

Print ISSN: 2288-4637 / Online ISSN 2288-4645
doi: 10.13106/jafeb.2014.vol1.no3.37.

Most to Least Preferred Parameters Affecting the Quality of Education: Faculty Perspectives in India

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[Received: June 6, 2014 Revised: August 7, 2014 Accepted: August 14, 2014]

Abstract

The objective of the study is to find out the faculty members' perspective of most and least preferred parameters affecting the quality of education in an affiliated undergraduate engineering institution in Haryana, India. It is a descriptive research. The data has been collected with the help of Questionnaire Based Survey. The sample size for the study is 110. The respondents are the faculty members teaching B. Tech who were selected randomly from the above said geographical area. For data analysis and conclusion of the results of the survey, statistical tool like factor analysis was performed in SPSS. The most preferred aspects of the institution by the faculty members are: a secured Wi-Fi facility is well channelized to provide easy access, library is well equipped, faculty can visit the library with ease whenever they find time, toilets for the faculty are hygienic and in adequate number, parking facility for the faculty vehicle is spacious, adequate Industry Institute Interaction for the faculty development etc. The least preferred aspects of the institution by the faculty members are: faculty / staff rooms are spacious, well furnished and adequate in number, and working relationships between the Head of Departments and their faculty members are synchronized.

Keywords: engineering, higher education, private technical, technical education, quality education

JEL Classification: I20, I23, I25

1. Introduction

The foundation of present day Technical Education System in India was laid during 1840's with the establishment of technical institutions at Roorkee, Madras, Calcutta and Pune. All India Council for Technical Education was established in 1945 as an Advisory Body in all matters of Technical Education. Technical Education in India gained momentum after independence in 1947 when emphasis was laid by Government of India (GOI) and the States in their policies and plans for this purpose. Full policy support and substantial funds have been provided by GOI and the States to create one of the world's largest systems of technical education. As a result of this, the country has witnessed enormous growth in technical education facilities during the past 50 years.

The Constitutional Amendment of 1976 places education, including Technical Education in the concurrent list. This calls for greater responsibility on part of both the States and the Centre for integrated development of technical education sub-sector. They have to meet the challenge of heavy demand of professional courses in the institutions directly funded by them and also ensure quality education both in the Government funded and in the private self financing professional and technical educational institutions growing at faster pace.

In 1987, the All India Council for Technical Education (AICTE) was vested with statutory powers through an Act of Parliament with a view to the proper planning and co-ordinate development of the Technical Education System throughout the country, the promotion of qualitative improvement of such education in relation to planned quantitative growth and the regulation and proper maintenance of norms and standards in the Technical Education System and for matters connected therewith.

Besides, the Central Government by an Act of Parliament in 1956 established the University Grants Commission to make provisions for the Co-ordination and determination of standards in Universities. The Bureau of Technical Education (BTE) in the

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Ministry of Human Resource Development (MHRD) remains the apex authority in the country to co-ordinate the efforts of various agencies, lay down policies, finalize development plans and implement the same for Technical Education System in the Country. Professional Bodies like Institution of Engineers, Institution of Electronics & Telecommunication Engineers, Institution of Mechanical Engineers, Council of Architecture, All India Management Association, Indian Society for Technical Education etc. are also engaged in various ways in the development of Technical Education in the Country.

Higher education needs to be viewed as a long-term social investment for the promotion of economic growth, cultural development, social cohesion, equity and justice. In order to meet the 12th Plan aim of inclusive growth and to ensure genuine endogenous and sustainable development along with social justice and equity the higher education sector has to play a pivotal role, especially in generating research-based knowledge and developing a critical mass of skilled and educated personnel. Within this philosophical paradigm some of the issues pertaining to the higher education system have been identified, that need to be seriously addressed for the balanced development of higher education in India.

The globalized era has necessitated inculcation of competitiveness. This can be achieved only by bringing quality of highest standards in every sphere of work. Therefore, the quality of higher education has become a major concern as of today. Needs and expectations of the society are changing very fast and the quality of higher education needs to be sustained at the desired level. Quality would mainly depend on the quality of all its facets, be it the Faculty, Staff, Students, Infrastructure, etc. As such, all the policies, systems and processes should be clearly directed towards attaining improvements in all the relevant facets for the overall rise in the quality of education.

2. Literature Review

Helen (2013) concluded that there is a direct need for not only training the students in soft skills but also enabling the trainees to be professionally trained. This will ensure the effectiveness and success of any training programs. The management as well as the trainers and trainees would benefit if the organization send the trainers for training which is imperative for teachers in their mid-career, whose services are required to handle such courses in soft skills/personality development.

Subrahmanyam and Ravichandran (2013) concluded that Universities or Institutions offering online distance learning can give up the conventional methods and can take up the hybrid learning as a tool in their course offerings in order to get the best results. Though, on outset, implementation of hybrid learn-

ing appears costly, costs can easily be recovered and can easily reach break evens in a short time.

Jain (2013) concluded that institutes with high turnover must continually pour money into recruitment efforts and professional support for new teachers, many of them untrained, without reaping student achievement dividends from these investments.

Qureshi et al. (2013) concluded that for any organization to achieve its goals it is important to keep their employee motivated and satisfied. Employee motivation leads to job satisfaction which also plays an important role in increasing the overall efficiency of the organization. The presence of these factors may not be as important but the absence of these factors can have an adverse affect on the organizational performance.

Prasad et al. (2012) concluded that six sigma is a powerful tool to achieve customer satisfaction by improving the processes in any system, which may be production or service sector.

Matta and Singh (2012) concluded that e-learning plays an important and vital role in day to day life, as well as in information world. There is no field, or industry that remained untouched from the effects of advancement in e-learning. It has become an integral component of IT world. In near future it will have its influence on each and every aspect of human life.

Cheney et al. (2005) concluded that the increased demand for higher education is not currently being met: only ten percent of the age cohort is actually enrolled in higher education.

Bhattacharya (2004) concluded that India, like other countries, is aware that a new age is dawning – one that will be characterized by unimaginable advances in knowledge and synthesis of knowledge, triggering major changes in the objectives, contents, and methods of higher education.

3. Research Methodology

Objective of the study: The objective of the study is to find out the faculty members' perspective of most and least preferred parameters affecting the quality of education in an affiliated undergraduate engineering institution in Haryana, India.

Sampling: It is a descriptive research. The data has been collected with the help of Questionnaire Based Survey. The sample size for the study is 110. The respondents are the faculty members teaching B.Tech who were selected randomly from the above said geographical area.

Database collection: The primary data was collected with the help of questionnaire and personal interview method from the affiliated technical institute chosen randomly. And the secondary data was gathered through the study of studies and research work carried out in the past.

Scope of the study: The area for the study is National Capital Region (NCR) and the institution to be studied is an af-

filiated technical educational institution in Haryana. The respondents are the faculty members (teaching B.Tech) who were selected randomly from the above said geographical area.

Statistical tools to be used: For data analysis and conclusion of the results of the survey, statistical tool like factor analysis was performed in SPSS.

4. Results

4.1. Factor Analysis

Principal Component Analysis with varimax rotation was performed through SPSS on the 51 items. Five factors were extracted. The total variance accounted for by the five factors was 66.75%.

Rotated Component (Factor) Matrix

Acronym:

SQ_i are the questions pertaining to Selection Process

AQ_i are the questions pertaining to Academic Excellence

IQ_i are the questions pertaining to Infrastructure

PDQ_i are the questions pertaining to Personality Development & Industry Exposure

MQ_i are the questions pertaining to Management & Administration

Rotated Component Matrix^a

Table 1: Showing Rotated Component Matrix for faculty members' sample

	Component				
	1	2	3	4	5
SQ1	.133	.576	.229	.075	.190
SQ2	.060	.713	.120	.178	.167
SQ3	.157	.712	.105	.204	.183
AQ1	-.075	.545	.064	.271	.444
AQ2	-.018	.759	-.129	.063	.292
AQ3	-.027	.645	.014	.283	.298
AQ4	.102	.623	-.036	.143	.289
AQ5	.173	-.395	.187	.379	.085
AQ6	.289	.785	.061	.060	.056
AQ7	.195	.810	.060	.090	-.156
AQ8	.201	.790	.065	-.030	-.219
AQ9	.210	.767	.069	.062	-.199
AQ10	.230	.338	.041	.538	.046
AQ11	.146	.660	.046	-.310	-.069
AQ12	.270	.808	.050	-.054	-.186

AQ13	.145	.239	.081	.558	.034
AQ14	.156	.272	.069	.666	.081
AQ15	.285	.436	.084	.527	-.067
AQ16	.194	.391	.165	.586	-.104
AQ17	.036	-.226	.176	.794	.000
IQ1	.169	-.043	.482	.462	.131
IQ2	.068	-.167	.682	.313	.004
IQ3	.180	.175	.118	-.036	.657
IQ4	.373	.500	.343	-.273	.243
IQ5	.148	.211	.678	.136	.055
IQ6	.613	.273	-.174	.201	-.147
IQ7	.852	.066	.149	-.076	-.127
IQ8	.758	.099	.306	-.266	.085
IQ9	.702	.091	.080	-.172	-.244
IQ10	.772	.229	.210	-.178	.234
PDQ1	.824	.159	.366	.039	.150
PDQ2	.871	.039	.029	.200	-.092
PDQ3	.751	.226	.040	-.033	.499
PDQ4	.708	.107	.105	.366	.218
PDQ5	.838	.197	.052	.286	.220
PDQ6	.751	.146	.334	.193	.264
PDQ7	.787	.099	.145	.253	-.005
PDQ8	-.333	-.179	.472	.620	-.041
MQ1	.658	.286	.140	.115	-.403
MQ2	.634	.131	.612	-.011	-.235
MQ3	.213	.151	.850	.132	.201
MQ4	.716	.110	.171	.370	.167
MQ5	.734	.268	.079	.272	.285
MQ6	.441	.293	.448	.371	-.168
MQ7	.316	.284	.723	.116	-.258
MQ8	.332	.066	.766	.045	.228
MQ9	.571	-.029	.092	.022	.617
MQ10	.854	.049	.103	.124	.211
MQ11	.769	.093	.080	.273	-.100
MQ12	.733	.245	.315	.058	.073
MQ13	.131	-.136	.465	.511	-.354

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 9 iterations.

Acronym:

SQ_i are the questions pertaining to Selection Process

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<Table 2> Showing grouping of the items as per the factor loadings for faculty members' sample

Factor Name	Items	Factor Loadings	
Factor 1	IQ6	A secured Wi-Fi facility is well channelized to provide easy access	0.613
	IQ7	Library is well equipped	0.852
	IQ8	Faculty can visit the library with ease whenever they find time	0.758
	IQ9	Toilets for the faculty are hygienic and in adequate number	0.702
	IQ10	Parking facility for the faculty vehicle is spacious	0.772
	PDQ1	Adequate Industry Institute Interaction for the faculty development	0.824
	PDQ2	Activities are arranged for enhancement of soft and life skills of the faculty	0.871
	PDQ3	Faculty has a conducive atmosphere for the development of the requisite competencies	0.751
	PDQ4	Eminent professors, senior industry executives are invited for guest lectures for interaction with faculty	0.708
	PDQ5	Faculty exchange programmes for giving exposure to the faculty	0.838
	PDQ6	Proper guidance is provided to the faculty in the live projects	0.751
	PDQ7	Celebration of annual festivals like Diwali with the faculty is done in a well organized way	0.787
	MQ1	Institution has a well defined HR policy	0.658
	MQ2	A well defined Academic Policy is in place	0.634
	MQ4	Decisions are taken by the duly constituted BOG / BOS /BOF assisted by committees and represented by faculty and experts	0.716
	MQ5	Sufficient surplus is available for cost recovery as well as for expansion, quality and efficiency improvement	0.734
	MQ10	Working relationships between the Dean and the faculty members are good	0.854
	MQ11	Quality Improvement Programme (QIP) is updated on regular intervals	0.769
MQ12	Faculty grievances' are timely addressed by the authority	0.733	
Factor 2	SQ1	Institution prepares the profile of	0.576

		students & ensures its regular updating	
	SQ2	Selection process of faculty is fair and standardized	0.713
	SQ3	Criteria followed for faculty recruitment is uniform	0.712
	AQ1	Students' faculty ratio is appropriate	0.545
	AQ2	Attrition rate of the faculty members as observed in last 5 years is low	0.759
	AQ3	Training Programmes for faculty prove to be beneficial	0.645
	AQ4	Faculty is encouraged to participate in curriculum development	0.623
	AQ5	Teachers get enough time to prepare their lectures	0.395
	AQ6	Faculty Development Programmes are organized on a regular basis	0.785
	AQ7	R & D support available is sufficient and well equipped for successful innovation	0.81
	AQ8	Adequate numbers of PhD holders in each department	0.79
	AQ9	Faculty has good number of publications of research papers	0.767
	AQ11	Salary structure of the faculty is satisfactory and motivating	0.66
	AQ12	Appraisal is given on the basis of past performance and future potential	0.808
	IQ4	Faculty members are provided with sufficient necessary facilities for doing academic work	0.5
Factor 3	IQ1	Communication cell for internal and external communication is well equipped	0.482
	IQ2	Recreational facilities are satisfactory for the faculty	0.682
	IQ5	Printers are in adequate number within the departments	0.678
	MQ3	Director/Head of Departments / Officers have the academic, financial and administrative freedom	0.85
	MQ6	Transparency in working of the institution	0.448
	MQ7	Communication flow between management and faculty is easier	0.723
	MQ8	Leadership style exhibited by the Dean and Director is participative	0.766
	Factor 4	AQ10	Institution holds an adequate number of patents
AQ13		Travel Grant (TG) is given to the faculty	0.558
AQ14		Seminar Grant (SG) is given to the faculty	0.666
AQ15		Institute gives Teacher Research Fellowship (TRF) in optimum number	0.527
AQ16		Institute gives Post Graduate Grants and GATE Scholarship in adequate number	0.586

	AQ17	Winter and Summer Schools for the faculty	0.794
	PDQ8	Career Award for Young Teachers (CAYT) for the faculty	0.62
	MQ13	Group Insurance plans for the security and safety of faculty	0.511
Factor 5	IQ3	Faculty / staff rooms are spacious, well furnished and adequate in number	0.657
	MQ9	Working relationships between the Head of Departments and their faculty members are synchronized	0.617

Interpretations: Looking at the table, it can be seen that IQ6, IQ7, IQ8, IQ9, IQ10, PDQ1, PDQ2, PDQ3, PDQ4, PDQ5, PDQ6, PDQ7, MQ1, MQ2, MQ4, MQ5, MQ10, MQ11 and MQ12 are substantially loaded on Factor 1, SQ1, SQ2, SQ3, AQ1, AQ2, AQ3, AQ4, AQ5, AQ6, AQ7, AQ8, AQ9, AQ11, AQ12 and IQ4 are substantially loaded on Factor 2, IQ1, IQ2, IQ5, MQ3, MQ6, MQ7 and MQ8, are substantially loaded on Factor 3, AQ10, AQ13, AQ14, AQ15, AQ16, AQ17, PDQ8 and MQ13, are substantially loaded on Factor 4, while IQ3 and MQ9 are substantially loaded on Factor 5.

Factor analysis for each set of faculty respondents is done based on the factor loadings. In all five factors have been extracted through Principal Component Analysis. Each factor represents the group of similar and coherent aspects for which response is sought through questionnaire. Following is the range of each of the five factors with the list of the aspects which the individual factors include:

Factor – 1: The aspects included namely:

- a) A secured Wi-Fi facility is well channelized to provide easy access
- b) Library is well equipped
- c) Faculty can visit the library with ease whenever they find time
- d) Toilets for the faculty are hygienic and in adequate number
- e) Parking facility for the faculty vehicle is spacious
- f) Adequate Industry Institute Interaction for the faculty development
- g) Activities are arranged for enhancement of soft and life skills of the faculty
- h) Faculty has a conducive atmosphere for the development of the requisite competencies
- i) Eminent professors, senior industry executives are invited for guest lectures for interaction with faculty
- j) Faculty exchange programmes for giving exposure to the faculty
- k) Proper guidance is provided to the faculty in the live projects

- l) Celebration of annual festivals like Diwali with the faculty is done in a well organized way
- m) Institution has a well defined HR policy
- n) A well defined Academic Policy is in place
- o) Decisions are taken by the duly constituted BOG / BOS /BOF assisted by committees and represented by faculty and experts
- p) Sufficient surplus is available for cost recovery as well as for expansion, quality and efficiency improvement
- q) Working relationships between the Dean and the faculty members are good
- r) Quality Improvement Programme (QIP) is updated on regular intervals
- s) Faculty grievances' are timely addressed by the authority

Factor – 2: The aspects included namely:

- a) Institution prepares the profile of students & ensures its regular updating
- b) Selection process of faculty is fair and standardized
- c) Criteria followed for faculty recruitment is uniform
- d) Students' faculty ratio is appropriate
- e) Attrition rate of the faculty members as observed in last 5 years is low
- f) Training Programmes for faculty prove to be beneficial
- g) Faculty is encouraged to participate in curriculum development
- h) Teachers get enough time to prepare their lectures
- i) Faculty Development Programmes are organized on a regular basis
- j) R & D support available is sufficient and well equipped for successful innovation
- k) Adequate numbers of PhD holders in each department
- l) Faculty has good number of publications of research papers
- m) Salary structure of the faculty is satisfactory and motivating
- n) Appraisal is given on the basis of past performance and future potential
- o) Faculty members are provided with sufficient necessary facilities for doing academic work

Factor – 3: The aspects included namely:

- a) Communication cell for internal and external communication is well equipped
- b) Recreational facilities are satisfactory for the faculty
- c) Printers are in adequate number within the departments
- d) Director/Head of Departments / Officers have the academic, financial and administrative freedom
- e) Transparency in working of the institution
- f) Communication flow between management and faculty is

easier

- g) Leadership style exhibited by the Dean and Director is participative

Factor – 4: The aspects included namely:

- a) Institution holds an adequate number of patents
- b) Travel Grant (TG) is given to the faculty
- c) Seminar Grant (SG) is given to the faculty
- d) Institute gives Teacher Research Fellowship (TRF) in optimum number
- e) Institute gives Post Graduate Grants and GATE Scholarship in adequate number
- f) Winter and Summer Schools for the faculty
- g) Career Award for Young Teachers (CAYT) for the faculty
- h) Group Insurance plans for the security and safety of faculty

Factor – 5: The aspects included namely:

- a) Faculty / staff rooms are spacious, well furnished and adequate in number
- b) Working relationships between the Head of Departments and their faculty members are synchronized

5. Conclusions

The most preferred aspects of the institution by the faculty members are: a secured Wi-Fi facility is well channelized to provide easy access, library is well equipped, faculty can visit the library with ease whenever they find time, toilets for the faculty are hygienic and in adequate number, parking facility for the faculty vehicle is spacious, adequate Industry Institute Interaction for the faculty development, activities are arranged for enhancement of soft and life skills of the faculty, faculty has a conducive atmosphere for the development of the requisite competencies, eminent professors, senior industry executives are invited for guest lectures for interaction with faculty, faculty exchange programmes for giving exposure to the faculty, proper guidance is provided to the faculty in the live projects, celebration of annual festivals like Diwali with the faculty is done in a well organized way, institution has a well defined HR policy, a well defined Academic Policy is in place, decisions are taken by the duly constituted BOG / BOS / BOF assisted by committees

and represented by faculty and experts, sufficient surplus is available for cost recovery as well as for expansion, quality and efficiency improvement, working relationships between the Dean and the faculty members are good, Quality Improvement Programme (QIP) is updated on regular intervals, and faculty grievances' are timely addressed by the authority

The least preferred aspects of the institution by the faculty members are: faculty / staff rooms are spacious, well furnished and adequate in number, and working relationships between the Head of Departments and their faculty members are synchronized.

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