

# NITs can be engines of economic growth

Arun Kumar Jain

**P**RIME minister Narendra Modi's 'make in India' call has set an important strategic direction for the country's businessmen, policy-makers, and regulatory agencies. It has helped generate a healthy debate as to where the country lags. That, in turn, pulls back productivity and competitiveness of our manufacturing enterprises. To start with, the government wants to ease regulation and do away with obsolete rules to improve the 'doing business in India' rank from the current 100+ position to a relatively healthy 50. How much it succeeds will be keenly observed.

One of the biggest groups of intellectual assets the country has built over decades is the 30 National Institutes of Technology (NITs) — about one in each state. These institutes have created a large pool of well-qualified technical and engineering force, which over the decades, has provided bulk of engineers to PSUs, railways, armed forces, private sector engineering companies, and state departments such as irrigation, electricity, housing and construction.

NITs are uniquely positioned to remove the various divides so glaring in the country, and at the same time, contribute substantially to expansion of Indian GDP. For example, one of the mandates of each NIT is to admit 50 per cent students from within the 'local' state. This single commandment has the power to provide access to quality technical knowledge to students coming from the remotest geographic corners of the country. With intelligent use of technology and launch of missionary programmes, NITs can help bridge the digital divide, income asymmetries, and rural-urban differentiation in



**ONE ON ONE:** NITs must go beyond classroom teaching and develop an agenda where its students and faculty can interact with the market for on-the-job-training opportunities and understand what the latter wants

the country. One third of the country lives in abysmal poverty, below poverty line. NITs can be the connecting force between rural innovations, local employment, and world-class manufacturing.

There are at least two areas where NITs can substantially increase their contribution to national asset creation. First, for some reasons, NITs have not been able to either do justice to their economic potential or keep pace with the technological development in the world. Instead of action labs where students are encouraged to experiment with cutting-edge technologies under high-quality mentors, NITs have remained steeped in traditional teaching and lecturing of courses. NITs can look at local innovations and convert the 'jugaad' into patentable products that can benefit mankind — alternative sources of energy, low-cost housing and trans-

portation, and collaboration with local hospitals to provide cheap and effective gadgets and solutions.

Secondly, many NITs have excellent labs which can produce huge wealth for themselves and for the country. In western countries (including the US), many fundamental and game-changing researches have come out from labs where the academic programmes are student-centric and in active support and collaboration with the industry. Some recent examples of engineering-technological-industry research collaboration are genetic algorithms, 3D printing, large-scale manufacture of graphene, new and advanced materials for solar power generation (such as calcium titanium oxide also known as perovskite), interdisciplinary work between computer sciences and biology leading to neural networks, just to name a few. (Unfortunately,

our NITs and IITs have not even begun work in most of these areas largely due to the missing research and industry interfaces).

While the focus of 'made-in-India' is to establish India as a world-class manufacturing base, the lofty goals require a sumptuous delivery of engineers and technical staff capable of providing solutions to tough scientific problems. This can be achieved only if the faculty can engage and excite the students with real-life problems rather than bland classroom lectures which can become too predictable and mechanical (no pun intended) within a few minutes. In many NITs, lack of funds has taken a toll even in terms of basic upkeep of infrastructure, machinery, and neglect of lab equipment. NITs have also suffered from politicisation and old-fashioned bureaucratic rules which no one wants to

make an effort to remove. These are serious issues requiring immediate administrative and faculty attention.

NITs should no longer be just places of information sharing and dissemination between students and faculty, or satisfying adolescent curiosity but should become major engines of economic development for the country. Beyond teaching the basics such as engineering drawing, each NIT can specialise in specific technical domains. For example, an NIT can focus on aeronautical engineering design and collaborate in manufacturing pilot seats complete with avionics and radar control, seat-ejection system. For this, they should seek international collaborations; here students and faculty can go on exchange basis for learning and skill-development. This will also produce the necessary and urgently required technically-capable engineers for maintenance and overhaul of fighter plane equipment.

Essentially, NITs have to develop a capacity to innovate with an industry-angled (commercial) mindset. Engineering is a discipline where tacit and explicit knowledge intersect. Both theory and experimental practice is required to become world-class practitioners. NITs, therefore, must develop an agenda where its students and faculty can interact with the market for on-the-job-training opportunities and understand what the latter wants. Of course, this requires structural and cultural changes but then that is only way forward if NITs have to play a central role as engines of 'make-in-India' revolution.

arunkumar@mydigitalfc.com

*(The writer is a professor of strategy and corporate governance, IIM-Lucknow)*

<http://epaper.mydigitalfc.com/articledetailpage.aspx?id=1257755>

Accessed Oct 28, 2014

**“It's the possibility of having a dream come true that makes life interesting”**  
-- Paulo Coelho

**my MIND**

Students and staff of NITs must interact with the market for on-the-job-training to understand what the latter wants, says Arun Kumar Jain P11