

ASSESSMENT OF VARIOUS PARAMETERS FOR QUALITY IN HIGHER TECHNICAL EDUCATION

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ABSTRACT

In the present research, an attempt has been made to find the effect of various parameters such as total faculty in the Institute, migration of faculty, placement of students, and Attendance of students in classes, availability of funds for Infrastructure development etc. over quality of higher technical education. Delphi technique has been used as a methodology in the research finding. The rationale behind the study is to find the critical parameters that affect the quality of technical education and whether by controlling them, the quality of the Institute can be enhanced for the betterment of all the stakeholders.

Keywords: Delphi technique, infrastructure, National Assessment and Accreditation Council (NAAC), pay structure, Quality of technical Education.

INTRODUCTION

Technical Manpower is the driving force in the rapidly changing globalized economy and society. Emergence of Technical manpower as a driving factor results in both challenges and opportunities. The growth of global economy has increased opportunities for countries with good levels of Technical education (Altbach, 1993) [1]. In the current global competitive environment, an accessible and high quality of higher education system is imperative for a nation's economic progress. A sound higher education system supports and enhances the process of economic and social development for a better future. Developing and transition countries are particularly challenged in a highly competitive world economy because their higher education systems are not adequately developed for the creation and use of technical manpower available. Converting the challenges into opportunities depend on the rapidity with which they adapt to the changing environment.

TECHNICAL EDUCATION SYSTEM IN INDIA

The higher education system in India grew rapidly after independence. By 1980, there were 132 universities and 4738 colleges in the country enrolling around five percent of the eligible age group in higher education. Today, in terms of enrollment, India is the third largest higher education system in the world, behind China and the U.S.A. China having the highest enrolment in the world (nearly 23 millions) has organized the technical education around only about 2,500 institutions. On the other hand, the average enrolment in a Technical institution in India is about 500-600 students with 6223 technical institutions (Source: A.I.C.T.E). This makes the system of Technical education in India a highly fragmented one that is far more difficult to manage than any other system of higher education in world.

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CHALLENGES FACED BY TECHNICAL EDUCATION IN INDIA

In India, the entry of the private sector in Technical education is on massive scale and is largely driven by inadequacy in government funding in the education sector, paving way for private investment. This is due to liberal policies in early 90's. With the present growth in GDP, it is expected that India's economy will surpass Italy by 2015, France by 2020, Germany by 2025 and Japan by 2035. It has been predicted that India, being driven by Knowledge economy, will become the third largest economy by 2050 (Varghese, 2010)[13]. Technical education in India is more privatized than any advanced countries. A large number of Institutes are private and self financed as prestigious Institutions are not able to accommodate all aspirants (Source: A.I.C.T.E.2012). Most private Institutes concentrate on profit making rather than on imparting quality education to students by limiting the essential requirements needed to fulfill the curriculum. Pay structure variations among faculties makes their retention and availability difficult. To propel the nation in 21st century, there is need for planned change in higher education with realistic perception for policy formation as to what is possible and what is not.

PRESENT SCENARIO OF QUALITY IN HIGHER TECHNICAL EDUCATION

The huge demand of 151 million by 2022 in all sectors of Indian industry for skilled manpower in India (Source: N.S.D.C) demands private sector role as a major leader in imparting higher technical education in India. Due to the failure of government sector to provide affordable higher education to all, private sector has emerged as a major player in higher technical education in India. Private participation in higher technical education has also increased the danger of dilution of quality in higher technical education for earning more profits from this sector (Rusa, 2012). Also the reports put out by the National Assessment and Accreditation Council (NAAC) have time and again emphasized how major higher education institutions are facing problems of experienced and motivated teachers, lack of innovations, lack of academic and physical infrastructure. Hence it was not at all surprising when a National Association of Software and Services Companies (NASSCOM)-Mckinsey Reports (2005)[12] found out that mere 25 percent of technical and 10 percent of non- technical graduates are actually employable. The companies employing these graduates have to pay huge amount in training them for their work potential. This can be seen as skill gap between what industry requires and what quality they are receiving. Since higher technical education in India is an important part of modern Indian society and is intertwined with the political and social systems of the society, this sector is in need to change, development and improvement (Albatch, 1993)[1].

METHODOLOGY

Delphi technique has been used as a methodology for studying effect of various parameters on quality of higher technical education. The Delphi technique is well suited as a means and method for consensus building by using a series of questionnaires to collect data from a panel of selected subjects (Dalkey & Haelmer, 1963[5]; Lindeman, 1981[8]; Martino, 1983[11]; Young, 2001[14]). Delphi compared to other data gathering and analysis techniques uses more than one iterations for going on a consensus of opinion concerning a specific topic (Ludwig, 1994)[10].

More specifically, the feedback process allows and encourages the selected Delphi participants to reassess their initial judgments about the information provided in previous iterations. Thus, in a Delphi study the results of previous iterations regarding specific statements and or items can change or be modified by individual panel members in later iterations based on their ability to review and assess the comments and feedback provided by the other Delphi panelists. Other important characteristics inherent with using the Delphi technique are the ability to provide anonymity to respondents, a controlled feedback process and the suitability of a variety of statistical analysis techniques to interpret the data (Ludlow, 1975[9]; Douglas, 1983[7]). These characteristics are designed to offset the shortcomings of conventional means of pooling opinions obtained from a group interactions i.e. influence of dominant individuals, noise, and group pressure for conformity (Dalkey, 1972)[6].

THE DELPHI PROCESS

Theoretically, the Delphi process can be continuously iterated until consensus is determined to have been achieved. However, Cyphert and Gant (1971)[3], Brooks (1979)[2], Ludwig (1997)[10] point out that three iterations are often sufficient to collect the needed information and to reach a consensus in most cases. In the present research study, a questionnaire is developed comprising of various factors of higher technical education and consensus is built in three iterations for degree to which they affect the quality of technical education.

Table 1: Various Parameters of higher technical education

S.No	Various Parameters of higher technical education
Faculty Quality	
1.1	Number of Teaching Faculty.
1.2	Number of Guest faculty.
1.4	Time Management.
1.5	Behavioral Skills.
1.6	Research Potential.
1.7	Conduction of Seminars and Workshops.
1.7	Participation in Workshops and Conference.
1.8	Policy Towards Promotions of Faculty.
1.9	Work environment
1.10	Selection mode for faculty.
1.11	Faculty Appointment on vacant sanctioned posts
1.12	Faculty departure from the Institute
1.13	Migration of Faculty to other Institute
1.14	Faculty growth factor
1.15	Faculty Satisfaction
1.16	Fund Availability for Faculty welfare
1.17	Service period of Faculty
Infrastructure	
2.1	Seating capacity in Classrooms.
2.2	Laboratory as per curriculum requirements.
2.3	Build up Infrastructure as per AICTE requirement.
2.4	Modern Teaching.
2.5	Housing facility for Faculty and Staff.
2.6	Adequate Hostel facility for Students.
2.7	Library facility for Students and Faculty.
2.8	Regular Maintenance of class rooms, furniture etc.
Students	
3.1	Attendance of Student in classes conducted.
3.2	Performance of students in mid-semester Exams.
3.3	Placement of Students in company through campus Interviews.
3.4	Scholarships for meritorious students.
3.5	Reservation policy in Admissions.

3.6	Delay in admission and readmission.
3.7	Drop out students from the Institute.
3.8	Total number of sanctioned seats for admission.
3.9	Fund availability for student's research programs.
4.0	Selection of students of Institute in national level exams.
4.1	Pass percentage
4.2	Total Number of students scoring first division.
4.3	Total Number of students admission.
4.4	Student's satisfaction.
4.5	Total registered students
5	Administration
5.1	Working hours of institute.
5.2	Fee structure and Examination fee.
5.3	Transportation Facility.
5.4	Regular Curriculum revision for graduation program.
5.5	Official working procedures.
5.6	Availability of fund for building and Maintenance of Infrastructure of Institute.
5.7	Availability of fund for Training Programs for faculty.

Round1: In first round of Delphi process, the open ended questionnaire is sent to 25 experts via email form out of which 23 were responsive and three were unaccepted due to multiple answers put up by the experts.

Round 2: In the second round of Delphi process, the questionnaire was restructured after the first round and was again sent to 23 experts out of which all 22 were responsive.

Round 3: In the third round of Delphi process, the questionnaire was given to panelists with their scores and they were asked to revise their judgments whether they wanted to continue or to quit. After the third round, only 20 panelists remained and three quitted. The data obtained from the panelists was processed in excel sheet and results were interpreted which are present and discussed in the succeeding section.

RESULT

Table2: Median and Standard Deviation of Various Parameters

S.No	Parameter	Median	Standard Deviation
Faculty Quality			
1.1	Number of teaching Faculty.	3	.75
1.2	Number of Guest faculty.	1	.75
1.4	Time Management.	2	.85
1.5	Behavioral Skills.	2	.78
1.6	Research Potential.	2	.74
1.6	Conduction of Seminars and Workshops.	2	.82
1.7	Participation in Workshops and Conference.	2	.67
1.8	Policy Towards Promotions of Faculty.	2	.51
1.9	Work environment	2	.78

1.10	Selection mode for faculty.	2	.76
1.11	Faculty Appointment on vacant Sanctioned posts	3	.60
1.12	Faculty departure from the Institute	2	.71
1.13	Migration of Faculty to other Institute	3	.60
1.14	Faculty growth factor	3	.75
1.15	Faculty Satisfaction	2	.83
1.16	Fund Availability for Faculty welfare	2	.74
1.17	Service period of Faculty	2	.79
Infrastructure			
2.1	Seating capacity in Class rooms.	1.5	.74
2.2	Laboratory as per curriculum requirements.	2	.76
2.3	Build up Infrastructure as per AICTE requirement.	2	.78
2.4	Modern Teaching aids.	1.5	.78
2.5	Housing facility for Faculty and Staff.	2	.76
2.6	Adequate Hostel facility for Students.	2	.79
2.7	Library facility for Students and Faculty.	2	.71
2.8	Regular Maintenance of class rooms, furniture etc.	2	.85
Students			
3.1	Attendance of Student in classes conducted.	2	.82
3.2	Performance of students in mid-semester Exams.	3	.68
3.3	Placement of Students in company through campus Interviews.	3	.60
3.4	Scholarships for meritorious students.	2	.88
3.5	Reservation policy in Admissions.	2	.76
3.6	Delay in admission and readmission.	2	.85
3.7	Drop out students from the Institute.	1.5	.68
3.8	Total number of sanctioned seats for admission.	1.5	.74
3.9	Fund availability for student's research programs.	2	.75
4.0	Selection of students of Institute in national level exams.	2	.71
4.1	Pass percentage	2	.76
4.2	Total Number of students scoring first division.	1.5	.68
4.3	Total Number of students admission.	2	.61
4.4	Student's satisfaction.	2	.63
4.5	Total registered students	2	.61
5	Administration		
5.1	Working hours of institute.	1	.59
5.2	Fee structure and Examination fee.	1.5	.74
5.3	Transportation Facility.	1	.75
5.4	Regular Curriculum revision for graduation program.	2	.85
5.5	Official working procedures.	2	.67
5.6	Availability of fund for building and Maintenance of Infrastructure of Institute.	2	.79
5.7	Availability of fund for Training Programs for faculty.	2	.74

CONCLUSION

From the Table 2, we find that in the first section of questionnaire i.e. Faculty quality section; parameter with serial number 1.1 which is for the total number of faculty in the Institute, is having the highest scores of values obtained by processing data after three iterations and parameter with serial number 1.13 which is migration of faculty to other institute, is having the second highest value. This indicates that in this section, they are the most dominant parameter for quality in technical education. Similarly, the second section of questionnaire which relates to Infrastructure; parameter with serial number 2.8 which is for regular maintenance of classrooms is having the highest scores of values along with the parameter at serial number 2.6 for the adequate hostel facilities for students having second highest scores. This indicates that these factors are critical for quality in technical education. Likewise the third section of the questionnaire which concerns infrastructure indicates that the parameter with serial number 3.3 and 3.2 which are performance of students in mid -semester exams and placement of students, respectively are important for quality of technical education. Similarly , the fourth section of the questionnaire which relates to administration shows that parameter with serial number 5.4 and 5.6 which relate to regular curriculum revision and fund availability are critical for quality of technical education. From the above research findings, we reveal that if these parameters are given priority in the Institute, than quality status of the institute can be enhanced significantly.

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