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**METHODOLOGY OF COLLABORATION BETWEEN
INDUSTRY – UNIVERSITY, INSTITUTES IN LIGHT OF
THE PROTECTION AND UTILIZATION OF PUBLIC FUNDED
INTELLECTUAL PROPERTY BILL**

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Abstract:- To compete in a global environment, it is necessary for India to innovate & promote creativity which needs to protect and utilize the Intellectual Property created out of public funded R&D, in which Government has invested large funds. It is the responsibility of Universities, to encourage students, faculty to innovate and such innovations can be utilized for raising financial resources of these establishments, through royalties or income which will minimize dependence of universities, institutions. Further the duplication of research shall be minimized i.e. both industry scientist & academic scholars are working on same problem but they there is confusion in approaching to the industry. Hence there is need to attracting Industry to campus by different activities like internships, establishment of Council for Industry, set up joint governing bodies or academia industry cell, guest lectures, seminars by industry professionals, curriculum developments, joint research projects, mandatory Summer / winter in-plant training for one month during the all year of Graduation & Post Graduation, overhaul of the Apprentice Act, to prepare central database / website of field wise Industrial problems / projects in which any industry can enter their problems/research work and any Institutes who are interested can collaborate with the company for the research.

Keywords: IPR, royalty, Protection and Utilization Public funded, research, university, industry, duplication of research

INTRODUCTION OF THE PROTECTION AND UTILISATION OF PUBLIC FUNDED INTELLECTUAL PROPERTY (IP) BILL

Global investments into R &D was estimated at US\$ 1.2 trillion. There will be a significant share of the global investments into R&D originates from the private sector through their collaborative research with academia in other countries and such collaborations leads to quality human resource coming out of the academic systems to be readily absorbed by industry. The Ministry of Human Resource Development held discussions with industry, academia and government representatives on March 5, 2013 to understand the issues, successful models etc. on industry-academia collaborations. To compete in a global environment, it is necessary for India to innovate & promote creativity which needs to protect and utilize the Intellectual Property (IP) created out of public funded R&D, in which Government has invested large funds. The above bill imposes obligations and creates rights to optimize the potential of public funded R&D & provides incentive to create IP and the mechanism for its protection and utilization. It encourages innovation in small and medium enterprises, promotes collaboration between Government, private enterprises and non-Government organizations &

commercialization of IP created out of public funded research and development and the culture of innovation in the country. National knowledge commission has already recommended for the collaboration of university –Industry. (<http://knowledgecommission.gov.in/downloads/recommendations/LegislationPM.pdf>)

The bill is essentially addressed to any university or non-profit research institution that receives money from government agency. At present, government funded universities and autonomous research institutions cannot commercialize the fruits of their research. However, the bill would alter the existing IP rules by allowing academic institutions, rather than the government, to patent publicly funded research and would reward institutions and inventors with a share of the royalties and licensing fees generated from the commercial products. It includes guidelines on the quantum of royalty that would be paid both to the inventor and to the institute upon commercialization of the invention. This bill will enhance awareness about IP issues, especially in universities, academic and research institutions. It will also increase the responsibility of universities, academic and research institutions to encourage students, faculty and scientists to innovate. Such innovations can be utilized for raising financial resources of these establishments, through

royalties or income. The income from IP will promote self-reliance and will minimize dependence of universities, academic and research institutions and other recipient organizations for Government funding. This bill would allow government funded academic institutions to patent their inventions & it should result in greater interaction between industry, academia and government.

PROBLEMS

At present, government funded universities and autonomous research institutions cannot commercialize the fruits of their research also commercialization of research is not possible in India. Duplication of research i.e. both industry scientist & academic scholars are working on same problem. Some of the concerns in the present education system are acute faculty shortage, poor Industry-Academia collaboration, obsolete learning infrastructure, and stagnating research.

OBJECTIVE

to develop methodology for academia-industry collaborative customized research
objectives of bill are is to provide for the protection and utilization of IP originating from public funded research etc. collaboration between Government, private enterprises and non-Government organizations & commercialization of IP quantum of royalty that would be paid both to the inventor and to the institute upon commercialization of the invention minimize dependence of universities
develop Innovation Clusters involving industry and institutes
strengthening Institutions to produce advanced quality research
scaling-up postgraduate education and demand-driven R&D and Innovation,
training to the faculties to develop innovative teaching methodology
attracting students to become research faculty
autonomy and accountability reforms, incentives and funding etc

SIGNIFICANCE OF BILL TO ACADEMIC & INDUSTRIES

- 1) It facilitate commercialization of IP generated out of Government funded R&D
- 2) The legislation will provide a uniform legal framework within the country for protection and utilization of the IP generated out of public funded R&D.
- 3) Innovations in private sector as well as in universities, academic and research institutions that receive grants from Government will be encouraged & increase the innovation culture in the country
- 4) Collaboration between Government, non-governmental organizations and private sector will be promoted.
- 5) In present situation, publication of research paper in reputed national and international magazines is associated with prestige for scientists working in majority of academic and scientific institutions. Such a publication sometimes results in unintended disclosure of valuable knowledge with

potential of IP (Intellectual Property). Sometimes, this knowledge may be further developed & patented by foreign scientists. Thus, the original researcher & the country lose invaluable intellectual property. This bill provides to protect the interests of scientists, the institutions.

6) In present situations, in the absence of any guidelines for filing patents/IPR, what is happening is that, international companies are approaching academic & research institutions & buying their patents. Indian scientists are actually signing agreements with them for IP Management. It means that India will pay for the science / innovation while the other countries reap the benefit. Foreign countries are plundering our scientific capabilities & we are helpless. This bill is provides guidelines in this matters.

7) Now a days, technology transfer at the moment is being done by tender process without any skillful technology transfer officer. The in-charge of an institution who may also be a scientist and who does not know much about this business takes a decision on the basis of highest amount offered by a company. But this process of technology transfer does not prove to be effective and efficacious in successful product development. It sometimes leads to dumping of the IP because the successful bidder for whatever reasons, are not able to develop a product or technology. This bill thus seeks to address this issue by providing to constitute an IP Management Committee within the organization within one hundred and eighty (180) days of the receipt of public fund.

8) Further, there are other Government agencies, like Defense, Space, etc., which have never in the past used their IP to build an industry for civilian applications. Even if, their IP had non-strategic value and had non-defense applications, it was never transferred to a company for civilian applications. But, with this bill they are prepared to share their IP for civilian application and such a development could immensely benefit the industry and the society.

9) Many foreign universities have created IP committees which visit each and every laboratory once in 2 to 3 weeks and talk to the scientists and find out what the scientists are doing. What have they recently found out? This is how they do Intellectual Property mapping. Many of the times, even the heads of the institution may not have full knowledge of their institutions whether they have something patentable because, it requires talking to scientists at regular intervals & hence review of research work is required which is addressed in this bill.

10) Dependence of universities, academic and research institutions and other recipient organizations for funding on the Government will be minimized as the bill provides for utilization of a portion of royalties or income, generated out of the public funded IP, for research and educational purposes. The Bill provides for the utilization of public funded IP and sharing of income or royalty earned between the IP Creator and the recipient. Not less than 30% of the income or royalty has to be given to IP creator due to which it will give rise to number of IP's (patents) & increase the flow of knowledge to industry

MECHANISM FOR COLLABORATION

creation of Academia-Industry Councils at leading institutions

create a cell to educate institutes as well as industry about the IP process and related issues,
Initiative for technology transfer including setting up of research parks
Establishment of Council for Industry and Higher Education Collaboration
implementing institutional reforms like modernizing / expanding laboratories, libraries facilities, centralised and Departmental Computer facilities etc
establishing inter-disciplinary centers of excellence that conduct R&D in collaboration with industry, converting research results into applicable technologies, and enhancing collaborative activities with national and international institutions
summer / winter or in-plant training for a month for every year of graduation & PG
increasing appetite for research awards/rewards
linking Research with products & develop areas of research by private partnership
Invest in new tools for research
research focus on problem identified by government
Industry to help institutes to market their capabilities
Institutes have to cultivate a fundamental behavioral change in students that will lead to a life-long attitude towards problem identification and solving
need for large corporations to introduce training modules for students, researchers
need for an overhaul of the Apprentice Act
linkages between MSMEs and institutes for R&D to increase MSME productivity
utilize the sick PSUs

METHODOLOGY FOR COLLABORATION BETWEEN INDUSTRY – UNIVERSITY, INSTITUTES

Industrial research needs to be driven by “demand” instead of the existing “forcing function” used so far in sectors such as defence, atomic energy and space research. Hence the research shall be promoted for raising national productivity by problem solving in partnership with industry. Industry - University / institutes needs to develop the mechanisms for collaboration for various activities some of identified activities are (sequence can be changed as per convenience)

a) Attracting Industry to Campus by way of start courses like Ph.D /PG programs for industry executives; Invite visiting faculty from industry also it can be retired corporate employees; involvement and support of industry in shaping academic curriculum development programs so that students will job-ready and more employable; frequent dialogue between Academia and Industry through seminars and workshops; Institutes can approach for internships, company visits and seminars; faculty/students needs to spend 2-3 months a year with industry and industry professionals to serve as guest faculty; Cross visits and greater interaction between industry and the faculty at institution; Induction of industry professionals in governing boards of institution.

b) identify the institute or industry as per research project &

define the objectives of the collaboration being sought;

c) to identify their problem / demand by way of “problem solving” partnership with industry

d) prepare the list of strengths and capabilities of different departments of institutes & identify strengths of each departments like five faculty and students,

e) to create a strategy for joint research with industry / institutes and offer consultancy services by faculty and students to industry

f) work out various needs, facilities, identify the resources required for faculty and students

g) agreements / MOUs on common goals for collaborations shall be done

h) Set up joint governing bodies / academia industry cell for R&D facilities with members from the industry as well as the institutes for mutual exchange of information

i) set up specific budget, targets, timelines, implementation plans & calendar for collaboration activities

j) Financial grants for government funding on research shall be sought from various Government agencies

k) Engage the corporate sector to invest in existing institutions facilities

l) research students and faculty shall interact with nominated members of industries

m) customize product development Cells in institute or industry

n) linking of research labs with institutes

o) evaluate the progress continuously & to work out mechanisms for monitoring and scaling research

MONITORING & EVALUATION OF COLLABORATION BETWEEN INSTITUTE & INDUSTRY

Monitoring and evaluation provide information that lead to project improvements, funding decisions, accountability and continuous learning. Monitoring can be done by making chart of various factors which are as mentioned below:-

Number of collaborations with other institutions
Number of MOUs with industry and academia, both within India and abroad
Number of exchange programs of research students and faculty with foreign collaborating institutions
Number of Seminars and training workshops organized
Number of Publications in journals
Number of Patents
Number of Industry Chairs

Number of Innovations commercialized
Revenue generated

ACADEMIC-INDUSTRY CELL

An institute might set up a cell to facilitate and drive collaborations and the members of cell can be

Two industry representative from R &D;
Two academic representative having entrepreneurial experience
Two student / faculty representative of each department from the institution;
Two alumni representative;
Two student volunteers;
One placement and training officer; and
one coordinator.

DATA OF VARIOUS COLLABORATIONS IN INDIA & ABROAD

The Department of Science and Technology has been nurturing 16 autonomous research institutions. In the year 2011-12 have published more than 1500 papers in refereed journals. Research paper published in 2002 are 453 & it was increased to 4273 till 2009

Collaboration activities identified in outside India

1) Fraunhofer Institutes Germany's

Fraunhofer Model: Ensure complete connectivity from fundamental research to applied research to customized development as per industry's requirement and eventual commercialization of the development; develop separate schemes for each of these segments. Develop an academia-industry led R&D model on the lines of Germany's Fraunhofer Institute starting with co-location of industrial research labs and educational Institutes. they had started innovation clusters.

<http://www.fraunhofer.de/en/institutes-research-establishments.html>

2) <http://www.ramot.org/> Ramot Model at the Tel Aviv University - Academic Institutions need to develop business models for on-campus research. Ramot professionals, many of whom are PhD-MBA veterans of business, are uniquely positioned to cultivate the special relationships between the academic and corporate arenas. They possess the uncommon combination of in-depth scientific knowledge, tech savvy and a sixth sense - assets critical for creating the win-win links which, on the one hand, support fertile, groundbreaking TAU research and on the other, provide technology companies with discoveries that give them the crucial competitive edge. Ramot nurtures the university's innovative research by,
Securing appropriate financial support for research
Identifying innovations with market potential
Patenting discoveries
Crafting licensing agreements with industry partners capable of propelling

TAU inventions into valuable products
Problem identification by government; Force competition between public and private institution for solutions (Various models for this: Canada, US, Germany)

Collaboration activities identified in India

1) http://respark.iitm.ac.in/about_us.php
The IIT Madras Research Park facilitates the promotion of research and development by the institute in partnership with industry, assisting in the growth of new ventures, and promoting economic development. The basic principles of the Park are

Creating a collaborative environment between industry and academia through joint research projects and consulting assignments

Developing a self-sustaining and technologically fertile environment

Encouraging and enabling the alignment of R & D activities to potential needs of the industry

Providing world class infrastructure for R & D activities

Enabling development of high quality personnel and

motivating researchers to grow professionally within

organizations through part time Masters and PhD Programs

Aiding technology and business skills sharing between the

university and industry tenants

2) <http://sid.iisc.ernet.in/> .SID promotes joint R & D programmes and R & D centres between IISc and National and International organizations. The Society for Innovation and Development (SID) was founded in the year 1991, in close collaboration with the Indian Institute of Science (IISc) Bangalore.

3) <http://www.iitk.ac.in/siic/about1.html>
IIT Kanpur has set up the SIDBI Innovation & Incubation Centre (SIIC) in collaboration with Small Industries development Bank of India (SIDBI) to foster innovation, research, and entrepreneurial activities in technology-based areas. SIIC provides a platform to Start-ups prospective entrepreneurs and intrapreneurs to convert their innovative ideas into commercially viable products.

4) <http://ecell.in/#> The Entrepreneurship Cell is a non-profit organization run by the students of IIT Bombay that aims at manifesting the latent entrepreneurial spirit

5) <http://www.fitt-iitd.org/about-fitt.aspx>
FITT is the Industrial Interface of IIT Delhi. It was established at the Indian Institute of Technology Delhi (IIT Delhi). FITT is a recognized (by DSIR) Scientific and Industrial Research Organization (SIRO). As a SIRO, FITT is eligible for full custom duty exemption for import of capital goods, raw materials and technology know-how that are required for execution of R&D programmes sponsored by the industry

6) <http://www-07.ibm.com/in/research/media/opencollaborative.html>
IBM has initiated the pen Collaborative Research program

with IIT and NID unique research collaboration with IIT Bombay and NID will focus on the development of new designs for mobile device interfaces that can easily be used by people who are semiliterate or illiterate, as well as individuals who have limited or no access to information technology

7) <http://www.bdu.ac.in/cuic.php> Bharathidasan University, Tiruchirappalli: The Centre for University Industry Collaboration started Interaction between University and Industry, and Training Programmes for students on core competency development such as employability skills, awareness on employment avenues etc.

8) The Centre for University - Industry Collaboration, Anna University Chennai
www.annauniv.edu/UICCcentre

9) <http://www.jaduniv.edu.in/collaboration.php> Jadavpur University, Kolkata is started the various activities for collaboration with Industry like IIPC (Industry-Institute Partnership Cell) & PPAC (Patent Promotion and Archival Cell). JU has established collaborations on strategic services with various universities all over the world. JU has a collaboration programs with:

Newcastle Upon Tyne, UK Faculty exchange and Human Resource Development in Coastal Zone Management
Leeds Metropolitan University, UK Faculty Exchange and Research on Web based distance education
Bolzano University, Italy Exchange programme
Brunei University, UK Faculty Exchange & Research
Shastri Indo Canadian Foundation Faculty & Student Exchange, Research
Staffordshire University, UK (www.staffs.ac.uk)
International Centre for Theoretical Physics, Trieste, Italy

10) INDUS University, Gujrat has started the Industry – Indus collaboration center. They prepare the models like Collaborative Continuing Education
Collaboration for joint innovation and research
Collaboration for resource sharing and avoid resource duplication where applicable
Collaboration for Technology incubation and Entrepreneurship Development.

11) Council for Minority Development (CMD) had already started Collaborative Industry Based Education & Industry Based Curriculum <http://cmd.ind.in/>

12) <http://www.cmju.in/faqs-industry-collaborative-education.php>
CMJ University, Government of Meghalaya offer Industry Collaborative Programme with the association

13) Christ University, Bangalore Faculty of Engineering have envisaged Engineering Research, Advanced Learning, Innovation and Liaison Centre Christ University and Festo have signed an MOU to build a centre of excellence and knowledge in the area of Industrial Automation Engineering

at Christ University's Kengeri campus. Renault-Nissan and Christ University have come together to establish strong academia industry cooperation to contributing to the cause of higher education in engineering and related fields.

<http://www.christuniversity.in/uploadimages/Festo%20Nissan%20write%20up.pdf>

14) Chitkara Institute of Engineering & Technology was affiliated to Punjab Technical University started the collaboration activity with Industries.

<http://chitkara.edu.in/news1/ciet/industry-collaboration/>
Infosys Campus Connect
Collaboration with Wipro Technologies
TCS Accreditation
HCL K2 Academy
CISCO Networking Academy
Dassault Systèmes (DS) - PLM Competency Centre

SUGGESTIONS & FINDINGS

to prepare central database / website of field wise Industrial problems / projects in which any industry can enter their problems/research work and any Institutes who are interested can collaborate with the company for the research. SMEs generally not care about understanding and improving their capabilities about IP hence university-enterprise collaborations is necessary i.e. open innovation through improved university-enterprise collaborations hence there is need to set up flexible mechanisms to promote research collaboration between public-private sectors such as universities and SMEs. While research institutions and firms are working to find solutions to problems as they arise, governments and research funding agencies have a role to play in providing guidelines on academic patenting and licensing and in fostering debate workshops be held where academic institutions can interact with industry to explore the possibilities of various kinds of collaboration as per their specific requirements. These could include internships, guest lectures by industry professionals and seminars and even curriculum innovation and joint research projects
academia-industry interface council with representatives of Industry and Academia shall be immediately started there shall be separate fund from Government for collaboration

create a cell to educate institutes as well as industry about the IP process and related issues, so as to make it accommodating and not restrictive
mandatory Summer / winter in-plant training for one month during the all year of graduation / PG
need for an overhaul of the Apprentice Act
need for awareness on Industry-Academia collaboration
tax exemption for skill / training development
need for large corporations to introduce training modules
set up institutes like as a model IIT Madras Research Park, research innovation university shall be started
recognize good works of collaboration between industry and academia through annual awards
utilize the sick PSUs
The Protection and Utilization of Public funded Intellectual

Property Bill needs to be amended & shall be in force as early as possible

Limitation of bill

Researchers will be inclined to concentrate their efforts on issues of interest to industry, and which can have immediate benefit i.e scientists are influenced by royalty rates, and will thus tend to work on industrial research rather than fundamental research i.e. industry/institutes will be focus on where there is money they will focus their research on that and learning and research becoming like businesses. Hence the clause in this bill can be modified.

The Bill has requirements of non-disclosure by the grantee and the researcher to enable the commercialisation of the research, and requires researchers and institutions to inform the government before all publication of research i.e. to take permission from government which is very complicated & time consuming for researcher and the security may be loss hence this clause needs to be modified.

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www.ipindia.nic.in
www.google.com
<http://spicyipindia.blogspot.com>
www.wipo.int

ABBREVIATIONS:-

IPMS Intellectual Property Management System
IPMO Intellectual Property Management Office
IPO Intellectual Property office
IP Intellectual Property
IPM Intellectual Property Management
WIPO World Intellectual Property organization,
WTO World Trade Organization
S&T Science & Technology
R&D research and development



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