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Where Goddesses Saraswati and Lakshmi come together

Prof. M S Ananth and his celebrated predecessors in the director's office have kept Saraswati, the Goddess of learning, shining bright and far in the pristine 630 acre campus of IIT Madras. Not to ignore Goddess Lakshmi, Ananth has persuaded (and how) tight-fisted Babus in Tamil Nadu government to part with the 11.4 acres of land adjacent to the IITM campus. The Babus were wondering despite having over 600 acres of land why the immensely popular director of IITM is seeking a paltry 11.4 acres. The Saraswati - Lakshmi argument would have tilted the balance.

THE 11.4 ACRE IIT Madras Research Park, the first of its kind in industry - academia partnership in the country, has come up in Taramani. It currently houses 38 units in a multistoried built up space of half a million sq ft. The runaway response and success of the park has prompted Kapil Sibal, the Union Minister for Human Resources Development, to entreat the other IITs and NITs to also consider setting up similar research parks. Heads of other educational institutions know that Ananth's is a tough act to follow.

Dr Sandhya Sekhar, CEO, IITM Research Park, an alumnus of IITM and IIM Bangalore, recalls how Prof Ananth provided moral support during the tortuous course to make this Rs 100 crore dream a reality.

Ananth who grew up in Chennai, studied Chemical Engineering at the AC Tech, Chennai before crossing over to the US to do his Master's in Fluid Mechanics and PhD in Molecular

Thermodynamics at the University of Florida, a centre of excellence in chemical engineering. In 1972, Prof A Ramachandran, the then Director at IIT Madras, invited Ananth to join the IITM faculty as an Assistant Professor and, as per the oft-used cliché, the rest is history!



Prof M S Ananth. His magnum opus is the IITM Research Park which he conceived and implemented with such passion!

Succession of illustrious Directors

IIT Madras, founded with technical and financial assistance from the German government with matching support from the Government of India, was inaugurated in 1959. From the early years - as in the other IITs, the academic rigour encompassing faculty, students, facilities, course curriculum and syllabus, was never diluted. Ananth was generous in giving credit to his predecessors - Prof B Sengupto, the first director, had the onerous task of building the hard infrastructure and kick starting academic activities aided by German professors and technicians. Prof A Ramachandran, who followed him, had to recruit and train faculty for taking over from the Germans who had done a great job; he also expanded the post graduate programme. Prof P V Indiresan was instrumental in fostering industry-academia interaction by creating the Industrial Consultancy Division, Prof R Natarajan ensured good



Prof V G Idichandy. The responsibility of looking after 6000 plus students 24/7 is a huge one...

governance systems, including user-oriented programmes in collaboration with industry. All the directors not only had the arduous task of consolidating and building on successes, but also to be in sync with the fast changing politico-social and technology milieu.

Stringent admission norms...

The Joint Entrance Exam for admission to IITs is considered one of the toughest to crack. Acceptance percentage as a ratio of number of applicants is one of the lowest even compared with hallowed world class institutions such as MIT, Stanford and Harvard. Intake year after year of a few hundreds of the country's brightest and best 16 and 17 year olds, who perhaps are staying away from home for the first time, would keep any head of an academic institution on his toes. Being a conscience keeper of the IIT Brand would need a person of extraordinary man-management skills, besides being an academic of outstanding abilities. The task of the director is indeed stupendous considering the knowledge revolution, new forms of knowledge delivery, growing competition within and from abroad in higher education, rapid and complex changes in markets and technology, government policy changes in areas such as reservation in admission, recruitment and funding and sustainable development of the campus.

Such a responsibility fell lightly on Ananth's frail shoulders for ten long years.

15 academic departments, over 100 labs...

Today the institute has a student population of over 6000 and faculty strength of 470. One can visualize the high intellectual density at the 630 acre verdant campus!

IIT Madras offers undergraduate courses leading to Bachelor of Technology degrees besides post graduate courses M Tech, MS, MBA, MA and PhD. The institute has 15 academic departments and seven advanced research centres and over 100 laboratories. The flagship four year - eight semester B Tech programme is offered in aerospace, biotechnology, engineering physics and naval architecture besides the traditional engineering disciplines.

Complexities of managing 6000 plus...

Prof V G Idichandy, Dean of Academics, pointed out that being a residential campus, the responsibility of looking after 6000 plus students 24/7 is a huge one. The campus was originally designed to accommodate only 2500 students. Not only the older hostels had to be improved in terms of facilities but also newer multistoried buildings had to be constructed to accommodate additional student strength. Other facilities such as catering had to be scaled up significantly and IITM did a good transition to outsourcing to private caterers. Prof K Krishnaiah, Dean of Research, felt that the IIT JEE coaching, which has now become a bigger business in terms of revenues than the IIT fee collections, has destroyed the creativity and all round development of youngsters who enter the IIT. Sometimes these youngsters find adjustment problems after entering IIT. Idichandy felt that shortage of facilities for sports and extracurricular activities also comes in the way of mitigating students' personality disorders. Idichandy and Krishnaiah, seasoned



Vertical growth to accommodate 6000 that will increase to 8000 soon!



Prof K Krishnaiah. IIT JEE coaching has grown into a bigger business in terms of revenues than the IIT fee collections!

academics, are in their own ways trying to ensure that the best ambience is provided at IITM for the gifted youngsters.

The IIT Madras Research Park could be one more outlet where the restlessness of these youngsters and their intellectual energy can be harnessed.

Prof R Nagarajan, a senior faculty member in the chemical engineering department, wears several hats. An IITM alumnus he took his PhD from the Yale University and worked for IBM in North America before joining IITM as a faculty member in 2004. He is also the faculty member in charge of Alumni Affairs. Besides, he has been quite active in industry - academia interface of IITM. BHEL - Tiruchi has had long years of collaboration with IITM. Nagarajan illustrated how moving into IITM Research Park, has changed the width and depth of relationship between BHEL and IITM. There are now twenty one ongoing projects and the interaction with IITM, faculty is more frequent. The feedback is based on real time and the interactions are much more collaborative rather than a customer-supplier relationship.

Globally 60 per cent of scientists in top 100 companies are of Indian origin!

Dr Sekhar said that when a company looks at the IIT faculty as an inexpensive resource and not as a key collaborator in its project, it gained very little from the enormous capabilities of the faculty.

Once in seven years, IIT Madras faculty members are allowed to go on a sabbatical for a year. Often the faculty used to go abroad to teach in a university. Nagarajan felt that with the IITM Research Park located in close proximity, the faculty can spend time in



Dr Ashok Jhunjhunwala. *the intellectual ambience provided by the Research Park is more relevant than the hard infrastructure.*

industrial research during their sabbatical without too much disruption to their family life.

Sekhar said globally nearly 60 per cent of scientists working in R&D in the top 100 companies are people of Indian origin. MNCs have now started setting up their R&D centres in India to take advantage of the large pool of technical and scientific manpower. India spends less than 0.8 per cent of GDP in R&D and nearly 80 per cent of this comes from government and defence undertakings. Indian corporates have been too slow to embrace the R&D culture. The IITM Research Park could be a trigger for the corporates to test the waters, she said.

Sekhar also pointed to the fortuitous timing of establishing the Research Park: the recent global recession has brought home the lesson to the industry that R&D is not only a necessary activity but a survival kit.

Dr Ashok Jhunjhunwala, the Faculty in charge of the IITM Research Park, points out that the eco system and the intellectual ambience provided by the Research Park is more relevant than the hard infrastructure of buildings and labs.

Bringing unlike minds together...

Sekhar pointed out that at the IITM Research Park there are many discussion rooms, meeting places, auditoria, conference rooms to facilitate meetings of not only common interest groups but also bringing together 'unlike minds.'

Prof Jagadeesh Kumar of IITM's electrical engineering department, also an alumnus of IITM, illustrates the above through an example. Madras Engineering Industries is an auto component manufacturer which has taken space in the Research Park. He referred to a common problem in automobiles - brake linings which

Let a thousand parks bloom...

IITM is now on its 52nd year. In this period, it has enabled 13,272 students to get their degrees in B Tech, 11,403 in M Tech and 3306 PhDs. Initially set up in collaboration with West Germany, IITM has evolved among the top institutes of technology. Thousands of IIT products are in senior leadership positions in different walks of life spread over the globe.

IITM also has the advantage of brilliant academic leaders giving new directions to the growth of this premier institution. MS Ananth, who has opted for retirement in advance of his tenure, has headed the institute with distinction. His association with IITM spans 39 years, with ten of these as the Director. The *magnum opus* of Ananth is the IITM Research Park he conceived and implemented with passion.

IE for long, has been expressing concern over the lack of connect between industry and academia, as also to the modest commitment of academia to application-oriented research. A closed economy with limited production volumes had little space for R&D.

Until 2000, industrial research was predominantly in the domain of the government - defence, CSIR, ICAR and a few large public sector corporations like BHEL. Even flourishing private companies like Bajaj Auto spent less than 0.2 per cent of sales on R&D. This was in contrast to close to 10 per cent of much larger sales of MNCs like Daimler Benz, Bosch and Siemens of Germany or LG and Samsung of South Korea. Such companies have been introducing new and more sophisticated products in

continuous stream that helped them maintain their leadership.

There has also been close cooperation between such corporates and advanced academic institutions. US provides the most interesting instance of such collaboration. The R&D budgets of several American universities, like the University of Wisconsin-Madison, are in excess of \$750 million (around Rs 3375 crore). Such large budgets are built by liberal contributions from the local community, governments, both federal and state, by corporates and most importantly, by the alumni.

Industry-institute cooperation, though advocated for long in India, has not been significant.

But with the opening up of the economy, the exposure of the consumer to global standards of quality products and growth in volumes, incentivise corporates to focus on R&D. What a sea change that has ensued!

The IITM Research Park set up by the initiative of Prof Ananth ably supported by renowned academics like Ashok Jhunjhunwala and headed by Dr Sandhya Shekhar, is a dream coming true. The combined efforts of leaders from academia and scientists, engineers and other professionals from private and public institutions and the involvement of young minds-undergrad, grad and research students from the IITM campus-is a formidable force for R&D. This also will encourage inter disciplinary work.

Other IITs and dozens of hi-tech institutions, universities and colleges seem keen to emulate this model. Let a thousand such parks bloom. **-SV**



IITM Research Park the first of its kind initiative in industry-academia partnership in the country



Dr Sandhya Sekhar. Nearly 60 per cent of the scientists working in R&D in the top 100 companies are people of Indian origin.

provide the friction for slowing/stopping a vehicle wear out over a period of time. A vehicle owner realises that brake linings are worn out only when he hears the screeching sound of the brake shoe grating against the brake drum. Now he not only has to replace the lining but also the expensive brake shoes and the drum has to be reground. Kumar is now developing a sensor which can measure the brake lining wear, so that replacements would cost less!

Inter - disciplinary...

Prof Mohan Sivaprakasam, a young faculty member in the electrical engineering department, is working with Triviton, a distributor of medical devices and a tenant in the park. He is developing a mobile, non-invasive procedure for cataract surgery in association with the Sankara Nethralaya and the Department of Biotechnology. Ananth could not have asked for a better example of 'bringing unlike minds together.' His own faculty colleague Prof Krishnan, Balasubramanian has taken up space in the Research Park for developing non destructive testing methodologies.

Ashok Jhunjhunwala, the eminent faculty member known for his path-breaking work in the telecom sector, is currently working on a mobile phone-based call centre for providing advisory services to farmers. The research, which is partly taking place in the IITM Research Park and partly in his electrical engineering department, at IIT, has taken up on pilot basis a group of 1200 farmers in the Kancheepuram, Erode and Dharmapuri districts of Tamil Nadu. They will be provided agricultural advisory, similar to the 'tele

medicine' concept. Look at IIT-M contributing to inclusive growth of the rural sector!

Nagarajan is quick to point out that the IC&SR model of outsourced research also has a place in the industry - academia interaction. He himself is involved in a research project for a US based firm. He visits US once in a year to meet with his project sponsors. They also come to IITM once in a year to review progress.

R Sundaram, Chief Techno Economic Officer of IC&SR, also an alumnus of IITM, keeps track of the commercial dealings between IITM and industry, be it in industrial consultancy or sponsored research or through the research park. His secretariat in the IC&SR building takes care of the administrative and accounting activities of the industry - academia interaction. The earnings through these activities in a year are more than the grant received by IIT Madras from the Ministry of Human Resources Development!

A third of IIT faculty active in the Research Park

At present, a third of the faculty members are active in the Research Park. The key challenge is to facilitate greater involvement of the rest of the faculty. Proximity to the park could trigger interest.

IITM Research Park outwardly looks like a premium commercial office building along the IT corridor. A casual visitor to the IITM Park may wonder what IFMR, a financial services outfit, may have anything to do with a technology institution of higher learning like the IIT. IFMR, which interacts with thousands of farmers to provide micro finance, uses the services of the Computer Science Department to analyse and interpret voluminous data. The simulation expertise of the VLSI



Prof R Nagarajan. The IC&SR model of outsourced research also has a place in the industry - academia interaction

and the aerospace departments, helps IFMR in financial modelling!

Sekhar also pointed to instances of R&D collaboration between the tenants in the Research Park. This was possible because of the openness and ambience provided in the Research Park.

A budget 85 room Ginger Hotel of the Taj group operates on the top floor of the Park. This ensures that a business visitor from outside the city to the Park where sometimes tenants work 24/7, need not waste time in commuting at unearthly hours. A patent research firm, an investment banker, a document authentication outfit, a speech recognition lab, food court... are allied activities which complete the mosaic of the inhabitants in the Park.

Defence Research & Development Organisation (DRDO) and BHEL have taken large space in the Research Park. Indian IT majors such as TCS, Cognizant, Tata Elxsi have also taken up space. One also finds a number of MNCs like Renault Nissan and Caterpillar there. Apart from the established companies, the Park authorities ensure that 15 per cent space is provided to start ups and businesses incubated by IITM faculty so that there is also heterogeneity in terms of business size.

The occupancy is already over 90 per cent. Sekhar says that there are many applicants for space in the Research Park but not all meet the eligibility criteria of industry-academia collaboration. Jhunjhunwala, who is trying to ensure more student participation in the Research Park, especially the blue blooded B Tech students, feels that this has to happen in a big way for the Research Park to fully mature into a world class facility. ■