Collaborative Research in India: Academic Institution v/s Industry

Neeraj Parnami Neeraj Parnami and T.K. Bandyopadhyay

Indian Institute of Technology Kharagpur, India

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Neeraj Parnami and Dr. T.K. Bandyopadhyay
Rajiv Gandhi School Of Intellectual Property Law
Indian Institute of Technology – Kharagpur, Kharagpur – 721302.

Abstract

The term 'collaboration' is used to depict the all forms of agreement between academic institutions, corporate, universities, and any combination of such two or more parties who share the commitment to reach a common goal by using their resources available. Collaboration in Research and development (R&D) sector has been broadly used phenomenon for many years in India. In the collaborative research, the significant factors like time & cost being reduced to large extent because of sharing of the resources by the parties. Collaborative research contributes to the technological and economical development of the country. Collaboration avoids duplication in research.

But there are lots of questions, may be arising in your mind like: what is actual meaning of collaborative research? Why do industries collaborate with the academic institutions? What goes on in the collaborative research? What are the effects of collaborative research? Which type of policy do they have? and simultaneously there are lots of issues - involved in collaborative research like intellectual property rights, technology licensing, confidential agreement etc. how can all these issues be resolved before or during collaboration, so that a healthy relationship may be established for the future benefits of all the parties involved? The purpose of writing this paper is to shed the light on the solutions available of all these questions and the issues arise between the parties involved in the collaborative research program.

Keywords: Collaborative research, Intellectual property, Academic institution, Issues, University, Licensing, Industry, Driving force.

Article Outline

1. Introduction
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1. Introduction

The conversation of academic institution & industry relationships started in the early 1980s and now it has become the necessity of both academic institution and the industry. Since the eighties, many countries have implemented policies to facilitate the transfer of knowledge from academic institution to industries: establishment of legal frameworks, creation of technology transfer offices inside academic institutions, increasing the mobility of researchers to industries, large cooperative R&D programmes, etc.

Collaborative research[1] may be defined as the strategic research program where the parties (Academic institution & Industry) involved and work together, especially in a joint intellectual effort in order to accomplish a shared vision and impact the benchmarks with the sharing of assimilated knowledge, higher productivity motive, common goal-oriented attitude, high leadership qualities, high level of trust on a time & cost reduction theme. Collaborative research activities have multiplied and diversified enormously in recent years in India. Major development in R&D sector is taking place in collaborative manner in the country. Many corporate companies like: Samsung, GE, Merck & Co., Cadila, Avesthagen, Ranbaxy, etc. are now taking interest in collaborative strategies with universities and research institutions like IITs, IISc, CSIR etc. In collaborative research programs, academic institution understands the existing problem as per the requirement of the industry and accordingly they attempt to find out a better solution and when the combine knowledge of industry and

academic institution is converted into a product; it is documented as a product of superior quality.

2. Driving Forces[2] towards Collaborative Research

Collaborative research is one of the fundamental activities that industries engage with the academic institutions and the strength of the collaboration lies in both shared interests as well as in existing relations such as collaborative team characteristics, collaborative environment characteristics, collaboration processes etc. There are many factors working as a driving force toward increased collaboration activities. Most of the factors involved here, address a genuine need toward the rapidly changing demand of research & development sector. Factors are as follows:

1. Encouragement of Funding Resources
2. Command on Expanded Capacity
3. Collegiality Involvement
4. Learning Ability
5. Distribution of Labor
6. Sharing of Resources
7. Risk Management

1. Encouragement of Funding Resources:

Encouragement of funding resources by funding organizations, such as government, private foundations, are increasingly to favor the involvement of interdisciplinary research teams of the academic institutions with the industry people. These funding organizations encourage collaborations that promote the cross-fertilization of ideas and methodologies.

2. Command on Expanded Capacity:

Collaborative research can fulfill the demand for expanded capacity that is required for collaborative research projects. Collaborative research may help to:

a) encourage experts from various relevant fields
b) manage thorough research of different relevant subjects
c) allow research to be conducted at different locations either at a state, national or international level
d) assist in conducting research with a large extent

3. **Collegiality Involvement:**

Collaborative research may be considered as a platform whereby the members of an organization meet and establish a co-operative environment among themselves for example colleagues, departments, and academic institutions.

4. **Learning Ability:**

Collaborative research provides opportunities to learn that how to implement the new approaches / ideas / methods / processes on the existing problems and lead to the development of innovative solutions. Simultaneously these types of collaboration may result in social and economic benefit to society, science, and private industry.

5. **Distribution of Labor:**

Collaborative research is much effective program to complete the project tasks, particularly when there is limit of resources, in a timely and efficient manner. By distribution of labor one can utilize the skills & experience of the collaborator and can manage the project work successfully.

6. **Sharing of Resources:**

Collaborative research program helps the parties involved to enhance the ability to share and exchange resources such as data, databases, ideas, equipment, computers, methods, human capital, technical resources etc.

7. **Risk Management:**

Strategic approach in risk management[3] plays an important role in collaborative research. Risk management is defined as decisions made to accept exposure to

risk, to handle the work effectively, to mitigate the risks and to apply cost effective controls. Collaborative partners may differ in the experiences and expertise of risk management skills for relevant areas.

3. Issues Arise in Collaborative Research:

There is no any fixed scenario that adequately represents that how a collaborative research relationship takes place and achieves the defined common goal. Sometimes even after a successful collaboration where researchers and investors invest their adequate time & money; for thorough research, collection of data and compilation of data, faces some issues. Some of these issues[4] are discussed as follows:

1. Intellectual Property Rights (IPRs)
2. Technology Transfer
3. Publication and Confidentiality
4. Understanding and Trust Level
5. Student Involvement in the Project
6. International Access of the Research Work
7. Cost Bearing of Litigation Issues
8. Approaches of Industry and Academic Institution

1. Intellectual Property Rights (IPRs):

Intellectual Property Rights (IPRs) is the central issue, mostly arising among the various individual members or categories of members involved in collaborative research. The IPRs have great effect at all stages & the nature of the collaborative research, its focus, and its success. Sometimes industrial people find too restrictive IPR policies[5] of licensing by the academic institutions and they pay a high value for their intellectual property contributions. As intellectual property originated from collaborative research may be any trade secret, protected knowledge, implied knowledge and other results such as commercial knowledge of markets, consumers and other non-scientific & technological

knowledge. That's why the IPR Policies must be framed under consideration of a broad range of results for both the parties (academic institution & industry).

Under Technology Transfer Principle; Bayh-Dole act provides academic institutions / universities control of their inventions. In 1980, the Bayh-Dole Act (PL 96-517, Patent and Trademark Act Amendments of 1980) created a uniform patent policy among the many federal agencies funding research. As a result of this law, universities / academic institutions retain ownership to inventions made under federally funded research. In return, universities are expected to file for patent protection and to ensure commercialization upon licensing. The royalties from such collaborations are shared with the inventors; a portion is provided to the University / academic institution and the remainder is used to support the technology transfer process. The Bayh-Dole act is not valid in India; but in U.S.

2. Technology Transfer :

Technology transfer[6] is the transfer of existing technology for application by a new user in the same area of application or in a completely new area of application by the same or a new user. Some academic institutions consider the technology transfer as an important tool to generate the revenue for the society rather than as a responsibility to assist a company in commercializing the research outcomes and that's why the academic institutions decide to write the IPR Policies accordingly.

3. Publication and Confidentiality[7]:

After completion of / during the research work the academic institutions try to make publish the research paper by their own name and; on the other side the companies try to get patent on the research product first and they request the institutions to delay the publication process. Sometimes such delays can impair the open research environment or prevent the institution's faculty from building a strong record of publications needed to gain tenure.

4. Understanding and Trust Level[8]:

Understanding and the trust factors are the pillars of making a collaborative research agreement as it matters during collaboration. Sometimes when collaboration starts and gradually approaches to the final stage, some dispute arises; because of the lack of understanding and lack of trust between the parties / members of the organization.

5. Student Involvement in the Project:

Student involvement in sponsored projects is helpful for the faculties in the academic institutions but sometimes companies do not want any engagement of students in the projects because of some IPRs issues.

6. International Access of the Research Work:

In future, if the company wants to use the research work / product for its foreign based subsidy, the academic institution may not allow the company to access the work in the foreign country or to disclose the work out of defined territory.

7. Cost Bearing of Litigation Issues:

Litigation issues are a big headache for the parties involved in the collaborative research. In future, if any litigation issue arises, who will bear the cost / loss – academic institution or the company? Who will be responsible for patent prosecution, renewal of the patent & maintaining the record? Similarly tax, regulation of the work, & liability of the work etc.

8. Approaches of Industry and Academic Institution

There is a big difference between industry's approach and academic institution's approach i.e. an academic institution follows the "Enhance the scientific knowledge for the society" principle and an industry follows the "Sell the product for profit" principle.

S. No.	Academic Institution Approach	Industry Approach
1.	Faculties are individually oriented.	Professionals are team oriented.
2.	Who visualized the idea?	Where is the outcome?
3.	The work should be original.	The work should be able to be leveraged.
4.	The work should contribute to science and society.	The work should contribute in the business.
5.	The work should be of such level to get it published.	The work should have worth – financially.
6.	Ideas can't be planned i.e. randomly created.	Budget plan should be decided before collaboration.

Table: Industry approach v/s Academic institution approach

4. General Discussion

Today many innovations exist there; which could not have been realized or would have come much later without academic institution's research outcomes. Participation in collaborative research program varied depending on which industry the company belongs to. For example: food & beverages is industry with the largest share of companies collaboration with the academic institutions while telecommunication service is the industry least involved with. In chemical industry; collaboration with academic institutions mainly helps to reduce costs and risks and allows companies to acquire and update scientific knowledge in order to finalize the products. In the agro-industry; academic institutions help the companies to meet government regulations, especially in testing activities in bacteriology. In the computer service sector; the main role of academic institutions is to help companies update and acquire technical knowledge.

Among the reasons that why some companies do not collaborate with the academic institutions, some of the reasons may be the discrepancies between the objectives of the two parties, the length of time involved in research, the different focus and hence different research questions

addressed by academic institutions and companies, cultural differences, and uneasiness with ‘open science’ disclosure procedures.

5. Conclusion

Companies usually select the academic institutions based on their reputation and domains of competence. Academic institutions are considered important for the innovation process because they are able to solve very specific problem and transfer important scientific and technical knowledge. Objectives of the collaborative research may be entirely commercial, producing legally protected results, or producing knowledge for public dissemination. Collaboration with reputed academic institutions may increase the reputation of the companies and they may gain some clients in terms of reliability and innovative ability. There is no doubt that the collaborative research program saves money as well as time of the companies involve, which are of their primary interest but still there is a necessary requirement of deep understanding the meaning of “***Collaboration***” by the academic institutions and the industries; before blaming on each other for the issues arise.

References:

1. http://www.fishresearchwest.org/get_involved/collaborativeresearchdefinition.asp (5 Feb, 2008)
2. http://ori.dhhs.gov/education/products/niu_collabresearch/collabresearch/need/need.html (5 Feb, 2008)
3. *Benjamin Caballero*, At Issue; Ethical issues for collaborative research in developing countries, p. 1 http://www.ajcn.org/cgi/reprint/76/4/717 (17 Feb, 2008)
4. Roberto Fontana, Aldo Geuna, Mireille Matt et. Al., At Issue ; Firm Size and Openness: The Driving Forces of University-Industry Collaboration, p. 5, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=479261#PaperDownload (11 Feb, 2008)
5. Roberto Fontana - *CESPRI, Bocconi University*, At Issue; Factors Affecting University-Industry R&D Collaboration: The importance of screening and signaling, p. 9 http://cournot2.u-strasbg.fr/users/beta/publications/2005/2005-07.pdf (10 Feb, 2008)
6. http://www.wipo.int/sme/en/documents/guides/technology_licensing.html (12 Feb, 2008)
7. Francis L. Macrina, At Issue; Dynamic Issues in Scientific Integrity: Collaborative Research, p. 10 http://www.asm.org/ASM/files/CCLIBRARYFILES/FILENAME/0000000841/research.pdf (20 Feb, 2008)
8. Carpenter William T., Jr., Koenig James I. et. al., At Issue: A Model for Academic/Industry Collaboration, p. 5, http://schizophreniabulletin.oxfordjournals.org/cgi/reprint/30/4/997.pdf (03 Feb, 2008)
9. http://www.btminstitute.org/leadershipinsight/VijayGovindarajan.html (20 Feb, 2008)
10. http://iit-iti.nrc-cnrc.gc.ca/business-affaire/research-recherches_e.htm (20 Feb, 2008)
11. http://www.scottish-enterprise.com/sedotcom_home/news-se/news-fullarticle.htm?articleid=217548 (20 Feb, 2008)
12. http://www.businessstandard.com/common/news_article.php?tab=r&autono=313380&subLeft=1&leftnm=1 (20 Feb, 2008)
13. http://www.avesthagen.com/press/30_sep_2004epp.html (22 Feb, 2008)
14. http://www.thehindu.com/2007/08/14/stories/2007081458990200.htm (22 Feb, 2008)
15. http://www.indianbiotechobserver.com/modules.php?name=News&file=categories&op=newindex&catid=3 (22 Feb, 2008)