A Pyramid Model Approach: Industry - Institute Partnership

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ABSTRACT: "A country's growth lies in the up gradation of the tech-savvy manpower".
Though India has one of the largest technical manpower in the world, there is a large scope for improvement of Industry Employable Quotient (IEQ). Therefore it is essential to transform the available huge human resource potential into industry ready engineers by incorporating skills and values along with the knowledge acquired. Academia and Industry have their own perspectives where in there is a mismatch as the former is knowledge based and latter is target /profit oriented. But engineers have both these latent qualities along with entrepreneur aptitude inbuilt in them. These qualities are to be effectively nurtured collaboratively by academia and industry.
Though there are various forms of Industry-Institute linkages which integrate skills and competencies along with curriculum, it is inadequate. To augment IEQ, this paper proposes a pyramid model wherein institute, industry and policymakers can work in cognizance towards the goal of creating tech-savvy man-power contributing to growth of the Nation. It also focuses on the involvement of major government organizations in the Industry – Institute linkage to boost the sense of responsibility towards the nation among the student community. An adoption model for strengthening industry institute partnership is also proposed.
Keywords: Pyramid model, Adoption of a department, Edge formation, Technology Driven Nation

I. INTRODUCTION

Many surveys in India estimated that only 10% of professional graduates are employable and same is true for engineering which is below 17% and needs to be addressed immediately. NAASSCOM and GIS report highlights that- Only 25 % of 3,60,000 engineering graduates are employable.
India is envisaged to be a powerhouse with population in working age group of 25-45 years by 2050.
Employees with proficient skills, real time problem solving capabilities in the field of engineering and technology are not adequately and effectively groomed by universities. University curricula are knowledge based with a sprinkle of skills and hence are not sufficient to provide industry ready employees (to be effective on the job from day one). However, Industry looks for a blend of adequate knowledge, skills and problem solving capacity in its employees which forms the largest gap.
Skill gap has a direct impact on economics, human capital and business growth of a developing country which will lead to more joblessness and greater disparity of incomes between high and low skilled workers. Other major threat to the developing countries is the brain – drain which needs to be addressed to channel the expertise towards the national problems.
These issues can be overcome by proper harmonization of Institute, Industry and Government.

II. CURRENT SCENARIO

The mismatch between industry's and the academic objectives is quite significant. There is a major disparity in the perceptions of both the parties, regarding the way in which technology development is to be achieved.

II.I Industry:

The Indian industrial scenario prominently comprises of large scale and small scale industries. For industry, the interest lies in translating the laboratory validated concept into a commercial proposition, where the most important considerations are those of economic viability.

- Large scale industries depend on imported technologies. They neither have the time for in house development nor do they believe in institute's capacity for time bound solutions. Academic contribution to these industries is just in the form of some modification only.
- In the medium scale industry, there is a need to develop merely a process for an existing system or alternate investigation for the developmental activity, which is usually carried in collaboration with the academia. But this is just an incremental innovation for the universities. For small scale industry, collaboration simply amount to product testing in the form of small consultancy services from academia.
- Association of Industries with the academia is aimed at time bound result-oriented solutions. But there is hesitance to invest in technology R&D which is neither short term or nor has clear outcomes.

II.II Academia
For academicians,

- The major interest lies in projects that have an intellectual challenge leading to creation of knowledge in specialized domains.

- Academia prefers the independence of the researcher and has a tendency to explore a variety of solutions by considering various aspects of a problem. This may be time consuming and not a unidirectional solution.

- Currently in academia circles , development of technology is limited to execution and validation at the laboratory level

- Funding aspect plays a vital role in take up R&D activity.

III. NEED FOR REFORM

The Industry – Institute interaction does not have a strong foundation.

For industries, they should realize that, cost of patented solutions are becoming astronomical, hence buying technology is not a viable solution in long run. Therefore, in the fore-run for sustainability in the 'Make in India' epoch, they have to rely on academic collaborations.

On the other hand, the institutes should realize that the research should also be focussed on time bound targeted solutions which the industries are looking at from them. This is where academic capability should be utilized for technology development.

Hence it is a mutual need to have an amicable linkage for win – win situation.

IV. PROPOSED MODEL

The proposed model is a pyramid based model. The basic vertices are representation of Institute, Industry (Private sector, Public sector, Government research centres) and Government (policy makers).
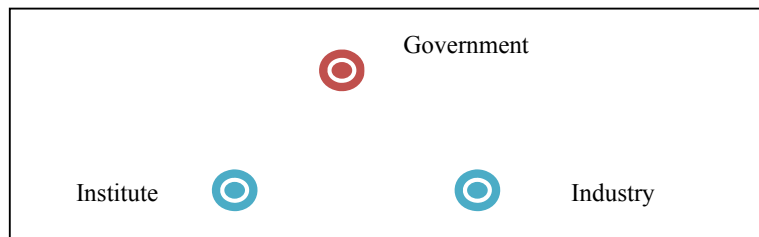
Figure 1: Vertices of the Pyramid platform

The connecting edges between the vertices represent the interaction between the entities represented. These paths are to be identified jointly by the corresponding entities by fostering to each other's aspirations making a strong foundation.
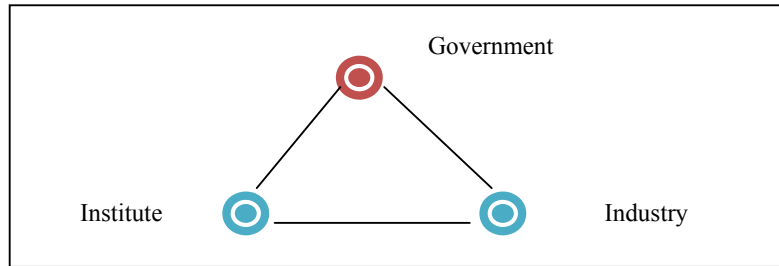
Figure 2: Edges of the Pyramid platform

Now, all these entities will strive for their joint verticals targeted towards the fourth vertex "Technology Driven Nation"
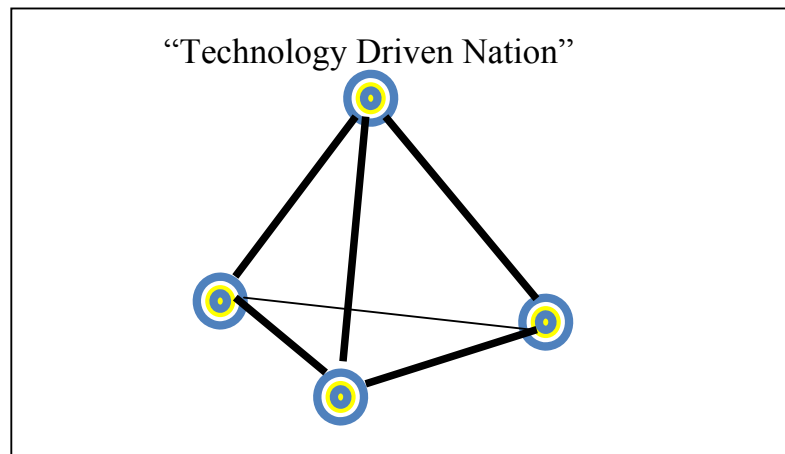

Figure 3: Formation of the Pyramid

IV.I. EDGE FORMATION

♣ **Institute – Industry association:**

♣ **Institute – Industry (private) association:**

Generally this interaction is limited to shallow collaboration in the form of guest lectures, industrial visits , mini projects, training and knowledge update through faculty exchange etc. with no significant benefit to both the parties and ultimately to the technological growth of the nation. Some form of deeper associating exists only with a few top ranking institutes which contribute to only one percent of the institutes in the country. Therefore is a greater need for revisiting the I-I association.

This demands the two parties to join hands and deliberate upon the industry needs and academic aspirations to reach a consensus of **OBJECTIVES** for a win – win strategy.
This leads to the development of the first corresponding EDGE of the base triangle
♣ **Institute – Industry (public and government organizations) association:**

This interaction is still in the nascent stage and has to go a long way. There are very few players in this association like DRDO, ISRO etc. who fund very few projects which seems to be meagre considering the strength of the student community (lakhs of students admitted to professional courses every year).

The major government service sector organizations like Railways, BSNL, Electricity Boards, Water and Sewage Departments to name a few have no active association with the institutes derailing the socio- economic growth.

This is high time that these players bond with institutes in an agreeable way towards the 'Make – in – India', 'Smart – City' and "Digital India" movement. These can be realised with the immense student potential from the professional institutes. Moreover they will be oriented towards the commitment of technical growth of the nation.

This leads to the development of the first corresponding EDGE of the base triangle

🞣 **Institute – Government association:**

The policy makers like AICTE, UGC and Ministry of HR can incorporate reforms to aid institutes with sufficient funding to promote institute's association with Government and Non- Government industries resulting in strong research culture and entrepreneurship aptitude in the students.
From the Government side, this can also be strictly monitored for successful completion of the activity and due credit be given to those institutes inculcating this culture.
This benefits the institutes in their ultimate branding at national and international level and Government benefits from the skilled student community and experienced faculty finding technical solutions to National issues.

This leads to the development of the second EDGE of the base triangle

🞣 **Industry – Government association:**

The government can take steps to draw huge level association with the industry in the decision making of long term plan for the nation, wherein an agreement can be made by various private and public sector players to channelize these plans. These commitments can be realise by strong involvement from the institute. Policy makers can achieve this by various promotional schemes

Industry also benefits from the following actions
• Government offering some form of tax concessions for investing in the industry – institute interaction.
• Industries utilize the youth talent to develop the State – of Art technology rather than importing technology at a huge cost. Developed technologies can be patented which will make them the fore- runners in the global race.
• Industries can also promote the "Swadeshi" concept.

This leads to the development of the last and third EDGE of the base triangle.

Therefore, this new angle benefits the students community and all the three entities and hence the nation at large.

IV.II Plane of the triangle:

A forum comprising of big – wigs of Universities, Academic institutes and policy makers can be incorporated and develop strategies befitting all the three vertices and edges.

IV.III Developing the pyramid:

The forum has to develop strategies leading to formation of the fourth vertex "Technology Driven Nation" achieving their mutual verticals also. This can be do through period meetings and revisions of the strategies to accelerating the movement towards the fourth vertex.

V. ACTION PLAN

Apart from the existing forms of industry – institute interactions, the following action is proposed:

Adoption of a department of an institute by the industry (Private sector/Public sector/ Govt. R & D):
• The major industries in the region can approach the institutes in their vicinity for adoption.

• They can have elaborate selection criteria for selection of the students during the first year level itself.

• 3rd and 4th semester the selected candidates to be given certified training for a fortnight at the industry

- During 5th semester, the students will be offered projects which have to be carried out for the next four semesters leading to credits in the marking system.

- During these semesters, the students will be given internship based on their projects.

- After successful completion of the projects and the degree, they are to serve the industry for a period of one year as a trainee.

This can be successful through a proper mentorship scheme both from institute and industry which act as a link between the industry and students.
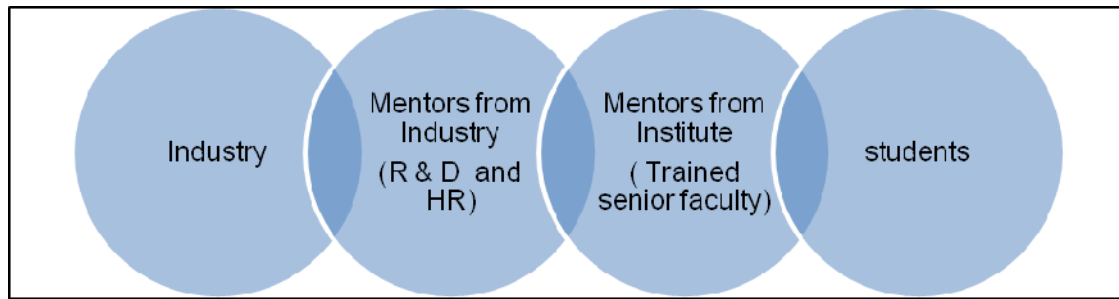

Figure 4: The Industry - Institute Collaborative Scheme

VI. OUTCOME

- With proper implementation of the above scheme, around 30% will find placement in private sector, 30% in public sector or R & D organizations and top 20% may go in for higher studies.
- The industry will benefit trained, skilled and industry ready employee.

- Government can curb brain- drain to a great extent and retain the talent pool.
- The programs of Institute can be benefitted by strong orientation to Industry by inclusion of researchers from industry
- Develop Win-Win Partnerships through long term partnerships
- Develop engineering entrepreneurs with understanding of knowledge, industry and business outlook.

VI. CONCLUSION

Industry-Institute-Interaction can be made successful with all the Institutions, Alumni, Professional bodies, Industrial associations, Government agencies etc. work towards inculcating the required **TALENT** in the student community at large. Faculty members of the institutions and senior executives form the industry identify the grey areas, should work in harmony and mentoring should be seriously reformed leading to **Technical Congregation**. Developed countries have achieved technological superiority due successful implementation of the Industry – Institute partnership.

For countries like India, where huge man power resource is available, all the three entities should come forward to make INDIA a "TECHNOLOGY DRIVEN NATION".

REFERENCES
[1]   Industry-Institute-Interaction to public private partnership: A journey to excellence by Prof-Shymal Majumdar (CPSC)
[2]   American Society for Training and Development report-2012
[3]   Technical Education and Training for sustainable Development by Vijay.P.Goel:[MHRD-Govt. of India].
 [4]   MIT Sloan Management Review-2010
[5]   Science Business Innovation Board Report-2012