

# Technological Universities of India to Achieve Global Quality and Excellence

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**Abstract :** There is a large number of Technological and Technical Universities in India but unfortunately none of their rank in global ranking with the exception of few premier institutes/universities. These universities are functioning under a highly regulated environment which restricts the level of freedom required for responding to the fast changes happening in the industry. The end result is the graduates passing out of these universities are not employable.

This scenario must be changed hence authors of this paper have investigated what ails the technical education system in India. Apart from excessive regulations, large number of colleges affiliated to a university, education treated as a business instead of places for academic excellence and research, and lack of innovations on the part of faculty and students, adoption of quality standards in research, teaching, and management is an absolute imperative to improve existing system.

Authors have proposed various programs to be designed and implemented to improve quality in engineering education. The regulatory agencies have also proposed few programs but implementation at the university and colleges/institute level remains

questionable. These programs must be championed by the top management of these organizations and adequate funding must be allocated else the importance of these programs gets limited to showing documents and saying right things in front of accrediting agencies at the time of assessment.

**Key words:** Technical universities, Technological universities, Quality programs, Management

## 1. Introduction

There are 88 Technical /Technological Universities in India, of which 34 are State Universities, 32 are Deemed to be Universities and 22 are Private Universities. A few of these are confined only to one or two disciplines like Management and Information technology. The First Technological University, Jawaharlal Nehru Technological University established in India, was in 1972 at Hyderabad (A.P.). Thus, the technological universities in India have been functioning for nearly last 4 decades.

Earlier Engineering colleges were affiliated to the traditional State Universities and were coupled with Arts, Science, and Commerce Faculties. Over a period of time, number of affiliated colleges to each university became so large that management and implementation of programs became a major challenge for the smooth functioning of these State

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universities. Secondly, engineering being a professional discipline, it deserves a special attention which could not be given by the traditional universities. On account of these two reasons, the idea of a separate university for the professional disciplines like Engineering, Medical and Health has emerged in the last decade. During past couple of decades, several of the Indian states established Technical/Technological universities. The apex bodies in the industry such as NASSCOM claim that 90% graduates are unemployable. Also it is to be noted that Indian universities are not getting ranked in top 100 universities in the world. Markers like these are suggesting that the system has not delivered quality product (employable graduates) and the quality of engineering education and research is not of high calibre.

## 2. Present System

The number of affiliated colleges to a Technical University should be limited to 50 (Yashpal committee says, no more than 200 affiliated colleges for a State Traditional University) and for every 5 Technical Universities there should be one Technological University. These Universities (Technical / Technological) are to produce graduates to become professionals with sound knowledge and hands on practice in Engineering. Graduates must be employable in the industry. Hence, they need to be equipped not merely with hard skills but also with necessary soft skills, communication skills, presentation skills etc. The UG curriculum should take care of this aspect, along with technology courses.

Every Technical or Technological University should have close relations with the professional organizations such as Institutions of Engineering – IE (India), IEEE, IEE and several other global organizations. The objective of such university should be to produce manpower which is technically sound, professionally competent and, socially relevant. The curriculum, should keep these objectives in mind. Neither a university nor any organization can grow and develop to its full potential, in isolation. It can grow and develop, by itself, only to a limited extent. To utilize its full potential, it must interact, share experiences, plan together and grow together along with other universities, thereby generating synergy. Such a group of universities can be called a consortium of universities and these universities can lead to the formation of a national

consortium of Technical and Technological universities of India. The formation of such an Apex Body is a must for taking these universities to the global plane and march together on the path of Global Quality and Excellence.

Both private and government funded universities, can join hands in this mission. The consortium should also motivate every college to get proper accreditation which is recognized both at the national as well as international level. Technological universities can form an Association- Association of Technical/Technological Universities of India (ATTUI) on similar lines to AIU, i.e. Association Of Indian Universities, New Delhi, and publish a quarterly journal 'Technological University News' on similar lines to publication by AIU.

All the universities should have a philosophy for its action plan. The best philosophy available now is the Total Quality Management (TQM) which not only provides a philosophy but also tools and techniques for enhancement of Quality, involving all personnel and processes.

## 3. Quality Enhancement Programs

Every University is mandated to implement quality in curriculum, delivery of academics, evaluation system, research and publications, and several other support systems. There are number of recommendations to achieve this goal of establishing highest standards for quality in a university, some of them are discussed in following section.

### 3.1 Think Tank

The definition of think tank varies from case to case. There are think tanks consisting of experts in certain domain while there are some which are multidisciplinary in nature. The primary objective of these groups is to influence government policies or global bodies or national or international standards for protecting interest of the industry in respective countries. In the case of a university, a think tank will consist of multidisciplinary experts drawn from various colleges affiliated to the university.

- There should be a think tank for each university. It should keep a watch on the functioning of a university, in the context of aims and objects mentioned in the University Act and ensure that the University is functioning on correct lines.

- It should work out performance indicators, both qualitative and quantitative and ascertain the progress being made at regular intervals.
- It should keep a watch on the developments in Technological universities, both in India and abroad, and identify the new trends and the best practices, discuss their merits and also decide if they can be adopted.
- They should keep a watch on the global league of tables/Ranking of Technological universities and make suggestions for improvements (based on continuous improvement processes principle) for the university so that Indian universities constantly strive to occupy higher & higher places in the global ranking.
- The think tank should also evolve mechanisms for proper governance of these universities which have governance structure that is transparent, objective and involving all the stakeholders.

### 3.2 Internal Quality Assurance Cell (IQAC)

The government agencies such as UGC and NAAC have recommended all the universities or institutes to create an internal quality monitoring team. The role of IQAC team has been clearly defined by these agencies. A university should not simply create this group only because it is recommended but mandate this team with clear set of objectives to be met and the role of the team. Monitoring by this group should not be limited to or restricted to just documentation of processes but this team must create a quality framework covering entire functioning of the university and implement it in phases.

- Every university should have a Quality Cell consisting of faculty members who should have clearly understood and imbibed the concept of Quality, its application to various educational process of the university- the admissions, teaching-learning process, curriculum development and delivery, evaluation, training and placement etc.
- There should be a regular Five Year Plan converted in to yearly plans and their implementation should be carefully noted, at regular intervals.
- The quality measures should be based on TQM Philosophy, which involves the entire faculty,

inspired with shared vision and a mission, determined to march on the unending path of Global Quality & Excellence.

- This cell must perceive each of the stakeholders as a valuable customer and develop mechanisms to take feedback and evolve an action plan to improve and meet their changing needs of today and tomorrow.

### 3.3 Innovation and Intellectual Property Rights (IPR) Cell

It must be mandatory for every Technical university to establish an Innovation and IPR cell. The cell must be empowered to visit all the colleges affiliated to the university for auditing and ensuring proper implementation of all the recommendations by the university. Innovation is the backbone for any technical university. Innovative ideas from students and faculties must be incubated in the incubation centers. Incubation centers must be adequately funded by the management and successful ideas must be shared with experts from the industry so that they could be funded by investors and later spun off as companies.

Innovations and innovative ideas generate Intellectual Property (IP) which must be documented and protected. The university must provide detailed guidelines for documenting and protecting IP. The guidelines must also cover process for filing patents so that IP is protected and commercialization takes place. It is noted that the level of awareness about the process and creation of IP is very low hence lot of IP that is generated gets shelved and never gets to its logical conclusion of getting patented.

The university must have detailed policy on the ownership of IP. If the IP is created in the campus then the ownership could be with the university or college. This needs to be documented properly.

### 3.4 Industry Interaction Cell (IIC)

The industry apex bodies have claimed that university graduates from the current system are not employable. Hardly 10-20% university graduates get employed after graduation. There are several reasons for that but some of them are,

- Obsolete curriculum

- Academia not connected with industry
- Lack of faculty members interacting with industry
- Lack of working on industry projects by students and faculty members
- Faculty members spending most of the time in teaching and admin function.

The function of this cell should not be limited to the placements only. That seems to be the key objectives of most of the corporate interaction teams in universities and colleges. Placements are important but the focus must be on sound academics and then placements will definitely happen. Industry interaction cell must be established at the university level as well as at the institute/college level. These cells must interact with industry for,

- Participation in curriculum design
- Participation in design of course and content
- Identification of projects to work on by faculty and students
- Undertaking joint research and publications
- Internship of students and faculty
- Industrial visits for students

### 3.5 Visionary Leadership

The progress and development of university depends on its leadership and hence, the University should have a visionary and transformational leadership and normally the Vice Chancellor (VC) should provide such a leadership. It is observed that for the successful implementation of quality programs, it needs to be championed by a member from the senior management team. The leadership team or VC must have a strategic plan for the university and not focus on simply operational aspects of the university.

Implementation of quality programs is a challenging task as it needs a total commitment from all the members at all the levels. The leadership of the university must lead the program from the front and set an example for rest of the organization.

## 4 Conclusion

There are number of myths about quality and they must be explained and eliminated. Quality is not something that could be built into the last stage of a product. In case of academic institutions, employable and successful graduate is the end product. Most professional organizations in India claim that universities are producing graduates who are not employable. There are number of stakeholders in this process and students are the most important factor in this chain. Design and implementation of sound quality program is important for ensuring quality education and also for improving our standing globally.

The programs proposed in this paper must be championed by the management and must be adequately funded. The programs should not be simply on the paper to show to accrediting agencies but must be implemented totally to excellent graduates who could take brand India globally.

### References:

- [1] Journal of Engineering Education – 13th Special issue “Technological Universities of India.” Vol. xxv No.3 January – 2012
- [2] Yashpal Committee Report
- [3] Association of Indian Universities, New Delhi
- [4] Website of NAAC
- [5] Edward Sallies, “Total Quality Management in Education” –Third Edition-2002 by Kogan Page Ltd. 120 Pentonville Road, London N1 9JN. (UK)
- [6] MarmarMukhopadhyay, “Total Quality Management in Education” Published by NIEPA 17-B, Sri AurobindoMarg, New Delhi- 110 010.