

Academia - Industry Rendezvous



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AIM OF THE SUBJECT:

Academics and industry, which for long have been operating in separate domains, need to inch closer to each other to create synergies. The constantly changing management paradigms, in response to growing complexity of the business environment, today have necessitated these two to come closer. A productive interface between academia and industry in the present times of knowledge economy is a critical requirement. Failure to recognize each other's role will reduce the interface between institute and industry; and it can potentially give rise to mismatch between demand and supply of manpower, which in turn, can cause disruption in the job market. A synergistic relationship has to be carved between the institutions (Engineering & managements) and the industry so that both can benefit and also contribute to enhancing the entire teaching – learning process.

WHY IT IS REQUIRED: [1]

It is very essential for the faculty members in any Business School and Engineering colleges to have strong industry interface. A faculty member with good insights into the working of the corporate world/Industrial background can certainly make his class session far more interesting, informative and add value to the students. A faculty member with adequate, continuous and ongoing exposure to the corporate/industrial world will certainly bring in the benefit of his familiarity with the real life business situation to his class room.

Faculties in Business and Schools have various opportunities of establishing and increasing their Industry interface. Projects and assignments given to the students could be based on real life situations related to some companies which would benefit the students and faculty as well as the industries themselves.

Faculty supervising and evaluating summer projects should interact with the Companies in which students undertake such projects. Interactions with the student's supervisor and key management personnel of the company are certainly possible for which the faculty member has to show such initiative. Such interactions lead to faculty getting familiar with the company thro a firsthand knowledge. Faculty finds oneself in a better position to guide the students & also offer valuable advice to the company. The summer project should ideally be an immersive experience to the students as well as faculty.

Faculty has ample opportunity to develop articles, research projects, research papers and case studies through the industry interface. In such type of mutual understanding, the industry and the institutions will not only benefited but also it will build the students future with more practical concepts and will lead to a bright future.

THE PRESENT SCENARIO:

Industries are growing, facing competition, going for new innovations for survival and racing for profits and long run reputation in the global market. Sometimes they require

consulting technical experts for R&D activities, new product developments, knowhow of any new product in market and how to implement it. The big/large size industries have their own well established infrastructure, qualified staff with modern labs and equipments. They know their problems as well as solutions. As such, they do not require any consultancy/guidance from others except some special projects and trouble shootings. In case of any new technical knowhow, testing of any sample whose equipment is not available at their end, they consult TRA (Technical research associations) or high class educational institutions.

The medium scale industries face stiff competitions, struggle for survival and they need guidance from various bodies. They are not always well equipped, nor having sufficient qualified staff, or proper R&D facilities and they need guidance/helps/supports from technical institutes. Although they require guidance but do not come forward in a fear of high charges, lack in openness in their mind, conservative thinking, and sometimes feel that outside agencies may trace their shortfalls / deficiencies rather than solve their problems. Those industries are not aware to whom to approach for a particular type of problem. Hence they resolve the deficiencies by discussing among themselves or from the people working in similar type of organizations.

The small scale industries are mainly dependent on Govt aids. They do not want to invite any qualified academicians because of the fear of being over charged by them and would offer some big ideas which are beyond their reaching points. In recent years they also feel that if they educate their employees, they may flee for better opportunities. For any developmental work which will enhance their production, quality, the small scale sector only think of Govt support and funds. At Textile industries some of them have accepted ISDS & TUF (skill development schemes floated by Ministry of Textile, Govt of India) and are benefited.

The Academicians on the other hand feel lethargic in visiting industries due to lack in confidence. There are academicians from various types of institutions in different categories. Most of them are not having sufficient practical knowledge which can serve the industries to fulfill their requirements at a high level. The lack of practical exposure and confidence in facing the challenges at industrial level, unwillingness, lethargy in continuing more studies for long duty hours and that of in odd hours, expecting high return with big reputation even for a smaller job have become the shortfalls on part of them. A majority of the academicians do not have solid industrial background with high theoretical knowledge which can build a good bridge among the industry and academicians. Some are having excellent knowledge but are not down to earth. Salary perks are the main dreams for them rather than learning and teaching students and the society.

THE ROLE OF TRA'S:

The third option is TRA i.e. Technical Research Associations which were built to serve the industries, the institutions and to train the students. They are known also as cooperative research. The large scale industries which have their own infrastructures do not necessarily invite scientists for the reason of cost cutting measures, not to engage any extra man (for example if any scientist visits any industries, one man from that industry will have to cooperate leaving aside his own routine work) and to some extent

in a fear of getting leaked out of the secret. In Textile Industries there was strike call by then Trade union leader in the year 1982 and after that all the Organized Mills shifted their base from Mumbai. As a result, the Textile Research Associations suffered a lot and their activities were also curtailed. There was a dearth of finance in TRA's. TRA's are mainly surviving on sample preparation & Testing Laboratories. They are sometimes engaged with Govt sponsored Projects or with small time Projects to remain in race.

TRA's are also in cost cutting fray, not afford to maintain high profile scientists. On the other hand, scientists do not stick to the Research institutes because of slow growth, bureaucracy within the institutions, lack in infrastructure and non cooperation from various bodies. Some scientists are not money minded and willing to serve society, but because of constraints and not getting supports from their superiors, they remain elusive. To improve the industry- academia relationship, the Government must support the Research Associations as nonprofit zone where instruments, equipments and knowledgeable scientists can be provided.

THE PERCEPTION: [2]

Experience dictates that it is imperative to recognise at the outset just who the stakeholders are and what their varying expectations might be. The scale of a project is also seen as an important factor in determining precisely the best strategy for successful collaboration. Most certainly, there is not a 'one size fits all' solution.

- To establish strong personal relationships between key individuals on both sides of the interface is absolutely essential to ensure a culture of trust and mutual understanding.
 - Partnership has to be the basis of collaboration, formulated on the concept of shared risks and rewards for both institutes and individuals.
 - The sustaining of partnership at senior management level between industry and academia requires constant effort by both sides, together with a constant ongoing review of the process.
 - Personal networking is very important, especially with individuals at the very highest level of industry.
 - A change in culture is required. Flexibility and nurturing of individuals are crucial to success.
 - Industrial culture, of necessity, is based on flexibility as driver of success. Academia needs to learn this lesson and become more adaptable.
- Academics must see the benefit of good management skills, supported by software and Integrated systems.
- Academic researchers and industrialists collaborating in joint ventures need to become much more informed on risk management and take professional advice or in the case of large-scale projects, employ a specialist.
- While universities and researchers are concerned with academic value protection, industry is concerned with profit. Government should value both academic development and wealth generation. All partners should see IP (intellectual property) as an opportunity in the developing environment, rather than a barrier.
- The Technology Transfer Offices in the universities are the appropriate forums for the IP process. Technology Transfer Offices should:

- Be better resourced.
- Attract external industry-experienced personnel.
- Encourage career-long training due to the nature of the constantly evolving model.
- Entrepreneurial Skills, training and Project Management should be included as part of science & engineering curriculum. Young aspiring leaders, on and off campus, need to be attracted and encouraged to this area and be better educated to deal with industry.
- The transfer of knowledge from higher education institutions and public research organisations to the market place is the key in developing a commercialisation environment and world-class research.

TOWARDS INTEGRATED MODELS: [3]

The academic – Industry relationship should not that of technology donator –acceptor, but is of interactive and collaborative nature. The higher education should not be completed without attending industrial training and practices. Simply bookish knowledge within limited periphery will not help a young engineer face competitive world. But so many colleges fail to fulfil it except a few premier institutes. Although academia – industry interface being adopted by the concerned bodies in principle, but it`s potential is far from being utilised due to “attitudinal differences” and perception among the stake holders.

The encouragements to enhance work flow:

1. At every college there is T&P Dept. who should work towards with renowned academicians and industries. The Chair should get financial benefit by the institutions and from Govt. bodies. This chair must have enthusiasm to encourage the students and to meet the targets. All the HOD`s and teachers must support the chair with the guidance of Head of the Institution. Regular meetings, interactions, shortfalls, are to be discussed and targets are to be fulfilled.
2. *Incentives:* To encourage academia-industry collaboration tax exemption for all expenditure on R&D where industry and academia work together could be given and service tax for any royalty coming out of technology transferred by an academic research institution to an industry could be exempted.
3. *Foundation of Centre of Excellence and Relevance:*
The recurring demand of qualified skilled manpower catering to the industry requirements could be met through establishment of centres for excellence in specified areas of universities/institutions under science and technology (S&T). The industries and the Government would shoulder the costs of infrastructure and the host institution would bear all the recurring expenditure like pay of staff, maintenance of instruments, and other organizational expenses for the centre.
4. *Reformation of Students' Internships:*
Students' exposures to industrial practices through internships are to be made mandatory. The student internships are also to be made more meaningful with Feedback mechanism and long term so that both students and industry are

benefited. This would also facilitate the Industry to plan and structure the internship programme.

5. *Celebration of Annual S&T Festival:*

This festival should be celebrated in the entire academic Institutions annually involving students, staff, and industrial community. The festival should also be considered as an intimate gathering featuring distinguished personalities from around the world who will come to discuss the past, present, and future of technology.

6. *Diffusion of Knowledge through Interaction:*

Students must be encouraged in preparing and participating papers which should be of industry based in the respective colleges. Projects can be undertaken at different innovative areas with the guidance of experts within the institutions as well as from the industries.

7. *Involvement of Alumni as Mentor of Students:*

Alumni with industrial background can act as mentor for Indian students to provide guidance on improving employability skills, placements, knowledge of global business trends, overseas opportunities in business, and Information of technological advancement etc. delivering lectures in their respective institute. Alumni can also raise a fund to support the entrepreneur skill among the interested students with feedback mechanism under special terms and conditions.

8. *Pulling Top-Notch talent to the Faculty Pool:*

Eminent scientists/ technocrats outside the college/ universities should be invited to show the students the industrial scenario, to sponsor the projects and to promote industrial cooperation.

9. *Review committee:*

This committee is supposed to meet at each year consisting of academicians, industrial Experts, from different fields to modify and update the syllabus time to time.

10. *Regulations and Policies*

Government should ensure a smooth transition of KPO (knowledge process outsourcing) between academia and Industry through its regulatory bodies and policies laid down by the management. It can help with a clear stipulation, where it should prohibit so that the academic world may not be deceived by the industry.

THE XI FIVE YEAR PLAN: [4]

In all leading countries this type of programs are implemented and good results are obtained. In India the following Mechanisms are on the card.

1. Technology Development /Pre- Commercial R&D:

1.1 *NMITLI (New Millennium Indian Technology Leadership Initiative):* Under this scheme the Projects are taken at distinct components and invite various institutions as well as industries to play critical role in the development of a particular component.

1.2. SBIRI: (Small Business Innovation research Initiative): This scheme supports small and medium size enterprises with a grant or loan to help early phase of product development.

2. Technology Transfer and up scaling:

2.1. HGT (Home Grown Technology): Unique scheme of TIFAC (Technology Information, Forecasting and Assessment Council) assisting the commercialisation of technologies successfully tried out in laboratories. This activity has provided a major impetus in promoting R&D Efforts in various national laboratories and strengthens linkage between research institutes and industry.

2.2. PATSER (Programme aimed at Technology Self Reliance): This scheme of DSIR (Dept. of Science & Technology) supports industry for technology absorption, development and demonstration and building capabilities for developments and commercialisation of contemporary products and process of high impact.

3. Technology Commercialisation:

3.1 TDB (Technology Development Board): It belongs to DST which encourages developments and commercialisation of indigenous technology or adopting imported technology to wider domestic application. This scheme provides financial assistance or grants.

3.2. Technology incubation in academic institutions: Under the NEB (National Entrepreneurship Board) of DST, a large number of technology business incubators (TBIs) as well as Science & Technology Entrepreneurship parks (STEPs) have been set up in academic institutions across the country. This scheme helps to nucleate small firms based on emerging technology needs.

4. Focussed Human Resource Development and Technology support:

4.1. Mission REACH (Relevance and Excellence in Achieving new heights in higher technical education): This mission under TIFAC is targeted towards upgrading the quality of higher technical education in Sc and Engineering institutions by creating Centre of Relevance and Excellence (COREs) in institutions in select areas of S&T which are of direct relevance to industries. This mission is a unique example of successful academia- industry interaction.

4.2. AICTE SCHEMES:

4.2.1. Industry Institute Partner Cell (IIPC): The objective of the cell is to reduce the gap between industries expectations and academic offerings by direct involving industries to join the team. The AITUC also provides financial assistance to the selected institutions to meet the recurring expenditures.

4.2.2. TEQIP: The technical education quality improvement plan aims to improve the quality of technical education in response to rapid economical and technological developments. The funds are also provided in phased manners.

4.2.3. *NAFETIC*: National Facilities in Engineering & Technology with Industrial collaboration aims to establish national facilities in the frontier areas of engineering & technology in collaboration with industry. The scheme provides sophisticated testing, instrumentation and design facilities to industry in specialised areas of engineering and technology, advanced knowledge and know-how to industry in the new areas of relevance through short term training / continuing education programmes, provides effective linkage between industry and academic institutions for sponsored research and consultancy.

CONCLUSION:

1. The world has moved from industrial revolution to knowledge revolution and from industrial economy towards knowledge economy. Global economies are gradually getting interconnected in this changed situation.
2. The quality of products of immeasurable economic value will hereafter be knowledge based.
3. Knowledge sharing, knowledge transfer and transfer of experience and technology between academia and industry are the need of the hour for the growth.
4. It is necessary to conduct industry-oriented applied R&D, academia-Industry-R&D lab consortia which could be very fruitful mechanism to improve the Industry – academia interface.
5. The faculty members of academia are to more of practical based so that the students can take fruits of it.
6. The industries also should come forward and to be more open minded to help the young engineers for their help in future.
7. The TRA's should have more infrastructures to help both academicians and industries. Their funds are to be supported by Government.
8. at every college and university, there should have a strong T&P cell funded by institutions and govt who should be able to prepare the students as per the need of the concerned industries. There should be strong alumni, S&T festivals, paper presentations (industry oriented) at college level.
9. The 9th five year plans are to be more implemented by govt so that both industries and academics are benefited.

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