

Productivity of Technical Education system using AHP

Dr.N.K.Mandavgade¹, Prof.N.R.Pathare², Prof.(Mrs.) M.S.Lande³

^{1,2,3} Assistant Professor

Priyadarshini College of Engineering ,Nagpur (India)

Abstract - The basic problem the industry is facing about the quality of the technical ability of the graduate students pass out from average technical institute. The productivity of the technical institute is accounted in term of placement of students and average result of the students. These out puts are affected by n numbers of input factors. Although a number of studies have been carried out in various parts of the world showing factors affecting quality of technical education practices and their impact on the student performance and management attitude, a very few such type of studies is carried out taking private technical colleges of Central India because the state is being considered as one of hub for technical education This paper focus the analysis of factors affecting the productivity of technical education system using questionnaire based data and Analytical hierarchical process.

Key Words: Productivity, Quality, Technical Education, Fish bone diagram

1. INTRODUCTION

Productivity may be the central problem for education and educational research for the remainder of this decade. Failure to deal successfully with this issue must inevitably lead to continued reduction in the real income of teachers and the loss of competent teachers to higher-salaried jobs. The result will be declines in student achievement, followed by lagging economic growth for the nation. Some early signs of these conditions are already visible. Unfortunately, we presently lack the empirical tools needed to improve productivity.

If you want to improve the output and productivity of education, then you must use technology to change the basic structure of education and redesign the process of education. Professor Kekang He believes that the exact meaning of "the structural change about school education system " is to realize the fundamental change of the classroom teaching structure (Zhenfang Liu 2013).

1.1 Quality in technical education

Quality is by no means a universal concept. In relation to stakeholder perspectives, there are a number of perceptions of quality. For example, Harvey and Green

(1993) have defined five understandings of quality as: 'exceptional'(in terms of excellence); 'transformative' (in terms of qualitative change);'fitness for purpose' (focusing on the purpose of the product); 'value for money'(quality closely related to costs); 'perfection' (processes and specifications are required to be perfectly met). In professional education, including engineering, the quality of educational programs plays a significant role in determining the success of graduates' entry into their professional practice. Engineering is practiced across national boundaries and hence the standard of engineering education and practice is essential and mandatory.

1.2 Quality in Education may be defined as:

The development of intellectual skills and knowledge that will equip graduates to contribute to society through productive and satisfying engineering careers as innovators, decision makers and leaders in the global economy. (R.Natrajan, 2000)

1.3 Quality engineering education is needed in Institutions for the following reasons:

1. To be growth-oriented and have a good reputation.
2. To be never out of market.
3. To be capable of maintaining customer confidence.
4. To be cost effective.
5. To improve customer satisfaction and to develop confidence.
6. To use the creativity of faculty and students for development of the institution.
7. To provide careers to the faculty instead of jobs.
8. To provide job satisfaction to all employees.
9. To enhance healthy competition.
10. To be an example to other institutions.
11. To eliminate the waste of resources at all levels.

2. Objectives of the study

The study was conducted with the following objectives in mind:

1. To identify critical factors / enablers affecting the quality of technical institutions in India.

2. To develop a quantifiable quality enabled model for an Engineering College keeping in view the quality concerns in Technical Education in India.

3. To rank the factors affecting the quality of technical education system across

3. Factor affecting the effectiveness

The literature clearly indicates that there are various factors which directly or indirectly influence the effectiveness (Quality) in technical education. Here we group these factors under three broad heads as discussed below.

- A) Students
- B) Teaching Faculty.
- C) Infrastructure

A) Students-

The students constitute the input of the whole system. The accomplishment of the process of imparting knowledge is greatly affected by environment in which the students are put and also on their self zeal to learn and excel. A student's own awareness and interest for learning and the inherent aptitude to grasp together with his sincerity, regularity and honesty are key to his successful accomplishment of his course. It is also necessary to boost the moral of the students by motivating the students. All these aspects when carefully implemented and nurtured bring about a total turn around in the quality of education.

B) Teaching Faculty

The quality of students coming out of the universities and colleges largely depends upon the quality of the teaching staff employed. The frontier of science and technology are doubling by leaps and bounds to cope with it its necessary, for the faculty to be constantly in touch with the same and try to update themselves through enhancing their qualifications attend various quality improvement programs like workshops, seminars, conference, summer and winter school etc. is the responsibility of the institution to provide a proper and conductive atmosphere for the teacher.

C) Infrastructure

"We shape our institution and our institution shapes us ", Winston Churchill. An institution must have adequate land, necessary buildings, hostels, supporting facilities, canteen, transport, library, well equipped laboratories and workshop avail abilities of teaching aids like OHP, LCD projector, seminar halls conference room and last but not least advance computing facilities. These facilities are initial prerequisite for any technical institution which must be present to ensure proper functioning of Technical Institution (Sahu 2008).

Table 1- Possible factors affecting Technical Education system

Students	Faculty	Infrastructure
Regularity	Qualification	Library
Academic Performance	Experience	Laboratories
Result of 12th Std	Knowledge	Audio/Video aide
	Regularity	Internet facility

AHP model for uncertainty decision

AHP is used for ranking the factors based on judgmental process using Saaty scale. The productivity in technical education process gets affected by various qualitative factors. The criteria and alternatives are finalized for solving the problem using AHP. The criteria and alternatives are identified using actual field based data, discussion with experts in field and brainstorming(Mandavgade,2015).

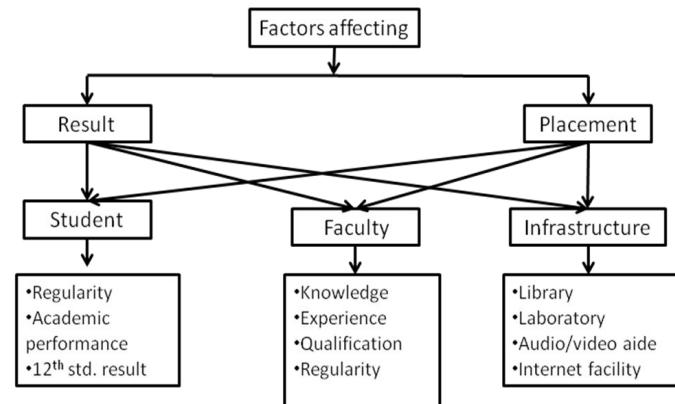


Figure 1- AHP Model of Affecting Factors

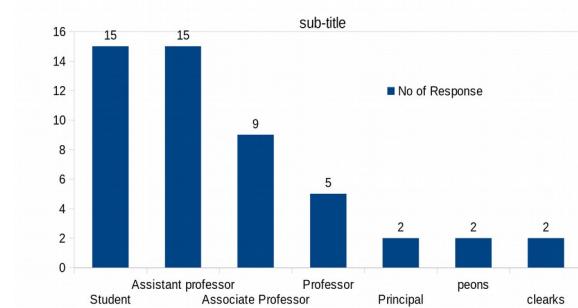


Figure 2- Analysis of Data collection

5. Result of AHP model

After the analysis of questionnaire , the result of importance of various factors affecting the productivity of technical education system is as shown in table 2.

Table 2- Ranking of various factors

Sr.No	Qualitative Factors	Ranking
1	Regularity of student	7
2	Academic Performance of student	3
3	Result of 12th std.of student	6
4	Qualification of faculty	2
5	Experience of faculty	4
6	Knowledge of faculty	1
7	Regularity of faculty	5
8	Library	8
9	Laboratories	9
10	Audio/Video Aid	10
11	Internet	11

6 CONCLUSIONS

Qualitative factors such as students , teaches and infrastructure etc affect the productivity of Technical Education system. The effects of qualitative factors are difficult to estimate in terms of numerical value. The Analytical Hierarchical Process is used for ranking of these qualitative factors affecting productivity of Technical Education system. The ranking of factors is done on the basis of data collected in the form of questionnaire. The AHP model developed can be useful for other organization can get the idea for decision making policy of quality improvement. Based on the results of AHP model, knowledge and experience of the faculty are found to be most critical factors affecting the performance of productivity of Technical Education systems. If the faculty is given proper training of his/her subjects then the productivity of Technical Education system get improved.

REFERENCES

- [1] Mandavgade, N.K.,Jaju, S.B. and Lakhe, R.R. (2015) (2015),"Assessment of qualitative factors affecting uncertainty measurement using AHP"Int. J. Industrial

and Systems Engineering, Vol. 21, No. 3, 2015 ,pp 277-301.

- [2] Samarjit Swain et al (2015),“Significance of the Critical Success Factors for Quality Development in Technical Education:A Case Study in Odisha”,IJRMET Vo.5,Issue 2, May-Oct 2015,pp22-27.
- [3] Mallesham P.(2005),“Quality in Technical Education”, Indian Journal of Technical Education , Vol 28 No. 2, pp 66-70.
- [4] Kulkarni P. (1999),”Quality in Engineering Education”, The Journal of Engineering Education, July & Oct, pp10, 25.
- [5] Natrajan, 2000, “The Role of Accreditation in promoting Quality Assurance of Technical education”, International Journal of Engineering Education,vol.16 No.2, pp 85-96
- [6] Biman Sen(1989),”Development of technical Education in India and State Policy -Historial Perspective”,Indian Journal of History of science 24(4);224-248.
- [7] Zhenfang Liu (2013),”Essential Attribute of Educational Technology in Enhancing The Productivity of Education”,International Conference on Education Technology and Information System (ICETIS 2013),pp 45-48.
- [8] ARTHUR S. MELMED,”Productivity and Technology”, in technical magazine - Educational Leadership ,Februyay 19983 pp 4-6.

BIOGRAPHIES



Dr.Nitin K.Mandavgade is faculty of Mechanical Engineering Dept having a teaching experience of 16 years. His area of specification is Uncertainty Measurement, Quality Control, He has published and presented number of papers in various Journal and Conferences aboard like UK,UAE etc.
nkmandavgade@gmail.com



Prof. Nilesh R.Pathare is working as Assistant Professor in Mechanical Engg Dept having technical experience of 14 years. He is having number of publications on his record.
Email-
pathare_nr@rediffmail.com
M-9011084355



Prof.(Mrs) M.S.Lande is working as Assistant Professor in Mechanical Engineering Dept having teaching experience of 12 years. Her area of specialization is lean six sigma and Quality control.
landemanisha1979@gmail.com
M-9665843292