

Performance-based funding for IITs

IITs are undisputedly the *crème de la crème* of technical education in India. Jawaharlal Nehru, speaking in the year 1956, at the IIT Kharagpur convocation: 'Here in the place of that Hijli Detention Camp stands this fine monument of India, I.I.T., today representing India's urges, India's future in the making'. In 2000, *Asiaweek* ranked five IITs (Bombay, Delhi, Madras, Kanpur and Kharagpur) in the top eight.

Despite all these accolades, what is it that lies beneath the calm waters of success? Choppy seas. That all is not well with the IITs, comes through with the statement of 'Pan IIT' posted on their website, 'We all know that the IITs are the most distinguished engineering colleges in the world. We all know that the IITians are the smartest engineering graduates in the world. We are the best. Or are we?'

Problems of the IITs

So, what are the problems of the IITs that yet need to be addressed? Foremost is the lack of emphasis and weightage on research, for without research the country cannot aspire to being top-notch in the field of technical education. The direct indicator of this apathy for research in the IIT system has been the low quantum and quality of research papers, as also patent output. It is a fact the world over that technical research must result in patents, hence low performance indicates unfocused research, not contributing to commercialization. The relevance to the country of existing research activity being conducted in the IITs is also a matter of concern, as is the cost of research to the exchequer. In spite of the fact that both Plan and Non-Plan grants for the IITs have gone up, as seen in

Tables 1 and 2, these prestigious institutes are plagued by problems such as faculty shortage, faculty retention and quality, and faculty performance management. The higher emphasis on basic sciences with a technology bent, and emerging areas such as biotechnology when taken up in the best technical institutions, could resolve several practical problems faced by India in medicine and agriculture. P. Balaram, Indian Institute of Science (IISc), Bangalore in his article on the occasion of the completion of 50 years of IITs titled 'IITs: An Academic View' has pointed out that biotechnology is an area of future opportunity, and that many of tomorrow's technologies would be seeded by basic research in modern biology, presently just a trickle in the IITs, that would hasten the process of change.

Table 1. Trends in Plan grant from 1993–94 to 2002–03 (Rs in lakhs)
(Source: Ministry of Human Resource Development, Government of India)

Institute	1993–94	1994–95	1995–96	1996–97	1997–98	1998–99	1999–2000	2000–01	2001–02	2002–03
IIT Bombay	330	360	300	600	850	1000	2180	1800	1800	2000
IIT Delhi	340	360	300	450	700	1000	2180	1800	1800	2000
IIT Kanpur	330	360	300	373	700	1000	2180	1800	1800	2000
IIT Kharagpur	380	360	300	480	775	1000	2180	1800	1800	2000
IIT Madras	330	360	300	400	700	1000	2180	1800	1800	2000
IIT Guwahati	48	1388	1100	1100	1450	2500	2018	8500	3060	7402
IIT Roorkee	0	0	0	0	0	0	0	0	1219	5000
Total	1758	3188	2600	3403	5175	7500	19918	17500	13279	22402
IIIT Allahabad								1650	1470	225
ABV-IIITM Gwalior					343	166	1000	1500	3500	225
IISc Bangalore	2380	850	1050	1990	1600	1600	1600	1600	2600	3000

Table 2. Trends in Non-Plan grant from 1993–94 to 2002–03 (Rs in lakhs)
(Source: Ministry of Human Resource Development, Government of India)

Institute	1993–94	1994–95	1995–96	1996–97	1997–98	1998–99	1999–2000	2000–01	2001–02	2002–03
IIT Bombay	2930	3219	3211	3728	3681	6541	6215	5370	7350	7200
IIT Delhi	2608	2804	3147	3054	3490	5950	6020	6600	6930	7000
IIT Kanpur	2322	2421	2780	3100	3190	5650	5280	6300	6615	6800
IIT Kharagpur	2442	2696	2918	3985	3490	5950	6025	8230	7273	7000
IIT Madras	2150	2260	2381	2798	3425	5885	5960	6500	6825	6825
IIT Guwahati										1480
IIT Roorkee									3478	5200
Total	12452	13400	14437	16665	17276	29976	30000	33000	38471	41505
IIIT Allahabad										450
ABV-IIITM Gwalior										450
IISc Bangalore	2778	2600	3173	3164	3450	7400	5435	7400	7400	8000

Solution to the problem

Having recognized the problem, a move is on to rectify this. The Ministry of Human Resource Development, Government of India has come up with a 'formula-driven performance-based funding mechanism' that has been implemented from the year 2002–03. Other initiatives for quality improvement in technical education involving the IITs include the National Programme for Earthquake Engineering Education (outlay of Rs 13.76 crore), National Programme for Technology Enhanced Learning (outlay of Rs. 15 crore), Indian Digital Library for Engineering, Science and Technology Consortium and the Eklavya Technology T.V. Channel. The special thrust on biosciences and bioengineering education and research is in the approval stage and proposals are being considered for a National Programme for Human Resource Development in IT (estimated outlay Rs 500 crore) and a National Programme for Quality Textbooks and Technical Education (estimated outlay of Rs 11.54 crore).

New funding mechanism in the IITs

Genesis

The Council of the IITs in its 36th meeting on 13 February 2001, under the Chairmanship of the Union Minister of Human Resource and Development, Murli Manohar Joshi decided to appoint an Expert Committee to review funding of the IITs and other related issues. The Expert Committee in April 2002 completed the 'Report of the Expert Committee on Review of Funding Pattern of IITs'. The Committee looked at the trends in funding since the 1990s, recommendations of the Expenditure Reforms Commission, experience of the Block Grant Scheme, the government's commitment to adopt zero-based budgeting, increasing student intake, evolving performance-linked Plan funding and rationalizing unit cost across the IIT system.

Introduction

In the FY 2001–02, the Non-Plan grants per IIT of Rs 70 crore rose by about three and a half times its level of Rs 20 crore in 1991–92 and the level of Plan grants per IIT also increased by six times from

Rs 3.50 crore in 1991–92 to Rs 21.80 crore in 1999–2000. The dispensation of funds across the IITs, barring the IIT Guwahati, has been more or less uniform excepting minor variations due to 'historical rather than educational reasons'. This did not take into account the performance in terms of student enrolment or research initiatives among the IITs.

The report, while considering the international experience in distribution of research funds on a competitive basis, has recommended the need for a funding principle that is fair, objective and promotes initiative for introducing greater clarity, transparency and accountability. It also states that a look at the Non-Plan grants and expenditure over the last few years of the IITs has shown 'very liberal funding'. Corpus funds in the IITs (other than Guwahati and Roorkee) are between Rs 60 and 100 crore; the Committee is of the opinion that these funds could be more meaningfully utilized for the accelerated development of these institutes.

Some recommendations are:

- Non-Plan funding should be formula-based with outcome focus, with the broad principle that similar activities are funded at similar rates and any variations should be based on sound and justifiable reasons.
- Portion of the corpus created from Non-Plan savings should be utilized for further development of the IIT system with a degree of autonomy, according to the perspective plans.
- There is need for greater thrust on generation of income from other sources. The scheme of 'matching grants' need not be continued, having served its purpose of encouraging internal resource generation.
- Tuition fees should not be seen as a source of income. Scholarships and free-ships need to be promoted for equity, and high value scholarships should be provided for postgraduate or PG/research programmes with flexibility to the IITs for instituting these.
- IITs should be provided greater autonomy in their internal administration within overall formula-based block grants subject to certain limitations.
- The Government should make unambiguous commitment that financial support to the IITs at levels required would continue to be available in future.

Formula-driven performance-based funding of IITs

Based on the recommendations of the Expert Committee, the Ministry of Human Resource Development has chalked out the salient features of the new funding mechanism. According to official sources, performance-based funding is based on the principle that IITs would deliver against set targets, under conditions of greater operational freedom but with accountability for results, both to the government and society. Performance would be regularly monitored on a framework of national goals and standards, with funding for the IITs being formula-based with outcome focus. The Government of India would continue to provide bulk funding for the IITs as Principal Provider, supplemented by increased contribution from other sources.

Non-Plan funding formula

Ninety per cent based on student numbers, in terms of full-time undergraduate equivalents or FTE, with a multiple of 1.5 for PG students, 2.5 for doctoral students and 0.5 for part-time students. Five per cent based on generic research output such as patents/publications other than outcome of sponsored research. The balance 5% based on other considerations such as campus size, location, infrastructure bottlenecks, large number of departments and the like.

In addition, the government would provide funds for scholarship in excess of fee income, retirement benefits in excess of interest earnings from GPF/CPF and annual running cost of national facilities in excess of annual income therefrom. In the transition period to the new funding system, a transition grant would be provided that would be subsequently phased out. The IITs would have greater autonomy for internal administration within formula-based block grants.

Plan funding formula

Fifty per cent Plan grants would be for infrastructure renewal. Expansion would be based on the perspective plans of institutes and their performance in reaching milestones according to those plans. Plan funding would comprise infrastructure grant based on campus size, programmes offered, number of departments,

expansion plan for increasing student numbers and programme diversification. Twenty per cent grant would be based exclusively on research performance, 20% on other parameters such as consultancy, continuing education and support to technical education at large and the industry. The balance 10% would be a special grant based on campus size, location and other factors.

Further, the IITs would be advised to utilize a portion of their corpus in excess of Rs 25 crore for further development of the IIT system. There would be a Memorandum of Understanding between the Government of India and the institute specifying the goals and targets to be achieved during each financial year. Performance of the IITs would be reviewed in April/May every year to fix the quantum of grants for each IIT.

This pattern of funding as given above would be applicable from the year 2002–03 onwards.

Implementation of the funding mechanism

In order to facilitate understanding of the mechanism and for inter-institutional comparison and compilation of input data in an appropriate data format, a one-day workshop was held on 'Financial management and formula-based funding for IITs' in Kanpur on 26 June 2003. According to official sources, most IITs have already begun increased intake in PG and doctoral programmes and an increased thrust on research outcomes.

On the drawing board – Future proposed plans

There is a proposal to support low-cost computing, high-speed campus-wide networks and reliable connectivity to technical institutions in the country. Engineering curriculum would be more information science-based, with capacity building at the PG level in emerging technology areas.

For combating acute faculty shortage in the IITs, a proposal has been mooted for appointment of persons of Indian origin (PIO) and foreign nationals. This could involve a scheme of visiting professorships to NRIs and PIOs, and appointment of foreign nationals and PIOs for fixed tenures in the IITs.

There is a proposed overhauling of performance management of faculty in

the IITs, although some innovative measures have been taken in respect of continuous/rolling recruitment procedures. A transparent system of objective assessment through peer review is sought, easing out of poor performers, measuring achievement based on multiple roles played by faculty and keeping the faculty constantly motivated by non-monetary incentives. A five-point scale system has been introduced in IIT Delhi and IIT Roorkee. A model based on the IISc appraisal system for faculty promotions would be considered as a framework by the IITs, keeping in view their own perspective plans.

A report is expected soon on the proposal for setting up campuses of IITs abroad, such as Mauritius, Sri Lanka, Middle East and South East Asia for promoting Indian education as a brand abroad. Recently, there has been a proposal to establish linkages in education among the IITs and Singapore; this is a beginning for promoting India's economic and other interests in the Asia-Pacific.

The DASA or Direct Admissions for Students from Abroad Scheme, due to its poor performance, is being dismantled and henceforth admission of foreign students would be through the JEE channel. It is proposed that foreign meritorious students would be able to gain admission to PG and doctoral programmes at the IITs at the same fees that Indian students pay. A review of the JEE has been undertaken to bring in changes in the timing of the screening test and more transparency in the system.

There appears to be a conscious effort, at least on paper, for increasing student intake in the IITs for building India's innovative capacity and having a more meaningful interaction with industry, particularly small and medium enterprises, notably in the automotive sector. A mindset change among both sides is hoped for. Relevance of research to India's concerns, presently mostly lacking at the IITs may have industry supporting through funding, young talented students engaged in solving problems unique to our country, which in turn would boost profitability. The participation of Industry Associations such as ASSOCHAM, CII and FICCI and captains of industry in this process of improving technical education and research focus is being seriously considered. A joint Task Force has also

been constituted to look into synergy between IITs and the Council of Scientific and Industrial Research.

Murli Manohar Joshi, who is also Chairman of the Council of IITs has pointed out that 'we have still a long way to go to assume leadership position in the field of technical education'. He expected the IITs to focus on PG and research programmes in order to provide global competitiveness in new and emerging technologies to the country. He has emphasized the need for research in IITs to be focused on specific needs of the country, India-centric research and the country's specific technological requirements. Joshi has stressed the need for IITs teaming up with other premier technical institutions, new networking of IITs with IISc, RECs and other engineering colleges in the country, with joint research facilities created for optimal utilization of resources. Joshi has also stressed that each IIT should be fully autonomous in its internal working. However, this autonomy would be subjugated to the mandate given to the IIT system and national goals and policies. He termed this kind of autonomy as 'synergetic autonomy'. He hoped that the new funding arrangement would help develop synergetic autonomy of the IIT system.

At the recently held Annual Conference of State Secretaries for Technical Education in New Delhi on 15 November 2003, Joshi said that research is essential for any of the high-level educational institutions and is important for the creation of knowledge. He was sorry to note that in spite of significant investment, we have not been able to do much in the field of research in solving the problems of our country; he has issued clear directions in this regard. Joshi added that while politicians were assessed for their performance every five years by a huge collegium of examiners (the general populace), 'you' (implying those who currently do not get regularly appraised) escape from this performance assessment and delivery. He was quite hopeful of the success of the new funding mechanism for the IITs in achieving the new targets set, for improvement in quality and research output in the technical education sector.

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