"UNIVERSITY - INDUSTRY - INTERACTION VIS-A-VIS GLOBALISATION AND INDUSTRIAL RESTRUCTURING OF INDIAN ECONOMY".

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ABSTRACT

At a time when the industry has necessarily to go through a process of radical restructuring, it is desirable to take stock of the present status of the industry, its strengths, weaknesses, opportunities and threats (SWOT), from which a strategic action plan for its future growth development can emerge logically. In the US, good hi-tech products have seen the light of day only because the academia there was co-opted by American industry in its R & D pursuits. There is a constant flow of people between private industry and university laboratories. Professors are allowed to run their own consultancy practices outside of their academic responsibilities. This country's economic liberalization should lead to campus liberalization as well.

1.0 NEED OF THE UNIVERSITY-INDUSTRY INTERACTION

The recent liberalization in the industrial and fiscal policies have led to a significant increase in the avenues for technology development, commerciliation and upgradation. In this suddenly changed environment, it becomes extremely vital to assess the global technology trends vis-a-vis their status in India based on market pulls and technology push. We can compete in this worldwide market only by coordinating our know-how, innovation, engineering and business skills with a well-trained workforce; which is possible only through University-Industry-Symbiosis.

2.0 PRESENT SCENARIO

The almost complete isolation of the world of education from the world of work has made teaching-learning in

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the technical education largely theoretical, thereby rendering the engineering institution product often unemployable and without the essential abilities for problem solving and attributes of self-reliance. The commercial value of university activities are examined by industry since its output or services are treated as essential inputs into business and commerce and other industrial enterprises. The quality of outputs of universities, thus, have a significant bearing on the economy, the strength of which consequently determines the extent of financial support for the promotion of university activities. Thus, industries will have to be more liberal in financing education and research activities. They will have to recognise that they are not doing any 'favours' to institutes but are really helping themselves.

Without the improvements in efficiency in the use of physical and financial resources which is dependent on the extent of effective application of new knowledge and technology, it is not possible to expediate the process of development. Thus, university is required to inform the industrial sector about the implication of new knowledge and technology innovation on production and commercial activities while industry is expected to atriculate its needs for manpower with relevant knowledge and expertise.

3.0 MAJOR CONSTRAINTS IN EFFECTIVE UNIVERSITY-INDUSTRY MECHANISM

One of the principal causes is that technical institutions and industry have not been able to identify a common front for working together. The educationists appear to have a feeling that they have been providing engineers to industry 'free of charge', on the contrary, industrial houses seem to express the view that they are fulfilling an obligation by employing unsuitable technical graduates. This treatment of each other as 'client' rather than as 'partner' is the major constraint in significant mechanism.

The other constraints are :

(i) A large number of institutions are located in mofusil areas where there are no industries around.

(ii) Lack of adequate facilities for the institutions to have interaction with industry, e.g. transport, communication, secretarial assistance etc.

(iii) Shortage of staff in the institutions resulting into overloading of the available staff having no time for interaction with the industry.

(iv) Rigid academic and administrative constraints preventing the interaction.

(v) Widening gap between the technological development and institution/workshop facilities.

(vi) Lack of motivation on the part of the faulty as well as students to undergo in-plant training in industry.

(vii) Lack of interest on the part of the industry in imparting relevant/proper training to teachers and students.

(viii) Lack of adequate financial support for industrial training, e.g. stipend, accomodation, transport, lodging and boarding etc.

(ix) Lukewarm response from the industry regarding consultancy/R and D and testing services by the

institutions.

(x) Lack of consciousness regarding time, quality and cost on the part of the institutions for the project assignments from industry.

(xi) lack of cooperation regarding continuing education, library facilities and overall development.

(xii) Apathy due to 'ivory-tower' attitude from both the sides.

4.0 ROLE OF INSTITUTION/ UNIVERSITY

(i) to impart the basic knowledge of the relevant disciplines.

(ii) to provide for the basic training in the relevant practical skills.

(iii) to develop a positive attitude towards the world of work.

(iv) to prepare educated and civilized manpower for industry.

(v) to have a continuous liaison with industry for evaluation, feed-back and improvement of performance.

5.0 ROLE OF INDUSTRY

(i) to organize and utilise all resources of production viz. land, labour, material, capital and entrepreneur at optimum productivity.

(ii) to produce goods and services in the required quantities, at the best possible quality, at the least possible costs at the most reasonable price and with the best possible service-after-sales.

(iii) to strive to fulfil all obligations towards share holders, govt. employees, customers etc.

(iv) to train and develop human resources for overall organizational productivity for global competition.

6.0 DR. D. SWAMINADHAN'S MODEL

The model of University-Industry-Symbiosis as proposed by Dr. D. Swaminadhan, Member - Planning Commission, Govt. of India, is shown in fig. 1. The ultimate aim of such a symbiotic relationship will be creation of confidence in industry by the University resulting in the industry voluntarily involving the Technical Institute, right from the feasibility of project appraisal stage itself. The development of such relationship requires firstly, careful understanding of the industrial needs such as relevance, cost effectiveness, time bound programmes, technology upgradation, etc.

7.0 POSSIBLE AREAS OF INTERACTION

(a) Curriculum development
(b) Participation in selection
(c) Transfer of knowledge
(d) Consultancy scheme/project assignments
(e) Seminars and conferences
(f) Technology-transfer
(g) Industrial visits
(h) In-plant training of teachers/students
(i) Exchange of faculty
(j) R and D facilities
(k) Testing and inpsection
(l) Production-cum-training centre
(m) Participation in evaluation
(n) Continuing Education
(o) Advisory Committee
(p) Institution of chairs
(q) Institutional evaluation
(r) Adoption of Institutions/Programmes
(s) Support to sandwitch programmes.

8.0 EXPECTED RESULTS OF SUCCESSFUL INTERACTION

(i) Curricula of the courses would be up-to-date in line with the industrial requirements.
(ii) Better knowledgeable faculty with practical orientation.
(iii) Cross-fertilisation of ideas in project assignments and problem-solving.
(iv) Possible revenue income through consultancy, R and D, testing and inspection facilities.
(v) Better avenues for continuing education and upgradation of skills.
(vi) Exchange of ideas, views, experiences through periodical meetings/seminars/conferences.
(vii) Better knowledgeable and better employable students available for industry.

9.0 MEASURES FOR PROMOTING INTERACTION

The challenges before University and Industry could effectively be dealt with by promoting interaction in such a way that industry should finance university programmes in lieu of highly trained manpower and consultancy services. In view of this, suitable measures can be :

(i) Improving infra-structural facilities
(ii) Making curriculum and research programmes as per needs of the industry.
(iii) Education and training should be specific to developmental needs of that area and curriculum to be devised and revised.
(iv) Institutions should undertake extension programmes to disseminate knowledge and ensure effective application of new technologies particularly in rural area.
(v) Some incentives linked with performance should be adopted to motivate staff members.
(vi) Exploring ways and means for raising funds from industry especially by organizing, training programmes, short-term courses, undertaking consultancy projects, encouraging donations, etc.
(vii) Utilising the income earned from consultancy projects for improvement of infrastructural facilities.
(viii) Developing mechanisms whereby linkages be strengthened for free flow of information to university as well as to industry.
(ix) Incorporating Patent-Royalty-Sharing formula.

10.0 CONCLUSIONS

University-Industry-Interaction is an urgent need to improve the quality and relevance of technical education, to keep out the industries at par with industries in advanced countries. In order to give greater impetus to the commercialisation of R and D results from institutions, favourable environment must be created to promote greater interaction between institutions and industry. A blend of institution-industries linkage mechanisms should be designed and implemented keeping in view the local conditions and requirements. The changing world under growing competition and higher emphasis on quality make this, a question of survival of industries and economy of the country as well.

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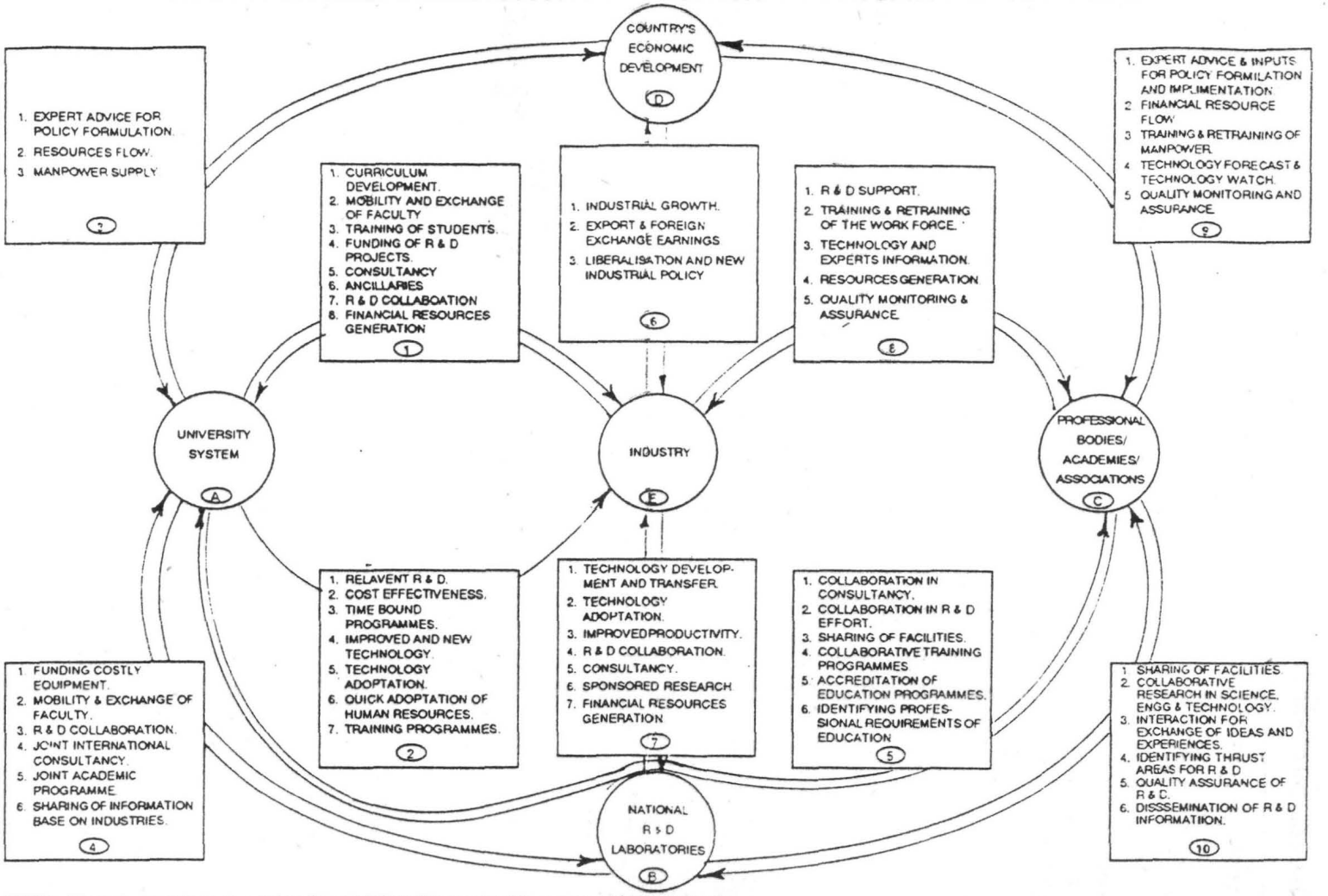
A MODEL FOR UNIVERSITY - INDUSTRY - NATIONAL R & D LABORATORIES - PROFESSIONAL BODIES AND ACADEMIES INTERACTION FOR COUNTRY'S ECONOMIC DEVELOPMENT



NOTE : "Country's economic development" caption may include all the sectors of the economy and the government.
"University System" includes professional institutes of higher learning in engineering, technology, medicine, pharmacy, agriculture, management etc.
Professional bodies/academies/associations includes INSA, IISc, Institution of engineers ICAR, ICMR, AICTE, FICCI, CII etc.

Formulated by Prof. SWAMINADHAN,
Member, Planning Commission, New Delhi.