

13. VIEWS ON A "SEPARATE TECHNICAL UNIVERSITY" FOR ENGINEERING COLLEGES OF MAHARASHTRA

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INTRODUCTION

The following article discusses the merits and benefits of a separate technical university in terms of developing the role and functioning of the university to provide engineering education required in current times.

The role of the university, in this context, is to foster an environment conducive to development of an educational system of the highest quality. It should support a system which is accessible and attractive to the staff and students involved in the teaching learning process. It should enhance the learning experience; encourage innovation and knowledge creation towards anticipating new solutions and solving existing problems. It should aim to impart a globally relevant education by promoting cross disciplinary skills as well as industrial experience wherever possible.

This article suggests that a separate university would be a welcome reform for the technical education, currently imparted and provide fresh impetus to the ongoing efforts at various levels for improvements. This would bring benefits in terms of improving resource efficiency and administrative restructuring to carry out the requisite functions of the university, raising the standards and thereby appropriately responding to the demands of society, science and industry in the present and the future.

Also it has been attempted to highlight some specific measures that can be explored and implemented within the framework of a separate technical university from the perspective of a professional engineer and academician, with over thirty years of experience in technical teaching and management within the Mumbai University.

MERITS OF SEPARATE TECHNICAL UNIVERSITY

Improved balance between autonomy, accountability and responsibility

The existing centralised university system along with the monitoring and control of central and state bodies such as the All India Council for Technical Education (AICTE) is aimed at implementing a standardised system, with a focus on following traditional processes in, a not for profit set up. The recent trend of establishing deemed universities and autonomous engineering colleges in greater numbers appears to be aimed at focussing more upon innovation, flexibility and a participatory management structure, to improve accountability.

However, these have sometimes resulted instead in lack of uniformity and protection of special interests at the expense of providing high quality education for the greater good of students and society, at large.

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A separate technical university is likely to improve governance and responsiveness of the administration and management whilst at the same time maintaining homogeneity, and standard under a non partisan umbrella. It is expected to improve operational efficiency and update technical syllabi as per recent developments, through this balance between autonomous empowerment and simultaneous government control. It would be valuable to identify the steps, to imbibe and pitfalls to avoid, from the recently established common Medical University at Nasik in this context.

Increased and more relevant collaborations and affiliations

Technical studies, unlike other streams currently under the same university, such as arts, humanities and commerce have slightly different aims and functions. The aim is to promote cutting edge research in science and technology, produce professionals who can put engineering concepts into practice within a commercial environment and impart necessary skills and knowledge for those who choose this as a vocation.

In this context, it is suggested that reclassification of a separate technical university may help to better collaborate with more relevant bodies and institutions to achieve these aims, for instance collaborating with national and international R&D institutions such as Indian Institute of Science at Bangalore, MIT, or networking with industry bodies such as NASSCOM, Institution of Engineers and other industry and trade associations.

By working closely with diploma colleges, polytechnics, ITIs and such vocational colleges the technical university can club together more relevant institutions and offer a seamless well rounded academic curriculum to achieve any of the above aims. Equally, working more with bodies such as Indo-US collaboration for Engineering Education started by IIT alumni, the All India Council of Technical Education (AICTE), etc. would enable improvement in

teaching and infrastructure that is urgently needed in the technical colleges across the state.

A separate technical university would help drive these with greater focus and allocate resources more appropriately for these objectives. This university could emulate and improve upon the example set by existing Indian Institutes of Technology (IITs) and National Institutes of Technical Teacher Training & Research (NITTRs), which are considered more successful in such networking and collaboration.

Improved flexibility to work more closely with industry

The lack of quality control and regular monitoring of technical education means that currently colleges still offer outdated programs with inflexible structures and content. They still fail to take into account the labour market needs and demands of a rapidly developing knowledge based economy.

Due to lack of sufficient communication and collaboration with the industry there is a massive shortage of a skilled workforce and simultaneously colleges are churning out engineering graduates who fail to meet the grade. Companies are forced to spend valuable resources in retraining. In addition, the number of places offered for technical studies also need to be scaled up massively to meet the demands of a growing economy.

A separate technical university should be more flexible in adapting its programmes more frequently to accommodate industries and benefit from their partnership through sandwich programmes, regular industry visits and interaction, guest lectures, apprenticeships and internships. Some other state universities such as the Anna University, Chennai, boast of a successful track record in its placements. Also the independent university in Gujarat may also be one of the key reasons for its highest ranking as a business friendly state. The state of

Maharashtra must take necessary steps to attract investment through offering a well trained large workforce.

Equally, the existing financial set up is found to subsidise the technical courses at the expense the state government and said to be unaffordable. In recognition of this drawback, a technical university may offer greater flexibility to tap into alternative funding resources that may become more important in the future such as contracted research and consulting, retraining and adult education, distance education, tapping into industrial contacts of alumni as well as sharing infrastructure and facilities, where possible.

Higher quality standards of teaching and learning

The need of the hour is to ensure well qualified technical faculty at all state colleges is employed and motivated regularly as this is the key to student development. This can be achieved through streamlining and managing processes for recruitment, staff training and ongoing support. The working environment needs to be open, free and academically oriented. An appropriate and suitably qualified management team for a separate technical university can foster such a culture from the top, thus ensuring due respect for technical knowledge and removing unnecessary layers of bureaucracy that lack the understanding of engineering education. Equally, such a university should be more successful in enforcing better infrastructure requirements and improved facilities from laboratories to libraries.

The post graduation studies and doctoral research will be affiliated to the Technical University and such a scheme will ensure a right culture of connecting undergraduate studies with higher studies. The interdependency of these courses will be nourished in a healthy atmosphere. It will be more effective in updating engineering curricula, linking it with engineering practices and in transparently evaluating the

performance of students to ensure genuine technical understanding rather than rote learning.

Improved participation and access

If all engineering colleges in Maharashtra are under one Technical University, then all the students will get same education and hence be equally employable by all industries. Rural students can be confident of their degree and employability. Where rural universities have sprung up, there is still a need for greater interaction with other top institutions in nearby towns and cities for providing inspiration and achieving better consistency and integration.

SPECIFIC MEASURES THAT COULD BE IMPLEMENTED

The following specific ideas are measures that can be implemented within the scope of a separate technical university to achieve the above benefits on a continuous and ongoing basis.

- A separate university should encourage more work in the area of monitoring university and college rankings by benchmarking against noteworthy institutions, nationally and internationally to improve measurability and accountability. This must be done alongside much greater collaboration globally with the best institutions.
- It is necessary for any University, to have regular and true vigilance over the performance of all colleges. It is felt that such inspections and supervisory procedures can be well defined through ISO Certification for mandatory requirements setting SMART targets. Reduction of bureaucracy, clear guidance and assistance to colleges aspiring for such accreditation and ensuring consistency by removing mal practices or other irregularities in inspection would be areas for further work.
- In my view, improved quality in the students

graduating from the university can be incrementally achieved by continuous improvements in the examination and assessment systems with more and more focus upon individual original work assessed throughout the year, as well as group assignments to promote team working.

- Also factors to be considered are optimum class strength, diversified background and learning ability of students etc.
- The anticipated barriers such as rigid syllabus structure, limited time availability during the semester, can thus be overcome. The extended objective of such an University can be to have seminars to discuss about Technical school syllabus so as to improve primary and secondary education from the technology transfer point of view.
- Also there is a case to be made for reducing the scope of the syllabus from first year itself to offer students, the opportunity to focus on electives of their choice, as specialization is the need of the hour. Some pilot projects to test such alternatives, in my view, are in line with the mindset of the current ministry and part of the paradigm shift necessary as stated above.
- Further, awareness of boosting fundamental and applied research in institutions is growing and needs to be strengthened by making more grants available to projects alongside careful examination of their viability and regular monitoring. In this context also a proper combination of educating students for 60% basic subjects

with fundamentals of engineering and 40% electives for useful application from the local industries point of view is very essential.

- This requires a motivated and competent faculty with professional ethics, autonomy & accountability with best teaching learning capabilities. The University must provide summer/winter schools, national conference/workshops to motivate and update the faculty and inculcate a sense of commitment for bringing excellence in education. Best practices should be emulated to generate resources through industry consultations, testing, live projects etc. I have personally recently actively participated in one such project - Indo US collaborations and would envision more such activity.
- Projects on social issues need to be encouraged. Such responsibilities should be handled by a central body like Technical University, where all likeminded people are working i.e. all are engineers. They need to build Nation through Technical Education consistently emulating best practices. Thus, the social responsibility undertaken by such a University will be very high. Introduction of entrepreneurship subjects in engineering will help to promote innovation.

All these elements are inter-related and vital to offer world class education fit for students graduating in the 21st century and to make each institute capable of contributing to the social and economic growth of the region.

