To Improve Relations between Public Research Institutes (PRIs) and Industry: Industry’s Perspectives

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In economies that are facing liberalisation, privatisation and a shortage of public resources for funding of Public Research Institutes (PRIs), concern about their efficiency in providing value for money forced PRIs to reconsider the balance and type of activities they engage in to, the extent to which they can provide assistance to both small and large customers, means by which they manage themselves, market their services to potential customers, improving their relations with industries, etc. This paper presents a study done to know perspectives of industry about various aspects of initiating, maintaining, and continuing its relations with institute. The recommendations are based on the survey carried out with R&D managers of major industries spread worldover.

Introduction
Shortage of public resources for the funding of Public Research Institutes (PRIs) and concern about their efficiency in providing value for money to industry have forced institutes to concentrate more on the functions related to industry. There is increasing concern among institutes to forge new links and relations with industry1. Owing to the phenomenon of globalisation, resource constraints, and increased accountability, institutes in the civilian sector, especially in the developing countries, are under tremendous pressure to re-orient their research focus from serendipity or supply side to become market driven2.

Institute-Industry relationships have been studied immensely in the last decade. With regard to basic research, collaborative relationships should reduce the disincentives for investments in R&D that emerge from the limited appropriability of research results. On the other hand, because of the increasing gap between public funding and research costs, institutes are trying to obtain resources from private industries, in order to finance their own research activities. Moreover, during their contacts with industries, institutes also benefit from exposure to more application-oriented research3,4.

This study presents industry’s perceptions on various aspects of initiating, maintaining and continuing relations with research institutes. This gives an insight for management of the institutes in knowing what actually industry is thinking and what research institutes have to do to attract, initiate, maintain, and continue relations with industry. It highlights the search strategy that usually industry adopts in identifying the institute, factors that industry looks for in an institute while deciding to enter into alliance and essential factors for successful alliance. Our recommendations are based on the survey carried out among the top R&D managers of industry who are directly involved in entering into research alliance with institutes.

Research Study
Attracting, entering, maintaining, and improving relationship with industries help research institutes immensely in countering onslaught of different challenges. Knowing the strategy that industry adopts in identifying an institute, institute can design its publicity strategy effectively to get more exposure. By knowing the fac-
tors that industries consider in an institute while choosing for partnership, institute can focus its efforts on those factors to attract industries. These will help institutes, not only in attracting the industries, but also in initialising alliance with it. Once an institute enters into research partnership with an industry, knowing the issues that matter in making the alliance successful will help the institutes to facilitate long-term and multiple collaborative relationships. Technology Marketer of the institute will have to play a crucial role in coordinating and maintaining smooth relationship with industry. Therefore, it can be concluded that the following four dimensions are very important in institute-industry relationship:

(i) Strategy that industry adopts in identifying the institutes working in related R&D areas.
(ii) Factors that influence industry in choosing the institute for partnership.
(iii) Role of Technology Marketer of the institute.
(iv) Essential factors for alliance to become successful.

Our study concentrated on knowing industry’s perceptions about these four important dimensions to suggest necessary actions for an institute for effective institute-industry interface. Findings are based on a study of R&D managers directly involved in negotiating alliances with research institutes. A survey was designed and carried out to gain insights into perceptions of the industry about research institutes on various important aspects while entering into research partnership, i.e., to sponsor contract research or to purchase a technology or to utilise consultancy services or to undertake a collaborative research. The study was designed to understand:

(i) Search strategy that industry adopts in identifying an institute.
(ii) Factors that industry consider while entering into an alliance.
(iii) Kind of role expected from technology marketer of the institute.
(iv) Essential factors for the relationship to become successful.

The study relied, primarily on open ended questionnaire. Personalised letters along with the questionnaire were mailed to forty R&D managers of major industries spread worldover. All these R&D managers were directly involved in negotiating alliances. Most of the questionnaires were also followed by phone. Finally, twenty useful questionnaires were received with a response rate of 50 per cent. All these questionnaires are analysed to arrive at requisite conclusions. Details of the respondents are given in Table 1.

**Search Strategy Industry Use in Identifying the Institutes**

What are the search strategies that industry usually adopts to find out the institutes which are pursuing research in their areas of interest? Knowing search strategy that industry usually adopts is very helpful to an institute while chalking out their advertising strategy. If the medium, which the industry mostly adopts, is known, the institute can give more weightage to that medium in their advertising strategy. It helps in getting good exposure to capabilities of the institute, thereby attracting new research partnerships. Results are presented in Table 2.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Number, per cent</th>
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<tbody>
<tr>
<td>Director, outsourcing</td>
<td>20</td>
</tr>
<tr>
<td>Vice President, technology</td>
<td>25</td>
</tr>
<tr>
<td>Deputy General Manager, R&amp;D</td>
<td>20</td>
</tr>
<tr>
<td>External relations manager</td>
<td>15</td>
</tr>
<tr>
<td>Head, R&amp;D and technology management</td>
<td>20</td>
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<table>
<thead>
<tr>
<th>Search strategy</th>
<th>R&amp;D managers, per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print media</td>
<td>77</td>
</tr>
<tr>
<td>Publications</td>
<td>70</td>
</tr>
<tr>
<td>Personal contacts</td>
<td>67</td>
</tr>
<tr>
<td>Consultants</td>
<td>61</td>
</tr>
<tr>
<td>Internet scanning</td>
<td>60</td>
</tr>
<tr>
<td>Patents</td>
<td>55</td>
</tr>
<tr>
<td>Interaction meets and exhibitions</td>
<td>52</td>
</tr>
<tr>
<td>Workshops and seminars</td>
<td>50</td>
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</tbody>
</table>
Print Media
Seventyseven per cent of the R&D managers surveyed said that they rely on print media to identify institutes working in their areas of interest. R&D managers always study success stories of institutes that appear in newspapers and leading magazines. They always scrutinise newsletters, brochures, pamphlets, etc., which they receive from different institutes. Institutes have to establish, refresh, and mail a list of current and potential buyers of research and other services. Mailings should be a mixture of generic information about the institute and targeted service information aimed at potential buyers. It has to publish a newsletter, carefully managed to present professional image of institute and update publicity materials and circulate brochures, newsletters, pamphlets, etc. It has to identify key trade journals and plan to feature material about the institute, feed success stories to those newspapers which reach business decision makers.

Publications
R&D managers of industries will be in constant look out for the leading journals in their R&D areas. If they find any work or expertise that fits into their long term business plans, they will approach that institute to enter into research collaboration. About 70 per cent of the respondents replied that they will come to know about the institutes through their published work.

Personal Contacts of Scientists of Industry
Sixtyseven per cent of the surveyed managers opined that they came to know about the institutes through personal contacts of their scientists. Collaborative relationships often develop formally and informally from personal contacts of members of academic institute’s scientific communities and researchers in industry.

Consultants
Industry sometimes does not have sufficient resources to penetrate market for business generation/development. They engage experts as consultants to help them in identifying and developing clients for their knowledge base. Similarly, industries also engages consultants who identify them the institutes carrying out research in their R&D areas. Sixtyone per cent of the respondents observed that they will identify institutes through consultants. An expert in the specific area, well exposed and has experience to help the institute is engaged as consultant. He assists the institute in evolving business plans and strategies, forecasting technologies, carrying out market surveys, identifying and developing clients for knowledge base.

Internet Scanning
Sixty per cent of the respondents in survey said that they will scan the internet if they want to find out the institutes working in their R&D areas. R&D managers, when they want to know the potential institutes having expertise and capabilities in specific technology or R&D area, they will search the internet and analyse the information and approach the institute for further discussions. Institutes have to create a Website of their own and have links with related major Websites to get more exposure. Web marketing, in combination with direct marketing, greatly helps the institutes in attracting clients.

Patents
Fiftyfive per cent of the respondents said that they will approach institutes by seeing the patents that they have filed.

Interaction Meets and Exhibitions
By participating in industry- interaction meets arranged by institutes and trade exhibitions organised by other agencies, industry will get awareness about the capabilities of various institutes and also get a chance to interact and have technical discussions with scientists of the institute. Around 52 per cent of respondents spoke similarly.

Participating in Workshops and Conferences
Getting into contact with the people through participation in conferences, workshops was mentioned by 50 per cent of respondents as the best way to exchange knowledge on research opportunities and to simulate ideas for new research. Informal discussions between scientists of institutes and industries, most of the times, will lead to research alliances.

Factors that Industry Looks in an Institute While Deciding to Enter into an Alliance
What are the factors that an industry considers while choosing an institute? Davenport carried out a study in 1997 to find out what the industry looks for and concluded that industry will give importance to high quality technical personnel/researchers, senior manage-
Table 3—Factors that influence industry while deciding to enter into alliance with institutes

<table>
<thead>
<tr>
<th>Factor</th>
<th>R&amp;D managers, per cent</th>
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</thead>
<tbody>
<tr>
<td>Technical and scientific expertise</td>
<td>80</td>
</tr>
<tr>
<td>Leading edge work or appropriate technology</td>
<td>78</td>
</tr>
<tr>
<td>Demonstrated capabilities</td>
<td>70</td>
</tr>
<tr>
<td>Past track record</td>
<td>65</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>60</td>
</tr>
<tr>
<td>Management of the institute</td>
<td>57</td>
</tr>
<tr>
<td>Review mechanism</td>
<td>50</td>
</tr>
<tr>
<td>Capability of industry</td>
<td>45</td>
</tr>
<tr>
<td>Financing</td>
<td>40</td>
</tr>
<tr>
<td>Business fit</td>
<td>25</td>
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mment commitment, customer focus, clearly defined research goals/objectives, effective project planning and management, supportive and flexible organisational culture and access to complementary skills5. A content analysis of our study is presented in Table 3.

**Technical or Scientific Expertise**

About 80 per cent of the R&D managers said that they give greater importance to the technical or scientific expertise of the institute. Industry looks for quality people having excellent track record and good expertise. They also study the research work carried out by the institute so far in their area of interest through publications, patents, technologies transferred, etc., and examine expertise available at the institute. Institutes have to identify their priority R&D areas, based on goals and objectives of the institute, and see that it has good expertise available in those areas. The capability of a research institute is reflected in its command over a scientific knowledge base5.

**Leading Edge or Appropriate Technology**

About 78 per cent of the R&D managers elaborated that they will study whether the leading edge work has been carried out at the institute in their areas of interest and see that whether institute has any appropriate technology ready to offer. Usually, institutes have their own technologies and technology related services which industry needs but cannot readily access in-house. Industry wants to obtain critical inputs from research institutes5. Normally the activities carried out at institutes cater to the needs of industry both large and small; large R&D projects in new technologies, collaborative projects, problem solving projects, services-oriented towards small and medium size enterprises, testing, and information services, etc.,

**Demonstrated Capabilities**

Industries, through their own sources, examine about the efficiency of performance and capabilities of institutes. Nearly 70 per cent of the R&D managers surveyed cited this as an important factor. Institute examines the performance of the institute in its earlier collaborations.

**Past Track Record**

About 65 per cent of the surveyed managers pointed out that they will give importance to past track record of the institute regarding deliverables, timeliness, clarity in reporting, reproducibility of data, project management, and adherence to terms in agreement etc.

**Institutional Infrastructure**

Sixty per cent of the R&D managers implied that due priority will also be given to institutional infrastructure. They will see that whether buildings, internal services and facilities are adequate? Are communication systems functional? Are maintenance systems adequate? Are right people in right jobs? Is state of instrumentation adequate?

**Professionalism in the Management**

About 57 per cent of the R&D managers felt need for professional management in institutes. Industry will observe whether there are adequate planning and procedures, and see whether these plans and policies are followed. Management of the institute has to identify performance gaps and opportunities in time and resolve them. In addition, it has to see that adequate ongoing communication exists and people have easy access with whom they deal.

**Review and Control Mechanism**

Only 50 per cent of the respondents pointed out that review and control mechanism is important. Industry will make sure that periodic monitoring and control is possible with the existing communication facilities at the institute. Careful mechanism should be evolved for monitoring project’s progress against agreed milestones. Project review can be through face to face meetings, telephone, fax or e-mail.
**Capability of Industry in Absorbing the Technology**

Alliance to happen necessitates understanding needs and capabilities of customers. Depending on the capabilities of the receiving industry, institute is ready to make fine tune to technologies that they are offering. About 45 per cent of the respondents surveyed, felt that the institute is, ready to make the capability of industry in absorbing the technology.

**Mode and Terms of Payment**

Large enterprises do not give much weightage to this factor, as long as their needs are satisfied with research results offered by the institute. But, small and medium sized enterprises, give importance to this factor. Only 40 per cent of the respondents suggested this factor. Depending on the type of technology being transferred, its value and utility in the market, type of the customer, the institute has to judicially negotiate the payment option keeping in mind win-win situation.

**Fit in the Long Term Business Plan of the Industry**

Around 25 per cent of the surveyed managers said that they will examine the portfolio of technologies and expertise offered at the institute and see whether anything will fit anywhere in their business plan. Institutes can analyse the business plans and R&D work carried out in various industries and plan its research work.

**Role of Technology Marketer of the Institute**

The biggest barrier to effective institute-industry interaction was that no funds have been allocated for promoting interactions between institute and industry. Another barrier is that industry is not aware of what institutes can offer. Institutes need to realise the importance of marketing themselves to industry by designating some one incharge (Technology Marketer) for promoting capabilities of institute; what they can offer to industry and how institutes and industry need each other to create a synergistic alliance. Opinions expressed by industry are presented in Table 4.

**Focal Point**

Usually, industries prefer to deal with one person, who represents the organisation instead of two or three persons. He should be the only contact point to avoid dealing with many organisational layers. He should respond to outside enquiries and act as information point. About 70 per cent of the respondents felt that the Technology Marketer of the institute has to act as a focal point. He has to perform functions like environmental scanning, scenario development, competitor analysis, customer analysis, distillation of SWOT analysis, formulation of strategic business development plan, performance monitoring, and measurement.

**Creating Awareness About the Institute**

About 65 per cent of the people surveyed, suggested that Technology Marketer of the institute has to take steps to promote and create awareness about the capabilities of the institute. Promotion and awareness of capabilities of an institute can be done through circulation of brochures, newsletters, pamphlets, etc., and arranging industry interaction meets, workshops, seminars, and training programmes. Interactions that are more intensive, are achieved through direct visits and exchange of personnel. Institute also encourages its personnel to contribute publications in trade journals and popular magazines in emerging technological issues and possibilities.

**Required Competencies**

Fiftythree per cent of the respondents felt that it will be better if the technology marketers have competencies like strategic thinking, interpersonal skills, achievement drive, functional knowledge, networking skills, and analytical skills.

**Facilitator**

While he is obviously a frontline marketer for his institute, he must be capable and comfortable in playing role of a facilitator. This is the opinion expressed by fortyeight per cent of the respondents. To play the role, he should possess and exhibit proper balance between scientific and business orientation. He can act as sign post organisation offering switchboard services and directing industrialists who are seeking help to the most appropriate expertise within the institute. They have to see that the institute will cater to the needs of the market by assisting scientists of the institute in developing new
products and processes, which meet anticipated requirements of emerging markets.

**Essential Factors for Successful Alliance**

What are the essential factors on which institute has to put its efforts to make alliances successful. This plays a crucial role in the outcome of alliance and influences future relations. Results obtained are presented in Table 5.

**Clear Understanding of Partners’ Responsibilities**

Ninty per cent of the respondents surveyed felt that there should be clear understanding of each partner’s responsibilities and tasks. The responsibility of each partner should be spelled out clearly during negotiations.

**Communication**

“I believe first step for successful alliance is good communication” said Vice President, Technology of an industry when contacted on phone. Eightyseven per cent of the managers surveyed felt same way. Better communication helps for resusciating a weak partnership. Respect each partner’s abilities and building up a good communication channel between partners are very crucial for a successful alliance.

**Trust**

Eightythree per cent of the respondents identified that the nature of the trust in an alliance is important for its ultimate success. Trust takes several forms; contractual trust relating to adherence to agreements and promises, competence thrust involving expectations of ability and performance, goodwill trust embodying mutual commitment to the partners in an alliance. It is also a way of establishing future collaboration. It diminishes transaction costs, increases organisational productivity, facilitates attainment of results higher than those expected, enhances communication, improves transparency between partners and limits dissension between partners.

**Focus on Quality**

Seventyfive per cent of the respondents firmly believed that clear focus on quality and cost of the product/process is very important.

**Clarity in Agreement**

Clarity in terms of agreement is very crucial was pointed out by 72 per cent of the respondents. The aspects that have to be taken care of, according to the study, are scope of work, targets, milestones, deliverables, timeframe for completion of the activity, Intellectual Property Rights, financial terms and conditions, effective date of starting of the work, inputs to be provided by each partner and periodicity of reporting.

**Adherence to Terms of Agreement**

About 70 per cent of the respondents believed that during the alliance, each partner has to adhere to what he agreed for, in the agreement. Institutes have to send periodic reports with reference to progress of work, targets, milestones, and deliverables and there has to be progress monitoring to see that activity is completed before the promised deadline.

**Face to Face Meetings**

This will help in building up communication and good trust between partners. This is the belief of 68 per cent of the respondents. It helps in effective project monitoring to reach the agreed targets or milestones at a time. It also helps in overcoming technical and scientific difficulties that arise during the progress of work.

**Periodic Review and Monitoring**

Sixty per cent of the sample suggested that there should be an effective project planning and management system. Without good project monitoring and management, institutes are unable to inspire confidence in the industry due to an inappropriate delivery mechanism, resulting in time and cost overruns.

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**Table 5— Essential factors for alliance to become successful**

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<thead>
<tr>
<th>Factor</th>
<th>R&amp;D managers, per cent</th>
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<tbody>
<tr>
<td>Clear understanding of responsibilities</td>
<td>90</td>
</tr>
<tr>
<td>Communication</td>
<td>87</td>
</tr>
<tr>
<td>Trust</td>
<td>83</td>
</tr>
<tr>
<td>Focus on quality</td>
<td>75</td>
</tr>
<tr>
<td>Clarity in agreement</td>
<td>72</td>
</tr>
<tr>
<td>Adherence to agreement terms</td>
<td>70</td>
</tr>
<tr>
<td>Face to face meetings</td>
<td>68</td>
</tr>
<tr>
<td>Periodic review</td>
<td>60</td>
</tr>
<tr>
<td>Flexible organisational structure</td>
<td>55</td>
</tr>
<tr>
<td>Exchange of personnel</td>
<td>48</td>
</tr>
</tbody>
</table>

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Exhibit 1 — Industry perception and suggested actions for industry

Industry’s perception

Identifies institute through
• Print media
• Publications
• Contacts
• Consultants

Factors expected in institute
• Technical and scientific expertise
• Leading edge or appropriate technology
• Demonstrated capabilities and past track record
• Infrastructure

Technology marketer of institute
• Should act as focal point
• Create awareness about institutes

Essential factors for successful alliance
• Clear understanding of responsibilities
• Communication and trust
• Clarity in agreements and adherence to terms

Suggested actions for Institutes

Can focus more on getting publicity through print media by
• Feeding successful stories to leading magazines
• Circulating brochures, Newsletters, etc.,
• Through giving advertisements in newspapers
• See that work done is published in Journals

* Recruiting quality people in core R&D areas
* Building expertise and better infrastructure facilities in core R&D areas
* Giving publicity to developed technologies
* Filing more patents and publishing basic work
* Maintaining good track record in past collaborations

* To create separate division and designate experienced person as incharge entrusting
  *Responsibility to create awareness about the institute and to act as focal point

*Spelling out each partners responsibilities clearly during negotiations
* Defining deliverables precisely
* Periodic reporting
* Building good communication channels
* Adhering to terms of Agreement
* Effective project monitoring and management system

Supportive and Flexible Organisational Structure

About 55 per cent of the respondents thought that supportive and flexible organisational structure is required for alliance to become successful. Each organisation should be receptive to the problems of other organisations. Both organisations should have integrity, cooperation and commitment to continue relations further.

Exchange of Personnel

Forty-eight per cent of the respondents pointed out that the staff should be exchanged between partner organisations to improve communications and to get good trust and respect on mutual abilities. Scientists of institute may be allowed to work in an industrial lab for sometime and similarly scientists from industry may be allowed to come and work with institutes’ scientists on the specified project.
Exhibit 2—Creating awareness about the institute

Awareness of the institute can be created through:
- Sending teams to visit industries
- Creating a website and doing direct marketing in combination with web marketing
- Arranging industry institute interaction meets
- Distributing updated and continually refreshed publicity materials
- Establishing, refreshing and mailing to a list of current and potential buyers of research and other services. Mailing should be a mixture of generic information about the institute and targeted service information aimed at potential buyers
- Publishing and distributing a newsletter, carefully managed to present a professional image of the institute
- Feeding success stories to those newspapers which reach business decision makers
- Identifying key trade journals and planning to feature material about the institute
- Speaking at conferences, seminars and participating in exhibitions

Conclusions

The importance of better industry-institute relationships has increased over the past few years. The new situation characterised by the shortage of public resources for funding of research institutes, concerns about efficiency in providing value for money to industry by institutes, increasing curiosity of industries to obtain early access to scientific breakthroughs and non targeted research has necessitated even more harmonious and productive institute-industry interface. Industry perceptions about institutes and suggested actions for institutes for effective institute-industry interface are summarised in Exhibit 1.

Various measures that can be taken to create awareness about the institute are presented in Exhibit 2.

References