Future course on Academia-Industry Interaction

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ABSTRACT

As institutes committed primarily to creation and growth of technological knowledge, the Engineering institutes have an important role to play in the industrial sector of the country's economy. It took extended years to take cognizance of this fact by way of encouraging mechanisms to foster interaction between the academia and industry. How meaningful has this interaction been over the years and where do we go from here? We consider these questions against the backdrop of the specific needs and expectations of the industry and aspirations of the academia. Universities and industry organizations have traditionally maintained informal ways of working together, including student internships, faculty exchanges, and industry capstone projects to complete a degree program. A more recent phenomenon is the formal collaboration between a university (or group of universities) and an industry organization (or group of organizations). The purpose of these formal collaborations is to meet the academic education and training needs of adult learners through joint ventures such as graduate programs (degree and certificate) and professional development activities (customized classes, seminars, forums, and conferences). This collaboration has developed effective, sustainable models of linkages between industry and institutions through capacity development.

Keywords: Academic, collaboration, interaction, industrial participation

Introduction

Interaction at the level of industry support to basic research is virtually non-existent, whereas at the level of industry participation in technology development, some interaction, particularly with large public sector enterprises, has been witnessed. Industrial problem solving constitutes, by and large, a successful initiative, though not actualized to its full potential, since interaction in this domain is largely contingent upon the presence of a strong industrial base in the region. One might, however, add that such a constraint is of little consequence if the interaction is in areas where the Institute has recognized expertise. Laboratory utilization by industry for developmental purposes and for material and product testing has seen relatively greater success. Continuing education programme has been a time tested platform for interaction, with participation from industry gradually on the increase.

Requirements of industry

Industry's enduring interest lies in targeted development. Large scale industry has the resources to invest in new technology development initiatives, but it often tends to rely on bought out technologies, generally from the overseas. Academic intervention may be required in minor technological innovation/modification aimed at technology absorption/implementation. In the case of medium and small scale industry, the needs are primarily oriented towards problem solving, with support required in the areas of design, process improvement and plant and machinery performance, etc. This industry segment may also need academic intervention in
reverse engineering where the product exists and what is sought to be developed is a process to yield it. There may be some appreciation, specifically in the case of medium scale industry, of the need for parallel exploration of a new product line triggering a focused developmental activity, which might be carried out in-house or in collaboration with the academia. Small scale industry dealing with specific products or ancillary units acting as feeders to medium or large scale industry do not generally seem to have development driven needs. In this case, problem solving may simply amount to product testing and production enhancement in terms of quantity and quality. (8-7)

In its interaction with the academia, industry's expected time frames are immediate, and investment is directed towards efforts that promise result-oriented solutions. The costing frames are typically guided by a reluctance to invest in technology R&D which has either long term or unclear outcomes.

What the academicians requires

For academicians, the primary focus of interest is invariably a problem that throws up an intellectual challenge. Technology development initiatives which involve understanding/exploration of a concept/phenomenon and alternative methodologies, etc., related to process and design improvement could be of considerable interest. Academic environments value the autonomy of the individual researcher and there is a strong preference for working towards creation of knowledge in specialized domains. (8-10) Typically, academic interest in the multidimensionality of a problem leads to a tendency to explore a variety of options to arrive at a solution. Such activity consumes both time and effort and the result may often be inimical to what the industry would regard as a wholesome solution.

Time frames at technical Institutes are governed also by research guidance and teaching priorities of the academic community. Globally, it is funding considerations that orient academicians towards sponsored R&D activities, enabling them, thereby, to sustain their broader research interests. It is not clear whether such compulsions are at work in the context of the Institutes.

Distance between industry and institute

The gap between industry's needs and the academic community's aspirations appears to be considerably large. There exists a strong feeling, at least in the academic circles, that unless technology driven initiatives find a surer place in the industrial sector in this country, the academia-industry interaction is likely to remain confined to developmental activities with limited exploratory or research-based content. (11-12) With little or no acknowledgement of research intensive needs on the part of industry, and the marginal interest that purely development related activities evoke amongst the academia, the academia-industry interaction does not appear to be resting on very firm grounds. Moreover, there appears to be a critical mismatch in relative perceptions of the two on the issue of how technology development is to be achieved. For academia, technology development amounts to conceptualization and execution coupled with validation at the laboratory level. For industry, the interest lies in translating the laboratory validated concept into a commercial proposition, where the most important
siderations are those of economic viability. The industrial R&D in the country should ideally be focused on this phase of technology development where laboratory models are scaled and converted into commercially viable products/processes. Evolving a laboratory-proven idea into an implementable technology is a kind of effort which the academic community does not appear to be fully geared towards, at least at present. Should the academia be at all involved in such an effort? This is a question we need to confront keeping in view the possibility that academic potential is best exploited in the first phase of technology development.

**Result and discussion**

With technology driven entrepreneurship coming up in the country in a big way, the academia is bound to be more amenable to a closer interaction with industry. Small and medium sectors, which are also going to be a major force in the new rise IT industry, could possibly be the catalytic agent in this change. This sector of industry may need technological inputs from the academia in certain identified niche areas. What is needed is a support system to ensure a focused involvement of both academia and industry. If Institutes are prepared to offer themselves for this endeavor, then it is imperative that they develop systems and procedures to ensure that industry expectations are met without any compromise on academic aspirations. Can academia, jointly with industry, conceive of and take up short-term, small-budget, targeted exploration/development activity which, on the one hand, would instill confidence in industry and on the other, encourage it to embark on long-term research driven development? Such efforts at the individual level across the Institutes have indeed yielded positive results.

Compulsions of a global market are bound to force industry in general to look afresh at their R&D efforts. This process must be guided by a complete paradigm shift from a simple capital intensive trading set up to a technology driven entrepreneurial one. Industry could set up research consortia with a view to encouraging research driven technology development either in-house or in collaboration with the academia. Simultaneously, if the academia could tilt the focus of basic research towards application as well, interaction with industry would receive further impetus. Research initiatives involving industry personnel through academic programmes with flexible formats could serve as the first step in this direction.

The guiding philosophy of the Group is that the education provided by its constituent institutions should be current and relevant to the needs of the employing organizations. In order to give a practical shape to this philosophy, the individual institutes maintain an effective interface with the external world of business, industry and the government to continuously monitor their specific needs and to provide value added courses to meet such needs. The interface also extends to exchange of personnel, practical training of students, consulting and sponsored projects and training and management development programs of in service personnel. One of the primary concerns of the faculty is to help industry and business to become globally competitive through application of knowledge to the problems of productivity and organizational effectiveness.

**Conclusion**

There is a need to create avenues for a close academia and industry interaction through all the phases of technology development, starting from conceptualization down to commercialization.
One noteworthy experiment in this direction has been the Technology Development Missions initiated at the Institutes during mid 90s with an active involvement of industry. Setting up of technology incubation centres in close proximity of academic institutions could provide yet another mechanism for fostering wholesome technology development. Other avenues for link ups are possible and can be explored. What is important is that such link ups acknowledge and capitalize on the relative strengths of the academia and industry.

References


