

GRADING OF ENGINEERING INSTITUTES

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ABSTRACT

The present paper deals with a new approach of grading the engineering institutes by using quantifiable indicators to measure their performance standards. Whilst measuring the performance of the Institutes, students' input level/output level service conditions of the employees, leadership, people involvement and working environment have also been taken into consideration; along with the infra-structural facilities and teaching faculty of the institutes.

1. INTRODUCTION :

There has been a phenomenal growth of technical education in India since independence, perhaps unparalleled in quantitative terms anywhere in the world during the same period. Whilst few institutes have developed comparable to the best in the world, on an average, the quality of the instructional process and of the product leaves much to be desired. This shortcoming in quality became a cause of concern over the last few years. Presently, the bodies responsible for technical education have already started assessment of Engineering and Technological institutes. Government of Maharashtra has given different grades

to different institutes, while AICTE has set up a -National Board for Accreditation (NBA). Though their criteria for grading are elaborate, but they still require quantifiable indicators such as students' input/output level, leadership, people involvement, working culture, service conditions of the employees and recruitment of the students in one year's time frame to evaluate the performance of the institute.

While grading any technical institute, the annual performance of the faculties in terms of publications, research paper/article presentation in seminars/conferences, participation in various induction programs and R&D/consultancy projects should also be taken

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into consideration. This will evaluate the institute in the real sense of the term. The afore -mentioned performance indicators for Accreditation show the real efficiency of the institute.

Government of Maharashtra and Director of Technical Education (DTE) have adopted a good marking system for institutional grading, wherein they have allotted certain marks for each item; their sum in all being one hundred marks. The grades are awarded based on the marks secured by the respective Institutes. But, this method is required to be improved if quantifiable input/output factors are found out and their ratio (output/input) is marked as the **Performance Factor (P.F.)** for the institute. This P.F. will give the true picture of the performance of the institute.

2. INPUT FACTOR (I. F.) :

To calculate the I. F. of any institute, the Bodies (Governments, AICTE, DTEs) should evaluate the following parameters-

1. Land and buildings
2. Laboratory and equipment
3. Library facility
4. Teaching & non-teaching faculty (Qualification, experience)
5. Computer facility
6. Leadership (Vice-Chancellor, Director, Principal)
7. Involvement of employees
8. Working culture
9. Service conditions (job security pay,

For instance , an “ X “ institute has secured the following marks:

Sr. No.	Item	Marks Obtained	Max.Marks
1.	Land and building	09	15
2.	Laboratory and equipment	06	15
3.	Library facilities	08	10
4.	Teaching and Non teaching faculty	12	15
5.	Computer facility	03	05
6.	Leadership	08	10
7.	Involvement of employees	02	05
8.	Working culture	04	05
9.	Service conditions	08	10
10.	Organization of induction programs	04	05
11.	Teaching -learning facilities	04	05
	Total	68	100

deputation of teaching staff for higher education, promotion, etc.)

10. Organizing programs to train the staff to establish acquaintance with the state -of-the- art-technology
11. Teaching -learning facilities.

Instead of taking the sum - of the marks obtained in each item, the ratio of the sum of the marks obtained in each item to the sum of the maximum marks of each item should be taken.

Therefore , the ratio of the sum of the marks obtained in each item to the sum of the maximum marks of each item will be $68/100 = 0.68$.

Here 0.68 is called the Control Factor (C.F.) of the institute.

Similarly, we define a new factor called 'Students' Entry Factor (S.E.F.)'.

This factor is to be calculated on the basis of the marks obtained by each student in Physics Chemistry and Mathematics (PCM)and then by finding the average marks as follows :

Average marks = Sum of PCM marks of all the students admitted / Total number of students admitted .

S.E.F. = Average Marks / Max. marks of PCM of an individual student

Then, the Input Factor (I. F.) for a particular institute is given by

$$I.F. = C.F. + S.E.F. / 2$$

2. OUTPUT FACTOR (O.F.) :

The result factor can be adopted with slight modification as follows. This

modified form may be termed as 'Modified Degree Score (M.D. S.)'. So

$$M.D. S. = 75D + 60I + 50II + 40 III$$

T

where D= number of the students passing - with distinction,

I= number of students in first class,

II= number of students in second class,

III= number of students in pass class

and T= total number of students taking the degree of graduation.

So,

$$\text{Result Factor} = M. D.S./ 100.$$

Now, we shall define a new factor called 'Students' Acceptance Factor (S.E.F.) to indicate the number of the students accepted by various organizations within a time frame of one year, after having been graduated from a particular institute. Hence,

S.A.F. = Total number of students engaged in one year's time / Total number of students graduating from the institute

Similarly, we can introduce a new factor called 'Research Project Publication Factor (R.P.P.F.) to give information in respect of number of research papers published /presented by teachers / students in journals / conferences of national and international repute. So,

R.P.P.F = Number of research papers published/prcsented in one

year's time/ Total number of teachers in the institute

Finally, we can define a new factor termed as 'Research Project Factor (R.P.F.) to present the number of R&D / Consultancy projects being undertaken by the institute in a particular year. Thus,

$$\text{R.P.F.} = \frac{\text{Number of R\&D / Consultancy projects being undertaken in one year's time}}{\text{Total number of teachers in the institute}}$$

Since the institute has considerable control over M.D.S. , hcnc we will give it 60% weightage . The S,A.F. has direct effect on 'Demand and Supply' theory and the institute as such has little control over it. But it pays a significant role. So, we give it a weightage of 30%. Likewise, we give a weightage of 5% each to R.P.P.F. and R.P.F.

Therefore, the Output Factor can be calculated as follows;

$$0. \text{ F.} = (0.6) (\text{M.D.S.}) + (0.3) (\text{S.A. F.}) + (0.05) (\text{R. -P. P. F.}) + (0.05) (\text{R.P.F.})$$

3. PERFORMANCE FACTOR (P. F.):

The performance factor for any institute can be calculated as follows

$$\text{P. F.} = \frac{\text{Output Factor}}{\text{Input Factor}}$$

This may also be termed as 'Process Efficiency Factor.'

CONCLUSION :

The above factors can serve the purpose of quantifiable indicators to know of the performance of the technical institute. But the assessment of the afore-mentioned factors are essential on a continual basis to know whether or not has that particular institute retained the grading given to it by the Accreditation Bodies.

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