

# A study of Intellectual Property Management in Industries & Academics & ways for collaboration in India

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**Abstract-** Intellectual property (IP) has emerged as a key driver in knowledge economy. Firms view IP as a valuable corporate asset and a strategic business tool. The future focus of research will be on mutual relationship with academic institutions/university & industry cooperation. It will be how to bring together the disciplines of IP and management & to identify the communication gaps in academic & industries for technology sharing / mutual research etc. It will avoid duplication of research work & will introduce Basic IP education. In Indian context, most companies and academic institutions under-utilize the IP system & its potential benefit due to lack of awareness of IP system. This is attributed due to complexity of IP system & lack of easily accessible teaching, training and/or professional assistance. The proposed Protection and Utilization of Public funded IP Bill pending before Parliament will impose obligations & create rights to optimize the potential of public funded R&D. It will further provide incentive to create IP and mechanism for its protection and utilization, simultaneously enhancing awareness, greater interaction among universities, academic and research institutions & their collaborations. This will pave the way in India like other developed countries to avoid duplication of research work & create immense resources through IP for social development.

**Index Terms-** Intellectual Property, Universities, Academic, Education, Industry, research, technology transfer, collaboration, Protection and Utilization of Public funded IP Bill Intellectual Property.

## I. INTRODUCTION & SIGNIFICANCE OF INTELLECTUAL PROPERTY (IP)

Intellectual property (IP) has emerged as a key driver in knowledge economy & the firms view IP as a valuable corporate asset and a strategic business tool. Recent research indicates that over 50% of the value of many business organizations or assets is attributed to IP. The purpose of IP system mostly, patents are to protect and promote the development of science & technology (S&T) and to promote the dissemination & use of S&T. Intellectual Property means the property represented by the product emanating from creativity of the human mind, human intellect and creative ideas i.e. creative ideas and expressions of the human mind (intellect) that creates commercial value. It can be an invention (Patents), Design,

Trademarks, artistic creation etc. In earlier times, physical or tangible assets like movable and immovable properties fetched the maximum value and the owner had an exclusive right over it. The property right, pertaining to such intangible assets, is called as Intellectual Property. The IP is an asset and, as such, it can be bought, sold, mortgaged, licensed, exchanged or gratuitously given away like any other form of the property. IP facilitates exclusive right to make, use, exercise, sell or distribute an invented article or Process in India i.e. these rights can be shared, licensed or sold. Thus IP serves as an indicator of achievements in Research & Development institutions and ability of individual researcher.

## II. SIGNIFICANCE OF INTELLECTUAL PROPERTY MANAGEMENT (IPM) TO INDUSTRIES & ACADEMICS

Intellectual Property management (IPM) has become as important as IP managers need decision support information related to R&D, innovation technology, finance, industrial economics, business strategy litigation, technology analysis, portfolio maintenance, licensing, acquisition analysis, evaluation etc. For instance, a patent portfolio may contain a large number of patents of less quality / high quality and on other end, a smaller number of exceedingly high quality patents, hence IP evaluation, audit is required. In India, most companies and academic institutions under-utilize the IP system due to lack of awareness and its usefulness due to complexity & lack of easily accessible teaching, training and/or professional assistance. Modern IPM provides essential tools for managing intangible assets like Patents, Designs and Trademarks, etc. IPM allows to handling risks & an uncertainty related to R&D and it facilitates the interaction between the public & the private sector. Market value of any enterprise is determined by its portfolio and optimal use of IP assets. In this competitive world, creating, protecting and managing IP rights and avoiding infringement of IP rights by others are crucial task of any firm or organization. Hence the main goal of patent management is obtaining and maintaining patents.

### 2.1 IPM identifies, precautions to be taken after inventing the technology

- not to publish the research work anywhere before filing of patent application,

- file provisional / complete specification in patent offices,
- check for technical/commercial viability of inventions
- after complete development of invention file request for examination (within 48 months),
- get patent & maintain the enforcement of patent by paying the renewal fee,
- commercialize the invention (make / sell / license / assign, etc.),
- field watch (regular search of patent / non-patent documents & watch on technological advancements)

### III. COLLABORATION OF INDUSTRIES & ACADEMICS FOR IP

In competitive world, it is necessary for India to innovate & promote creativity which needs to protect and utilize the IP created out of public funded research and development (R&D), in which Government has invested large funds. The proposed Protection and Utilization of Public funded IP Bill, imposes obligations & creates rights to optimize the potential of public funded R&D & it provides incentive to create IP and mechanism for its protection and utilization. The above bill 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 R&D and the culture of innovation in the country.

At present, government funded Universities & autonomous research Institutions cannot commercialize the fruits of their research. However, after the approval of above bill by the Government 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 i.e. around 30% and licensing fees generated from the commercial products to the inventor and commercialization of the invention. This bill will enhance awareness of IP 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.

#### 3.1 Significance of proposed Protection and Utilization of Public funded IP Bill to Industries & Academics

- The above bill facilitate commercialization of IP generated out of Government funded R&D
- 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

- Collaboration between Government, non-governmental organizations and private sector will be promoted.
- This bill mandate to constitute an IPM Committee within the organization within 180 days of the receipt of public fund
- This bill give guidelines to share IP of Government agencies, like Defense, Space etc for civilian application and such a development could immensely benefit the industry and the society.
- 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.
- The bill will also encourage research institutions to establish their own technology licensing offices and to adopt their own policies on IPM and technology transfer.

### IV. SCOPE OF RESEARCH

The focus of research will be on, academic institutions/university & industry cooperation such as academic exchange agreements / joint research work. Also on, to identify the communication gaps in academic & industries for technology sharing / mutual research etc. to avoid the duplication of research work. In India, IP awareness is very less. Many scientists, highly educated persons don't know about patents, hence there is urgent need to increase the awareness of IP in academic & industries. In India there are huge research potentials, talented persons but comparatively Indian patent filing is very less hence there is need to find out the gaps & to identify the problems in academic & industries for filing IP's / Patents.

### V. METHODOLOGY & ANALYSIS OF COLLABORATION OF INDUSTRIES & ACADEMICS

The expertise of central originations like CSIR/NRDC/TIFAC /NIIPM etc. to be made available for technology transfer to university/ Institutes & Industry for avoiding the risk of duplication of R&D and providing assistance during development of new products. Universities/Institutes & Industries collaborate with each other to promote the use of university research & sharing the data mutually.

Hence, infrastructure shall be provided to University/ academic Institutes for utilization of Patent Information. Secondly, link IP cell, technology transfer department, Patent Information, R&D etc. to academic Institutes & Industry. It is necessary to provide technical problem & information for research by industries to University/academic Institutes & carry out research on that & identifying solutions to technical problem

from the universities / Institutions. Thereafter patenting the inventions & prepare the agreements on technology transfer. After that, IP enforcement by licensing & publicly disclose will ideally avoid the duplication of research.

IP is never given much importance in India, but after 1995 i.e. end of GATT & 2005 (India signed international agreement like TRIPS / WTO, PCT / WIPO etc & allowed pharma product Patents after 2005, there is need in institutions & Industries to create an independent “IP cell” to protect their IP’s and increase IP awareness culture in organization. Effective IPM can allow research institutions to use their own research to benefit the public at large and to enter into public-private partnerships. With the joint research consignments to work together the benefits for Industries resulting from the universities / academic institute are, availability of the extensive network of University / Academic Institutes , availability of University/ Academic Institutes officials, network and knowledge for technological support.

## VI. STATISTICS

**Table 1: Filing of IP in last 5-6 years\* in India:**

	Patents applicati on received	Designs applicati on received	TM applicati on received	GI applicati on received
<b>2004-05</b>	17466	4017	78996	29
<b>2005-06</b>	24505	4949	85699	16
<b>2006-07</b>	28940	5521	103419	33
<b>2007-08</b>	35218	6402	123514	37
<b>2008-09</b>	36812	6557	140172	44
<b>2009-10</b>	34287	6092	141943	40

**Table 2: Comparison of Patent filing in year 2008-09 by Indian Industries \***

Indian Industries	No of patent filed
Samsung India	205
Council of scientific & Industrial Research	165
Dr Reddy’s Laboratories	147
BHEL	119
Rainbaxy Laboratories	101
Infosys Technologies	81
Avesthagen Ltd.	66
Tata steel	65
Cadila Healthcare Ltd.	57
Matrix Laboratories Ltd.	54

\*Source from IPO website

**Table 3- Comparison of Patent filing in year 2008-09 by Indian Academics\***

Indian Academic university / Institutes	No of patent filed
Indian Institute of Technology	91
Amity university	33
Indian Institute of Science	21
Central Institute for Research on cotton	12
National Institute of Pharmaceutical Education & Research	8
National Institute of Immunology	7
University of Delhi	7

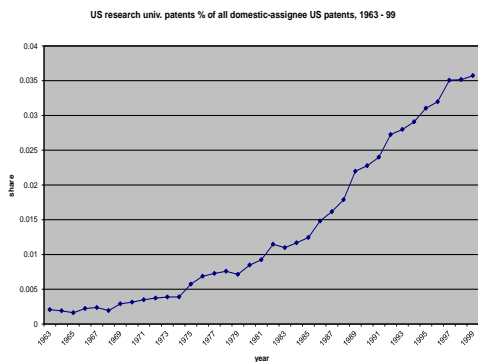
**Table 4: Comparison of Patent filing in year 2009-10 by Indian Scientific & Research Development organizations \***

Scientific & Research Development organizations	No of patent filed
CSIR	162
Defense Research & Development organization	80
ICAR	55
Indian Space Research Origination	17
Central Institute of Fishery Technology	13
National Institute of Pharmaceutical Education & research	10
Centre for Development of Advance computing	07
National Institute of Immunology	07
Indian Council of Medical Research	06
SAMEER	06

**Table 5: Comparison of Patent filing in year 2009-10 by Institutes, Academics/university\***

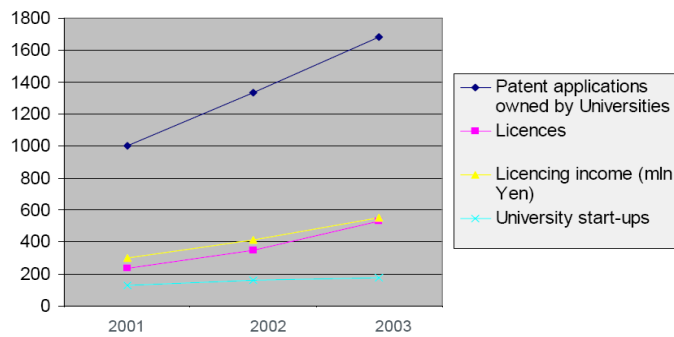
Indian Academic Institutes / university	No of patent filed
Indian Institute of Technology	109
Amity university	81
Indian Institute of Science	45
Serum Institute of India Limited	12
The Energy & Resource institute	07
Institute of Life Sciences	06
Dalmia Institute of Scientific & industrial Research	04
Jadavpur University	04
Krishna Institute of Medical Science	04
Manipal Institute of Technology	04

From the above tables it is observed that, due to collaborations between university-PRO there is increase in trend in obtaining the IP, also there is increase in Patent filing after 2005. It is expected that the joint collaboration programs on IP amongst PRO & university will not only avoid duplication of research activities and wastage of time, resources but also will have a strong & enhanced IP regime. Hence there is need to manage these IP efficiently, so that technology will be fruitful & there will be effective use of academic research work for industries and duplication of research can be avoided. Hence IP management plays vital role in industries and academics & thus Collaboration between Government, non-governmental organizations and private sector, academic institutes, university shall be promoted.



**Figure 1 - Internationally Patents granted to Research Institutions**

**US research university patenting before & after passage of Bayh-Dole Act in 1980- 1999**

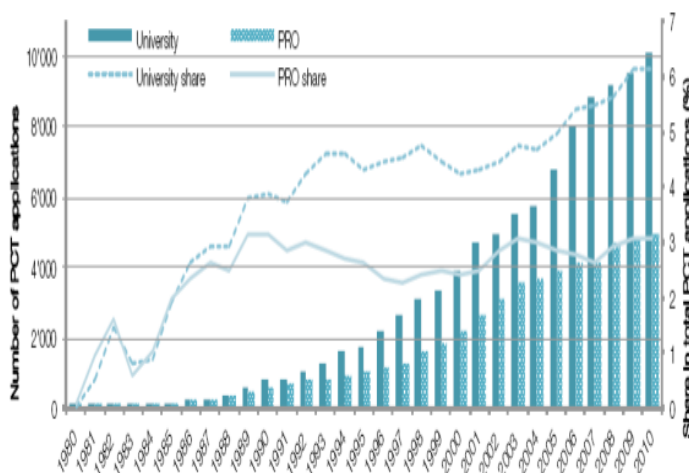


**Figure 2 -Effects of Japanese Bayh-Dole Act passed in 1999 Patents granted to Research Institutions**

As per the Figure 1 & 2 it is observed that in international scenario like USA, Japan after there is collaboration between the Academic & industries & Bayh-Dole Act came into force, and thus Patent filing has sharply increased.

**University and PRO patenting is on the rise**

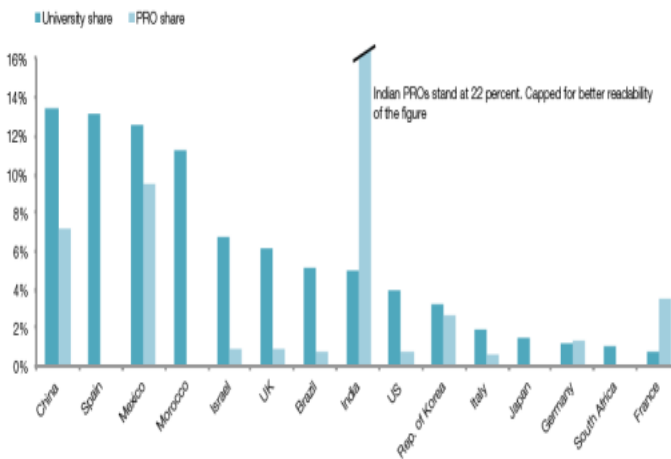
World PRO and university PCT applications, absolute numbers (left) and as a percentage of total PCT applications (right), 1980-2010



**Figure 3- Percentage share of University & PRO Patenting 1980 to 2010**

**University and PRO patenting is prominent in China and India**

University and PRO patent applications as a share of total national applications for selected countries, in percent, for different time spans



**Figure 4- Percentage sharer of University & PRO Patenting in China & India in 2011**

As per figure 3, it is observed that there was increased in the percentage of share of total PCT application filed by University & PRO Patenting from 1980 to 2010. Thus university& PRO collaboration increased the Patent filing.

As per figure 4, there was increase in university and PRO filings of the total patents obtained by Indian assignees during 2011, about 22% patents were jointly owned by industry, university or government sectors. Thus now a day's universities and PROs have also experienced growth in licensing revenue by way of mutual agreements.

## VII. FINDINGS & CONCLUSION

This study discusses the opportunities and challenges offered by IP to foster technology transfer from government funded research institutions. It is observed that from various originations that, there are strong scientific capabilities but there is no adequate Academic/university-Industry collaboration. There is a weak industry science linkage in the country hence, there is need to develop internal IP management capabilities, the formulation of comprehensive national IP policies, strengthening their IP court systems and IP offices, enforcement mechanisms, etc. The interactions shall be take place by the licensing of patents, R&D collaboration, scientific publishing & participation of conferences etc.

In India, IP awareness is very low hence IP culture is required to an enabling environment. Many scientists, highly skilled & technocrats educated persons don't know about patents. Hence there is urgent need to increase the awareness of IP in academic & industries. Further basic IP education can be provided at school level and undergraduate level and form uniform IP course structure in India & increase the IP resources. Many universities do not having technology transfer policy, IP cell /department etc., guidelines for managing technology transfer activities. Hence there is need to allow academic institutions, rather than the government body, to patent publicly funded research and would reward institutions and inventors with a share of the royalties i.e. around 30% and licensing fees generated from the commercial products to the inventor and commercialization of the invention. Technology transfer offices between the university & Industry and mechanisms to enhance technology commercialization are required with financial support for which IP bill shall be approved by the Government. Further, it is highlighted that there may be special fee reduction for the university or students to boost the research activity.

There are several difficulties the universities face in the implementation of patenting and patented technology commercialization. They do not have operative guidelines about disclosure and patenting. Increasing autonomy of institutions, decentralizing recruiting, providing performance based incentives and acknowledging technology transfer activities in researchers' career is essential. There is a need to redraft the university regulations on IP. Performance incentives for researches are needed for balancing entrepreneurial activity and scientific achievements.

Patent plays an important role in fostering technology transfer as countries develop their research capabilities. Technology transfer by patent licensing, collaboration can entail cross-fertilization between academics and industry, synergies in research and new ideas for science, avoiding wasteful duplication of efforts, and create employment and new market opportunities for firms. Hence there is a need to have substantial private investment in developing such a strategy.

## ABBREVIATIONS

IPO	Intellectual Property office
IP	Intellectual Property
IPM	Intellectual Property Management
TM	Trademark
GI	Geographical Indications
UN	United Nation
WIPO	World Intellectual Property organization, WTO World Trade Organization
TRIPS	Trade Related Aspect of Intellectual Property Rights
GATT	General Agreement on Tariffs and Trade
S&T	Science & Technology
NIIPM	National Institute for Intellectual Property Management
PRO	Public research organizations
PCT	Patent Cooperation Treaty

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### Presentation

This paper is accepted by World Academic Industry Research Collaboration Organization (WAIRCO) & it will be presented by the Author in the International Conference on Engineering, Technology and Management - ICETM at September 2012 at Tirupati, India. The details are available at <http://www.worldairco.org/ICETM%20Sep%202012/Management.html>

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