

# An opportunity to scale up the IITs

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## NRIs! 10 Years No Minimum Balance!

The Supreme Court stay on reservation in higher educational institutions has come as a relief to most academic institutes. After all, as a consequence of the new quota policy, institutes like the IITs are being forced to increase the intake by over 50%.

The way this whole episode is unfolding is an example of how increase in intake ought not to be done — coming as a diktat from the government, as a consequence of a policy that was found wanting, and with no inputs being taken from the educational institutes.

However, it is true that the current intake of IITs (and similar institutes like the IIMs and IISc) needs a careful evaluation. These institutes are still living in yesterday's reality when producing a few hundred engineers without doing much R&D was sufficient.

Today's reality, characterised by the IT boom, the growing knowledge and R&D sector, desperate situation of teachers in engineering, etc., — all areas where IITs can make an impact — has not affected the IIT system much and these factors are not taken into account while planning the size of these institutes.

Consider this: while the economy is growing at over 10% in manufacturing and services, IITs have grown at an average rate of about 2%. If we leave aside the intake increase that happened due to changing the UG programme from five years to four years, the increase is even less.

IITs seem quite satisfied taking in the best 2% of aspirants and, not surprisingly, turning out bright graduates, who are so few in numbers that they are really sought after and highly paid, making IITs even more sought after.

IITs can exist in this mode easily, as the paucity of seats will continue, keeping them in the limelight and much sought after. In fact, there is a strong interest in maintaining this exclusivity, as it brings easily adulations like 'excellence', visits and statements by dignitaries, etc., and also keeps the value of being an IITian high.

But is this small size and ridiculous exclusivity justified in today's India when aspirations of youth as well as the country as a whole are, thankfully, rising with confidence? To put the size of IITs in perspective, this year all the graduates from all the disciplines from all the IITs are barely enough to cover the manpower needs of just one of the main software companies in India!

Against this background, the increase in intake due to the new quotas really offers an opportunity for the IITs to scale up. IITs still operate at about 10 to one student-faculty ratio, when even in the University of California system this ratio is about 20 is to one. Given the demand of fast growth and the opportunity in knowledge economy, which India cannot afford to miss, we should be doing more, not less!

The internal IIT systems and processes are currently designed for operating in the small — fixed academic programmes and course sequences, too much teaching and spoon feeding, strong exam orientation, limited use of technology, too much involvement of faculty in non-academic tasks, etc. These will have to change to scale successfully.

Many US universities have shown that scaling is possible by using professionals and automation to manage systems, leveraging the PG and R&D staff for teaching, leveraging the bright young students for R&D, etc.

And they have done it without compromising on R&D (indeed by improving their R&D) — there are at least 20 highly ranked research university campuses in US that have over 20,000 students each. Places like Georgia Tech, an eminent engineering-focused institute like the IITs, has over 12,000 UGs and over 5,000 PGs, and a faculty of about 900.

Closer home, NTU in Singapore, another science and technology institute, has over 19,000 UGs (was less than 13,000 a decade ago), 8,500 PGs (doubled in the last decade), over a 1,000 faculty, and a research staff strength of 2,500.

The existing model of IIT campuses is also old and incapable of scaling. Current campuses are fully residential, not only for students, but for faculty and staff as well. Having younger students living on campus can be argued as necessary in India for safety and transport reasons, but is there any real need for staff and faculty housing (or for senior students) to be on the academic campus?

Why can't there be separate residential campuses/colonies where faculty and staff stay and with good transportation provided to the academic campus. Such a model will substantially increase the capacity of the existing campuses, and free the IIT administration and faculty from township management issues (today a substantial time of faculty and administration is spent in various committees overseeing or managing the residential campuses.)

For example, take the NUS in Singapore. It has an area of about 350 acres (smaller than most IIT campuses), but supports a faculty of 1,900 and student population of 32,000 (whereas most IITs have a faculty of about 350 and student population of about 4,000).

NUS is able to do this as the faculty and staff housing is outside the main academic campus. And its campus is better equipped in terms of both academic and recreational facilities than campus of any IIT.

It is time for IITs to start aspiring to become world class technical institutes both in quality and quantity, and both in teaching and research. Each IIT should aspire to be like Georgia Tech and have about 20,000 students, 1,000 faculty members, large research staff, and many more programmes and disciplines.

Imagine what will be the impact of these institutions on industry as well as on the youth of the country if we have this type of capacity. If this target is set, and support provided to upgrade the infrastructure and redesign the campuses to handle this scale, there is no reason why it cannot be achieved in about 10 to 15 years.

Of course, it is not reasonable to expect world class stature without having world class facilities and compensation for faculty. It is important that the compensation practices also follow the approaches such universities take, which are generally linked to performance as well as other opportunities open to faculty (in India today, for some disciplines, the comparable compensation in industry is three to five times).

This almost-forced increase is, therefore, an opportunity for each IIT to create a vision and a 10-15 year plan to scale up to become a world class technical institute. Let the increase, which was being done for the wrong reasons before, be done for the right and deserving reasons now.

*(The author is Microsoft Chair Professor, IIT Delhi. Views are personal)*



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