Computer, Library, Reading Rooms, Internet facility etc.)'. It is perceived with a score of 2081 in which 46.0 percent of students responded as good, 36.2 percent of students felt it is very good. Second position is given to 'quality of class rooms' with a score of 1841, in which, more than half of the students (51.1%) opined it is good, 31.8% percent opined it is very good. On the other hand the 3rd rank is given to the statement 'A well sourced library and resource centre is available with appropriate resources to meet the curriculum needs' is perceived with a score of1818 in which 46.7 percent of students opined that it is good, 35.1 percent of students opined that it is very good.

Table 2: Perceptions of the students about the infrastructure and learning resources at their studying institute.

S. No.	Statements	Very poor	poor	Average	Good	Very good	Total
	Scale Value (SV)	1	2	3	4	5	
1.	Curriculum is planned properly taking into account of all modern developments	25 (5.6)	17 (3.8)	74 (16.4)	227 (50.4)	106 (23.6)	450 (100.0)
	Frequency x Scale Value (F x SV)	25	34	222	908	530	1719-XII
2.	Syllabus is designed such that each module encourages thought process and creativity	30 (6.7)	13 (2.9)	76 (16.9)	212 (47.1)	119 (26.4)	450 (100.0)
	Frequency x Scale Value (F x SV)	30	26	228	848	595	1727-IX
3.	Theoretical knowledge is related to practical applications during teaching	25 (5.6)	17 (3.8)	73 (16.2)	228 (50.7)	107 (23.8)	450 (100.0)
	Frequency x Scale Value (F x SV)	25	34	219	912	535	1725-X
4.	A well sourced library and resource centre is available with appropriate resources to meet the curriculum needs	24 (5.3)	10 (2.2)	48 (10.7)	210 (46.7)	158 (35.1)	450 (100.0)
	Frequency x Scale Value (F x SV)	24	20	144	840	790	1818-III
5.	Open access for learning resources (like Laboratories, Workshop, Labs, Computer, Library, Reading Rooms, Internet facility etc.)	30 (6.7)	6 (1.3)	44 (9.8)	207 (46.0)	163 (36.2)	450 (100.0)
	Frequency x Scale Value (F x SV)	30	12	396	828	815	2081-I
6.	Performance of training and placement cell	29 (6.4)	11 (2.4)	66 (14.7)	218 (48.4)	126 (28.0)	450 (100.0)
	Frequency x Scale Value (F x SV)	29	22	198	872	630	1751-VI
7.	Quality of class rooms	8 (1.8)	9 (2.0)	60 (13.3)	230 (51.1)	143 (31.8)	450 (100.0)
	Frequency x Scale Value (F x SV)	8	18	180	920	715	1841-II
8.	Quality of lab equipment	18 (4.0)	16 (3.6)	61 (13.6)	227 (50.4)	128 (28.4)	450 (100.0)
	Frequency x Scale Value (F x SV)	18	32	183	908	640	1781-IV
9.	Infrastructural facilities for research / innovative projects	19 (4.2)	18 (4.0)	91 (20.2)	211 (46.9)	111 (24.7)	450 (100.0)
	Frequency x Scale Value (F x SV)	19	36	273	844	555	1727-VIII
10.	Sports and games, gymnasium facilities	16 (3.6)	18 (4.0)	93 (20.7)	223 (49.6)	100 (22.2)	450 (100.0)
	Frequency x Scale Value (F x SV)	16	36	279	892	500	1723-XI
11.	Hygienic canteen facility	21 (4.7)	25 (5.6)	119 (26.4)	184 (40.9)	101 (22.4)	450 (100.0)
	Frequency x Scale Value (F x SV)	21	50	357	736	505	1669-XIV
12.	Quality of hostel facility	21 (4.7)	29 (6.4)	84 (18.7)	215 (47.8)	101 (22.4)	450 (100.0)
	Frequency x Scale Value (F x SV)	21	87	252	860	505	1725-X
13.	Quality of amenities provided	18 (4.0)	16 (3.6)	63 (14.0)	227 (50.4)	126 (28.0)	450 (100.0)
	Frequency x Scale Value (F x SV)	18	32	189	908	630	1777-V
14.	Quality internet facility round the clock	27 (6.0)	22 (4.9)	65 (14.4)	202 (44.9)	134 (29.8)	450 (100.0)
	Frequency x Scale Value (F x SV)	27	44	195	808	670	1744-VII
15.	Innovative teaching / Learning methods	15 (3.3)	20 (4.4)	87 (19.3)	250 (55.6)	78 (17.3)	450 (100.0)
	Frequency x Scale Value (F x SV)	15	40	261	1000	390	1706-XIII
	Total score for Infrastructure and Learning Resources						26514
	Maximum Possible Score	5 (Maximum score points) x 450 (number of respondents) x 15 (number of statements)					33750
	Percentage of score of for Infrastructure and Learning Resources	Total score for product display/Maximum Possible Score x 100					78.5

The 4th rank is given to the quality of lab equipment is perceived with a score of 1781 in which 50.4 percent of students responded it is good and 28.4 percent opined it is very good. On the other hand 'the quality of amenities provided' with a score of 1777 in which 50.4 percent of sample students opined that it is good, 28.0 percent felt it is very good and the respondents given 5th position to this statement.

The 6th rank is given for the 'performance of training and placement cell' in which 48.4 percent of students opined it is good, 28.0 percent opined it is very good with a perceived score of 1751. Regarding 'the quality internet facility round the clock' is perceived with a score of 1744 in that 44.9 percent of students stated it is good, 29.8 percent of students opined it is very good and given the 7th position to this statement.

The 8th position is given to 'infrastructural facilities for research / innovation projects' perceived with a score of 1727 in that 46.9 percent of sample respondents opined it is good and 24.7 percent felt it is very good. On the other hand 9th rank is given to statement 'syllabus is designed such that each module encourages thought process and creativity' in that 47.1 percent declared it is good, 26.4 percent expressed an opinion as it is very good and it is perceived with a score of 1727.

The 10th position is given for two different statements i.e. 'theoretical knowledge is related to practical applications during teaching' and 'the quality of hostel facility' are perceived with a score of 1725, in which 50.7 percent respondents opined it is good, 23.8 percent opined it is very good for 'theoretical knowledge is related to practical applications during teaching', 47.8 percent of students opined it is good, 22.4 percent of sample students felt it is very good for the statement 'quality of hostel facilities. On the other hand 11th rank

is given for 'Sports and games, gymnasium facilities' is perceived with a score of1723 in that 49.6 percent of students opined that it is good, 22.2 percent opined it is very good.

The statement 'curriculum is planned properly taking into account of all modern developments' occupied with 12th rank with a score of 1719 in which 50.4 percent said it is good and 23.6 percent said it is very good. The statement 'Innovative teaching / learning methods' perceived with a score of 1706 in that 55.6 percent responded it is good and 19.3 percent felt it is average and it is occupied with 13th position.

Finally, the 14th rank is given for' hygienic canteen facility' with a score of 1669 in which 40.9 percent opined it is good and 26.4 percent opined it is average. Therefore the total score of student's perception on 'infrastructure and learning resources' is 26514 and the average score is 1768.

Table 3: Perceptions of the students about the Teaching Learning Process and Evaluation at their studying institute.

S. No.	Statements	Very poor	poor	Average	Good	Very good	Total
	Scale Value (SV)	1	2	3	4	5	
1.	Qualified and experienced teachers	11 (2.4)	13 (2.9)	58 (12.9)	251 (55.8)	117 (26.0)	450 (100.0)
	Frequency x Scale Value (F x SV)	11	26	174	1004	585	1800-VII
2.	Attitude of teachers towards their students	4 (0.9)	15 (3.3)	50 (11.1)	247 (54.9)	134 (29.8)	450 (100.0)
	Frequency x Scale Value (F x SV)	4	30	150	988	585	1757-XIII
3.	Teacher- student interaction at class and institute level	23 (5.1)	6 (1.3)	54 (12.0)	231 (51.3)	136 (30.2)	450 (100.0)
	Frequency x Scale Value (F x SV)	23	12	162	924	680	1801-VI
4.	Faculty guidance and support for mini project / main project / hobby project etc.	19 (4.2)	12 (2.7)	54 (12.0)	223 (49.6)	142 (31.6)	450 (100.0)
	Frequency x Scale Value (F x SV)	19	24	162	892	710	1807-V
5.	Supply of lesson plan, lecture plan and course material etc.	19 (4.2)	9 (2.0)	66 (14.7)	246 (54.7)	110 (24.4)	450 (100.0)
	Frequency x Scale Value (F x SV)	19	18	198	984	550	1769-XI
6.	Teaching aids usage by facility - OHP, LCD projector, etc.	18 (4.0)	9 (2.0)	60 (13.3)	245 (54.4)	118 (26.2)	450 (100.0)
	Frequency x Scale Value (F x SV)	18	18	180	980	590	1786-VIII
7.	Assistance and guidance of lab instructors'	23 (5.1)	10 (2.2)	56 (12.4)	239 (53.1)	122 (27.1)	450 (100.0)
	Frequency x Scale Value (F x SV)	23	20	168	956	610	1777-X
8.	Conduct of practical sessions	23 (5.1)	10 (2.2)	74 (16.4)	237 (52.7)	106 (23.6)	450 (100.0)
	Frequency x Scale Value (F x SV)	23	20	222	948	530	1743-XIV
9.	Guest lecturers with visiting faculty from top ranking universities / NITs/ IITs/ Executives form industry	29 (6.4)	16 (3.6)	75 (16.7)	206 (45.8)	124 (27.6)	450 (100.0)
	Frequency x Scale Value (F x SV)	29	32	225	824	620	1730-XV
10.	Industrial visits / In - plant trainings / Internships facilitated by the Institute	31 (6.9)	30 (6.7)	87 (19.3)	195 (43.3)	107 (23.8)	450 (100.0)
	Frequency x Scale Value (F x SV)	31	60	261	780	535	1667-XVIII
11.	Organization of training & Placement programmes	25 (5.6)	15 (3.3)	92 (20.4)	208 (46.2)	110 (24.4)	450 (100.0)
	Frequency x Scale Value (F x SV)	25	30	276	832	550	1713-XVI
12.	The Industry - Institution interaction programmes are conducted periodically	29 (6.4)	16 (3.6)	98 (21.8)	195 (43.3)	112 (24.9)	450 (100.0)
	Frequency x Scale Value (F x SV)	29	32	294	780	560	1695-XVII
13.	Special efforts / remedial classes for poor academic performance students	8 (1.8)	24 (5.3)	76 (16.9)	228 (50.7)	114 (25.3)	450 (100.0)
	Frequency x Scale Value (F x SV)	8	48	228	912	570	1766-XII
14.	Examination system of university / college	6 (1.3)	8 (1.8)	67 (14.9)	230 (51.1)	139 (30.9)	450 (100.0)
	Frequency x Scale Value (F x SV)	6	16	201	920	695	1838-III

15.	Transparency of evaluation system	8 (1.8)	14 (3.1)	67 (14.9)	258 (57.3)	103 (22.9)	450 (100.0)
	Frequency x Scale Value (F x SV)	8	28	201	1032	515	1784-IX
16.	Regular tracking and monitoring of student progress through tutorials, class, test, assignments, projects etc.	7 (1.6)	10 (2.2)	56 (12.4)	236 (52.4)	141 (31.3)	450 (100.0)
	Frequency x Scale Value (F x SV)	7	20	174	944	705	1850-I
17.	Intimation to parents regarding students' academic reports	16 (3.6)	8 (1.8)	54 (12.0)	232 (51.6)	140 (31.1)	450 (100.0)
	Frequency x Scale Value (F x SV)	16	16	162	928	700	1822-IV
18.	Feedback mechanism on teachers' performance	14 (3.1)	10 (2.2)	54 (12.0)	215 (47.8)	157 (34.9)	450 (100.0)
	Frequency x Scale Value (F x SV)	14	20	162	860	785	1841-II
	Total score for Teaching Learning Process and Evaluation						31946
	Maximum Possible Score	5 (Maximum score points) X 450 (number of respondents) X 19 (number of statements)					40500
	Percentage of score of Teaching Learning Process and Evaluation	Total score for product display/Maximum Possible Score X 100					78.8

Table 3 illustrates the perceptions of the sample students about the 'Teaching Learning Process and Evaluation' at their studying institute.

According to the above table 52.4 percent opined good and 31.3 percent opined very good for 'regular tracking and monitoring of student progress through tutorials, class, test, assignments, projects etc.' and perceived with a score of 1850 and it is occupied with 1st position. On the other hand 2nd rank is given for 'feedback mechanism on teachers' performance' is perceived with a score of 1841 in which 47.8 percent opined it is good and 34.9 percent felt it is very good.

The statement 'examination system of university/college' is occupied the 3rd position with a score of 1838 in which 51.1 percent responded it is good and 30.9 percent opined it is very good. While the perceived score of 'intimation to parents regarding students' academic reports' is 1822 in which 51.6 percent of sample students opined it is good, 31.1 percent opined that it is very good and given 4th rank to this statement.

Regarding the statement 'faculty guidance and support for mini project/main project/hobby project etc.' occupied in 5th position in which 49.6 percent felt it is good and 31.6 percent opined it is very good with a score of 1807. The 6th rank is given for 'the teacher- student interaction at class and institute level' with a score of 1801 in which 51.3 percent opined it is good and 30.2 percent opined it is very good.

The statement 'qualified and experienced teachers' perceived with a score of 1800 and it is occupied 7th rank in which 55.8 percent responded it is good and 26.0 percent felt it is very good. While the statement 'teaching aids usage by facility - OHP, LCD projector etc.' perceived with a score of 1786 and 54.4 percent opined that it is good and 26.2 percent opined it is very good and this statement is occupied with 8th rank.

The 9th position is given to the 'transparency of evaluation system' shows the average score of 1784 in which 57.3 percent opined it is good and 22.9 percent opined it is very good. It is observed that 53.1 percent responded as good and 27.1 percent felt very good for 'assistance and guidance of lab instructors' and it is perceived with a score of 1777 and occupied with 10th position. On the other hand 11th rank is given for 'supply of lesson plan, lecture plan and course material etc.' in which 54.7 percent opined it is good, 24.4 percent opined it is very good with a score of 1769.

The statement 'special efforts/remedial classes for poor academic performance students' perceived with a score of 1766 in which 50.7 percent opined it is good and 25.3 percent felt it is very good, respondents given 12th rank to this statement. 13th position is given for 'attitude of teachers towards their students' in which 54.9 percent opined good and 29.8 percent felt it is very good with a score of 1757.

The 14th rank is given for the statement 'conduct of practical sessions' in that 52.7 percent responded as it is good, 23.6 percent opined it is very good and it is perceived with a score of 1743. The guest lecturers with visiting faculty from top ranking universities / NITs/ IITs/ Executives form industry is perceived with a score of 1730 in that 45.8 percent opined it is good and 27.6 percent responded it is very good, the respondents given 15th rank to this statement. On the other hand 'the organization of training & placement programmes' perceived with a score of 1713 in which 46.2 percent opined it is good, 24.4 percent responded it is very good and its position is 16th in this sample data. Regarding the 17th rank is given for 'Industry - Institution interaction programmes are conducted periodically' is perceived with a score of 1695 in that 43.3 percent opined it is good, 24.9 percent opined it is very good.

Finally, the 18th position is given for the statement 'Industrial visits / In - plant trainings / Internships facilitated by the Institute' is perceived with a score of 1667 in which 43.3 percent opined it is good and 23.8 percent opined it is very good. The total score of teaching learning process and evaluation perception is 31946, the average score is 1775.

V. FINDINGS AND CONCLUSION

This paper outlines the findings and analysis of the study involving perception of students towards quality in technical education. The findings indicate that the level of quality services provided by engineering colleges is good. The key findings of this study are:

– It is observed that in the perception of the sample students regarding quality in management and leadership aspects, most of the students have positive response on these statements i.e. 'placements are being provided through campus recruitment', 'involvement of the students in laboratory and workshop practices' and 'culture and discipline of institution' with a scale values of 1940, 1876 and 1870 respectively. The overall percentage of the above sample data is 80.95. It can be inferred that the students satisfied towards the quality in 'management and leadership' aspects.

– It is also noticed that the perceived score of 'open access to learning resources' and 'quality of class rooms' found higher than the average score. With this background there is a need of improvement in the rest of factors in the above sample data. The overall percentage of the above sample data is 78.5. This shows that the students are satisfied with quality of 'infrastructure and learning resources' at engineering college.

– We can also found that in the perception of the sample students about the teaching learning process and evaluation at their studying institute, most of the students have positive response on these statements i.e. regular tracking and monitoring of student progress through tutorials, class, test, assignments, projects etc., feedback mechanism on teachers' performance, Examination system of university/college with a scale value of 1850, 1841 and 1838 respectively. The overall percentage of the above sample data is 78.8. This shows that the students are satisfied with quality on 'teaching learning process and evaluation'.

VI. FUTURE SCOPE

The study will be helpful to the society in understanding the concept of TQM in Technical Education. In the context of knowledge and education, Total Quality Management is an investment which is vital in promoting social and economic development of the nation through building its capabilities by providing education including various streams of technical education. It will also helpful in to understand their different areas and progress. The study will also give a direction to the technical institutions, which they can further develop with their internal research and also helpful to scholars for their research.

Conflict of Interest. The paper does not have any conflict of interest and it is the original study of the researchers.

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