

CONCEPT OF CONSORTIUM OF ENGINEERING COLLEGES AND POLYTECHNICS FOR EFFECTIVE AND RESULT ORIENTED INTERACTION WITH INDUSTRY

D. K. GHOSH

1. INTRODUCTION

In my article published in the University News (22.5.1995) of AIU, New Delhi, entitled "Concept of University Company - UK Story - Possibilities in the Indian Context", I have strongly advocated for establishment of University Company in the University System basically to :- (i) work as a structured professional interface between the university and the industry and :- (ii) function, and do all commercial activities which the university in its present form and character as a non-profit making body cannot do and is not geared to do a professional job that a company with a professionalist to head as Manager, can do that. Such a concept need to be conceived at the national level so that suitable provision of exemption from the Income Tax and Sales Tax could be made for the company as the entire income would be transferred not to any individual or individuals but to a public institution called University which is already a non-profit making body.

2. UNIVERSITY COMPANY VIS-A-VIS COLLEGES

While it may be possible with

changes in the relevant laws of income tax and sales tax, to establish and function a University Company, is it practicable to do so in relation to the colleges ?

Although the concept of the University Company is basically meant for the University itself, it is quite open and possible to bring the colleges within the purview of the company functioning. However, in reality, it may not, for practical reasons of organizational limitations, cover the colleges and even if it does, colleges may some time or other find themselves neglected.

Fundamentally, the concept of University Company is to ensure optimal utilization of the expertise and facilities in all the institutions - be it a University or a College, for interaction with Industry and thereby while institutions will generate income, industry will benefit through the former's expertise and facilities.

The suggestion of the University Company was made to initiate and activate the consultancy activities between university and industry. Today, there is hardly any worth the name university-industry interaction and the reason is very simple; because there is

no interface body or an effective body to sell the expertise and facilities of the University to the industry. Wherever such activities are being carried out, either there is nobody to act as interface or a Professor has been charged with the responsibility to do so besides his basic teaching and research activities which really means on a part-time basis. Nor is there a mechanism by which the faculty is relieved of the procedural tangles most of which are irritants, and to monitor the progress of the consultancy work for timely completion. Time is the essence of the entire game of interaction and this has to be respected religiously if the relationship is to be sustained for meaningful and fruitful purposes.

We have over 7000 colleges of all types in the country with over a large number of non-viable ones having very small enrolment and utterly poor conditions in terms of expertise and

facilities. Even, of the big colleges, a large number of them are for Humanities, Science or Commerce or some have a mix of the first two, or some have all the three. While in many of these colleges, expertise may be there for interaction with industry, the scope is rather limited.

3. POSSIBILITIES FOR COLLEGES

Really, speaking, it is the Engineering Colleges particularly the good ones and big ones and some Polytechnics which need be organized first for the purpose of interaction with industry. This number is large particularly some of the states have a large number of Engineering Colleges and Polytechnics. Among the various states, four have the largest number of colleges and polytechnics at different levels post-graduate, degree and diploma, approved by the All-India Council for Technical Education (AICTE), as shown in the Table1.

Table-1

STATE	Number of Colleges approved by AICTE			TOTAL
	Post-Graduate	Under Graduate	Diploma	
1. Karnataka	26 (22.41)	97 (19.28)	263 (20.00)	386 (19.96)
2. Maharashtra	13 (11.21)	124 (24.65)	214 (16.27)	351 (18.15)
3. Tamil Nadu	12 (10.34)	79 (15.71)	150 (11.41)	241 (12.46)
4. Uttar Pradesh	10 (8.62)	25 (4.97)	133 (10.11)	168 (8.69)
	61 (52.58)	325 (64.61)	760 (57.79)	1146 (59.26)
Total Number in India	116	503	1315	1934

Source : Pages 177-78, ISTE Handbook - 1995-96.

Percentages in parenthesis is in relation to the total in the country.

It is clear from the above table that out of 1934 Engineering Colleges and Polytechnics all over the country -

Karnataka has	19.96%
Maharashtra has	18.15%
Tamil Nadu has	12.46% and
Uttar Pradesh has	8.69%

While a large number of the institutions are poorly funded and ill-equipped, many of them have good staff and facilities. And there is no denying of the fact that these facilities are not optimally utilised particularly in terms of selling them to the industry. However, as we know some of these institutions already have some interaction with industry but that again is not upto the optimal level. Many of these institutions carry out testing activities which though is a source of income, does not contribute to any innovative activity.

For the purpose of interaction with industry, while all states have some scope in relation to the number and capabilities of the Engineering Colleges and Polytechnics, scope in Maharashtra is really unlimited if only one knows how to go about. Karnataka, particularly Bangalore offers sufficient opportunities for interaction. In terms of industrial activities, even Tamil Nadu and UP can offer adequate opportunities in this regard.

4. MEETING THE CHALLENGES

In the context of the globalisation of our economy where the *laissez-faire* is the guiding factor, there is no alternative but to be competitive and the essence of competition is quality, price and time. The competition is all round. Among the institutions, the competition

could be located in terms of the quality of students, for better the institution in terms of staff and facilities and a name because of that, greater is the pressure of good students albeit almost all professional colleges are overcrowded. Much of the quality of output is dependent on the input of students. The competition continues among the institutions on this basis.

The real competition is in the employment market among the students coming out from different institutions. Industry would pick up first the students of the known colleges and polytechnics, much on the assumption of the quality of products as evidenced by the selective decision of the industry for campus interview. Come thereafter are the students from other colleges and polytechnics who compete with each other to establish superiority over the other. It is here that the real test of the efforts of the colleges to train the students for the industry lies.

Unfortunately, we do not have any structured mechanism to find out the changing needs of the industry. Nor do we have the feed back mechanism from the industry about our products. Resultantly, our syllabi remain out-dated for it is difficult to know what changes are necessary to make them relevant. On the other hand, in the absence of the feed back, there are no correcting measures and therefore in default except occasional changes here and there, status-quo continues.

Admittedly, broadly the problems lie in these two respects. In this paper, the aspects of the quality of staff members and the facilities for education in professional subjects are not being discussed for the aim is different and specific.

5. CHANGING SCENARIO :- NEW SIGNAL ?

Recently, I participated as a Resource Person in a Workshop of the Vice-Chancellors and Principals of selected Colleges of MP, in Bhopal. The subject was Resource Generation in Higher Education. It was really visionary in the part of Mr. S. C. Behar, Director-General of the MP Academy of Administration who organized the workshop, that on the second day, he had invited industry representatives including BHEL - a public sector giant organization. The idea was to have a direct - face to face - discussion between the academics and industry and to know the strengths, weaknesses and suggestions of each other for a fruitful university-industry interaction.

While there are certain areas that industry also need to attend to, but in this paper, we should talk about what we need to look into to remove the known deficiencies that we have.

Briefly, the deficiencies pointed out by the industry, are two. One : Except the known colleges, eg. Regional Engineering Colleges and a very few other colleges, the level of the graduates in terms of their knowledge even of the fundamentals is poor : poor still is the capacity of perception and expression. Absence of all these, they pointed out, disappointed them for even on the job training did not help much. However, the general experience is that there are always some bright students from all parts of the country irrespective of the colleges they come from. Two : There is a general lack of appreciation for discipline which does not help the recruits to emulate the culture of the company and that is important, rather crucial, both to the

employees and the employer for a variety of reasons.

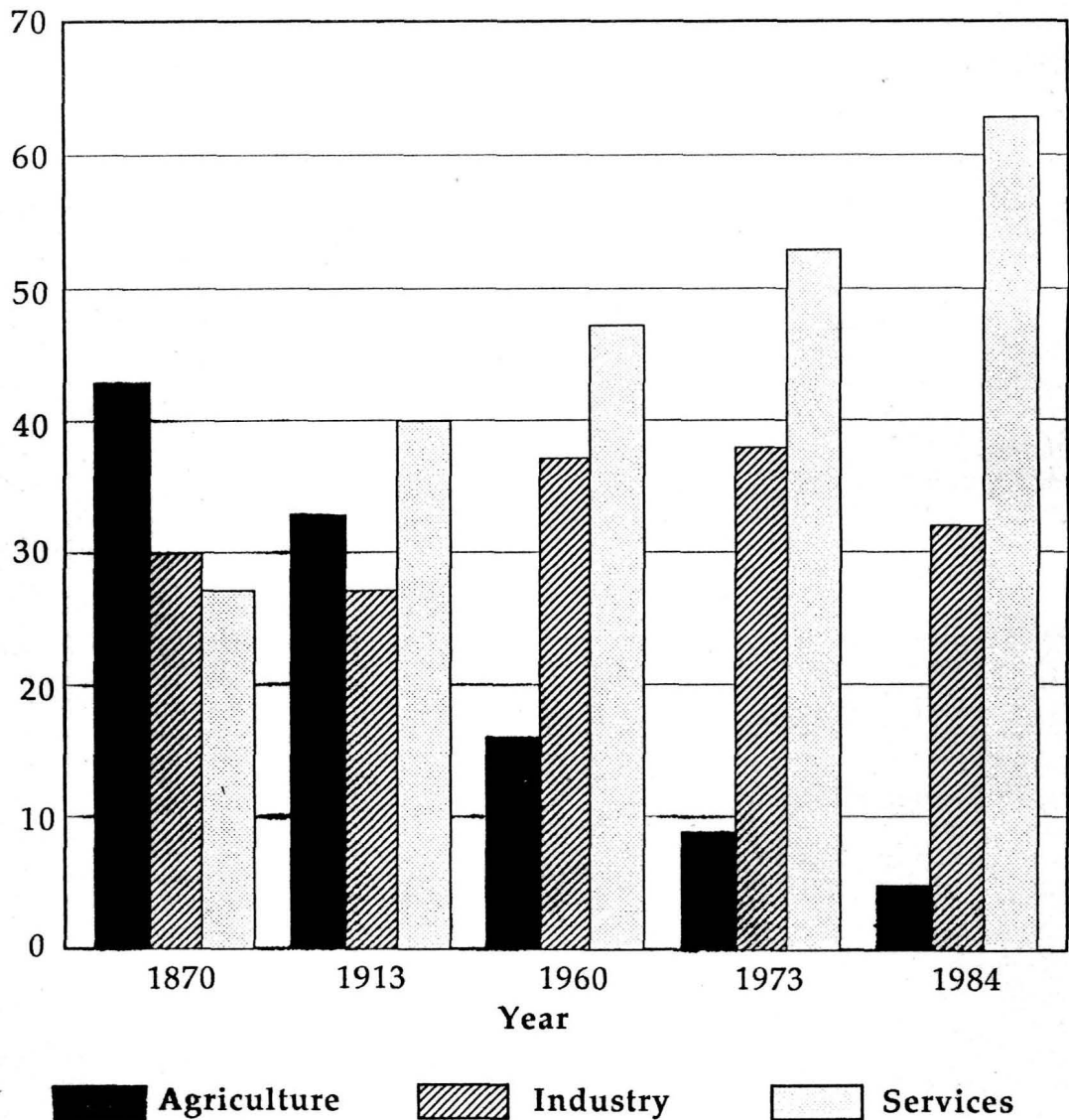
Such a situation is leading to a new scenario where the industry find it less expensive and more practical to recruit diploma holders who are found to be more willing to learn on the job and the expectation of the industry *vis-a-vis* degree holders is not high. This makes both the side happy. Moreover, diploma holders would stick to the company. If this serves the purposes of industry, they may opt for more diploma holders with very small number of degree holders for the real shop floor job is done by the former. The trend is to gradually reduce and if possible, eliminate totally, the middle level personnel - be it managerial or technical.

6. SERVICE SECTOR OVER TAKING INDUSTRY FOR EMPLOYMENT

With the change of the socio-economic needs, demand of personnel has also changed phenomenally over the years. In the latter half of the last century, around 1870, highest employment was provided by the agricultural sector, followed by industry and lowest was the service sector. Around the time of the first world war, the sectoral breakdown of employment in industrialised countries showed visible change . Agriculture was relegated to the second position and industry the last. From 1960 onwards, agricultural sector took the last position and service sector continued its domination. Even now, in the relative position, service sector provides highest employment. More share has been taken from agriculture and industry by the service sector. The position of the period 1870-1984 was, as shown in the figure-1.

Figure - 1

**SECTORAL BREAKDOWN OF EMPLOYMENT
IN INDUSTRIALIZED COUNTRIES, 1870-1984.**
% of total employment*



* Averages of six countries (France, Germany, Japan, Netherlands, U.K., U.S.A.).

According to the available statistics of 1989, Canada and USA provided 70.1% and 70.2% employment in service sector as against 25.6% and 26.9% in industry respectively for that year. Japan, however, provided more employment in industry 34.2% (1989) than Canada and USA. Resultantly, percentage in service sector was 57.7%. Unfortunately, similar statistics are not available for India. However, figures for Pakistan were 19.8% for industry sector and 28.9% for service sector. For agriculture, it was 51.2% in 1989 as against 52.7% in 1980.

The trend is clear and definite. As economy like Pakistan also provides sizable employment in the service sector. With the opening of the economy in India, the trend of more and more employment in the service sector is quite obvious and is visible. As we move more and more to the industrialisation, the trend of the industrialised countries will fast seep in. For quite sometime past, we have been noticing the engineering graduates going for management studies specialising in financial management or marketing management. This trend is steadily increasing.

It is time that a serious futuristic study is undertaken to indicate the needs of various sectors for employment of graduates and diploma holders in various sectors. That will greatly help the planners both at national and state level. If the futuristic study indicate that over the next one decade, the need of Diploma holders will be more, and less and less demand will be of Engineering graduates, that will certainly help curb more growth of Engineering Colleges coming into being and avoid more unemployment.

7. CONSORTIUM OF COLLEGES AS ALTERNATIVE TO UNIVERSITY COMPANY

With the background that I have tried to provide and the fact that a large number of engineering colleges and polytechnics produce trained students on one hand and have large number of experts and good facilities to interact with the industry effectively and meaningfully, there is a need to create a structure which should be able to :-

- * Continuously interact with the industry around and receive feed back from them about the performance of the students which the institutions should analyse for corrections.
- * devise a mechanism through which needs of the industry as also their futuristic suggestions are seriously examined and considered to update the curriculum. (This can well be done by involving industry representatives on the relevant committees and getting them to lecture from time to time to the students, and at seminars, with the teachers).
- * aggressively interact with the industry for selling the expertise and facilities of the institutions which, on one hand, would generate income both of the teachers and the institutions, and on the other hand, industry will be benefitted of the innovative ideas and facilities of the institutions for better productivity.

For obvious reasons, the structure

of the University Company cannot be adopted even with minor adjustment for any individual college, howsoever big that may be. However, to serve the purpose of the University Company, the concept of a CONSORTIUM of Colleges and Polytechnics seems possible. A number of Colleges and Polytechnics

say 15-20, may come together, which have good facilities of staff and facilities and have definite mission to interact with industry, and form a CONSORTIUM which may be housed in one of the buildings of members of the Consortium. A possible model could be as follows :

Possible Model of Consortium

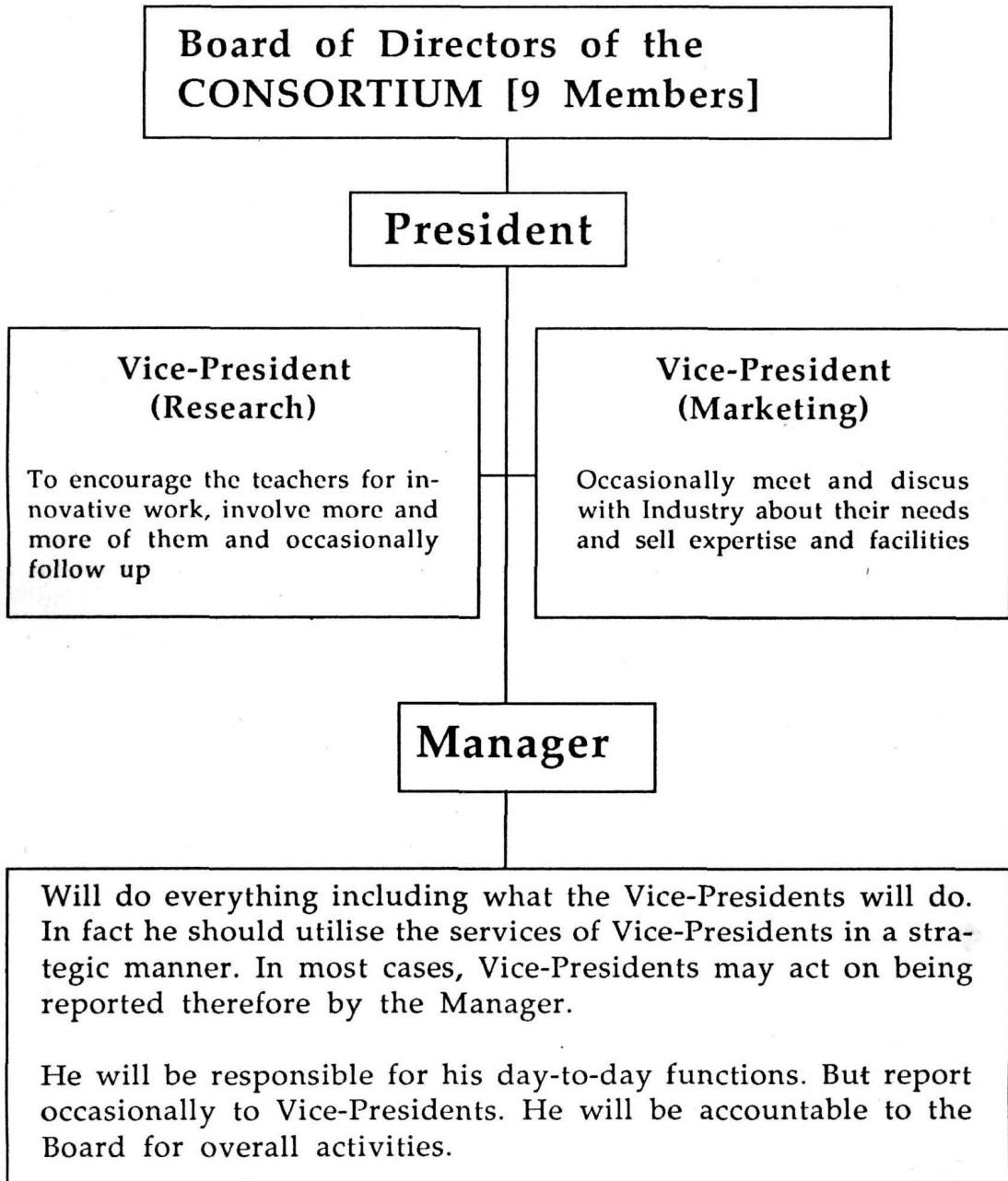
Title : PUNE / BOMBAY CONSORTIUM OF COLLEGES AND POLYTECHNICS

Constitution

- | | | |
|----------------------------------|---|--|
| President
(One) | - | One of the Principals or Chairman/President of one of Trusts/President of one of Trusts/Societies of these colleges as may be decided may be elected as the President. |
| Vice-Presidents
(Two) | - | Two Principals of Colleges elected by rotation. |
| Members
(Six) | - | Two Teachers
Three Industry Representatives. One Nominee of the Chairman |
| Secretary | - | A whole-time Manager with industry background having some academic work/interest. |

The Secretary will be a whole-time paid Officer of the Consortium appointed, on contract and result-oriented basis (see the following diagram).

**The Structure and functions of the
CONSORTIUM could be as follows:**



The first job of the Manager would be to prepare a Document of Capabilities of the Consortium showing the experts and facilities and wherever possible the work already done or can be done. Once this is ready, the Manager should :-

- Survey the market,
- Market the capabilities,

so that the interaction starts.

It would be a good idea, to begin with, that the Consortium invites at least a few important industrialists of the area over Tea and appraise them of the new approach and willingness to work with them as partners so that a favourable environment is created.

To begin with, depending on the size and the expected consultancy work, each member may contribute a seed money say, Rs. 5,000/- to Rs. 20,000/- as share. Possibilities of loans from Banks may, also be explored. The funds will be needed for first two years for the following purposes after which income should be able to meet the operational expenditure :-

FINANCE :

- (1) Salary of the Manager of the Consortium. It should be attractive for a result-oriented person. Initially, a person from industry may be borrowed on experimental basis.
- (2) To begin with a skeleton staff may be appointed, say, one Personal Assistant and another Assistant who should do everything. It should look and function like a business office. More staff may be appointed as the necessity arises and if only it is cost-effective.
- (3) Provision for Transport, Communication and TA/DA.

- (4) Miscellaneous Expenses.

OBJECTIVES OF THE CONSORTIUM

Broadly, the objectives of the consortium could be as follows :-

- * To undertake commercial activities otherwise not possible by Colleges directly :-
- * To perform along commercial lines with an outsider inducted as Manager or Managing Director with strong industrial background
- * To free Faculty from various formalities and act as interface between Colleges and Industry :-
- * To transfer the profits to the Colleges.

MODEL ORGANIZATION

Subject to new needs as may come up when the Consortium becomes operational, the model organisation of the Consortium could be as follows :-

- (1) Contact Group
- (2) Business Development Section
- (3) Finance Section
- (4) Technology Transfer Section

CONTACT GROUP

The Contact Group should perform in very important areas which are essential to the present and future activities of consultancy. In particular, it should :-

- * aim at protecting and increasing academic and financial interest and maximising long term academic and commercial benefits.
- * advise and offer direct support services in negotiating contract research and consultancy activities.

Another important area where this group should operate is to introduce funding opportunities to areas of

the colleges where potential has not been maximised and to promote cost-effective collaborative research and consultancy work.

BUSINESS DEVELOPMENT SECTION :

Basic to the various responsibilities of the Consortium, Business Development Section is the most important section which should aim at :-

- * developing new contacts and sources of funding, particularly from industry through marketing of research expertise of Colleges and a programme of industrial visits to assess corporate research needs; and
- * planning dissemination of a range of research funding opportunities and other research programme information to increase contact bids and income.

Added to the above responsibilities which involve a large number of associated questions and solutions, The Business Development Section should also do following :

Manage all personnel related work, Colleges, performance related pay scheme and appraisal system. This includes Reception, Central Secretarial support and other office services.

These may not appear to be significant, but in reality they are important for if these are taken care of well, the faculty is comfortable to do a lot for they would be able to get rid of irritating situations of mundane

matters that otherwise they have to face not infrequently.

TECHNOLOGY TRANSFER SECTION :

This is yet another area where specialised knowledge and experience is needed. When the Consortium handles the technology transfer, it does so with professional skill. Precisely, it aims at :-

- * protecting valuable ideas and from legal and copyright complications,
- * managing exploitation of inventions, designs, software and know-how, including patented material, and
- * advising to explore the option for exploration.

These suggestions are broadly keeping in view the UK experience for University Company. What is important is to assess our needs and modify both the Model and Organizational structure. There is nothing like past word.

CONCLUSION :-

Finally, the suggestion of the Consortium is nothing but an organized group activity, pooling the strengths of a number of viable Engineering Colleges and Polytechnics for common benefit through mutual co-operation and exchange of ideas. The need is imperative and time is high and therefore, sooner than latter it will be in the interest of the academic community and also of industry to form some organized group to achieve the objectives that have been talked about in this paper.

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