

Indian patenting activity in international and domestic patent system: Contemporary scenario

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A detailed assessment of Indian patenting activity over the period 1990–2002 was undertaken by (a) examining patents granted by the US, European and Indian Patent Office; (b) delineating patents under various types, i.e. entity-wise (Indian organizations, foreign R&D centres in India, resident individuals), proprietary protections (utility, design, plant patents), organization-wise (industry, research organizations, specialized institutions, etc.), industrial sector-wise, category-wise (process/product), etc.; (c) assessing impact through citation analysis, and (d) benchmarking with patents activity of some developed and developing countries. Patent filing through the Patent Cooperation Treaty and patenting during the period 2003–04 in the US was analysed. The strategic options for commercialization of patents were also investigated. Recommendations have been given for strengthening the patenting activity in the country.

Keywords: Indian patenting activity, patenting strategies (contemporary scenario), patentometrics.

A study of the contemporary scenario of Indian patenting activity in international and domestic patent system was commissioned by the Office of the Principal Scientific Advisor to the Government of India (PSA office) to the National Institute of Science, Technology and Development Studies (NISTADS), New Delhi. The primary objective of this study was to undertake a detailed empirical and analytical examination of patenting activity in India, and bring out the strengths and areas where attention would be required. It was perceived that this would show the extent of India's preparedness in the new changing scenario, i.e. post-WTO situation, where the essence of competitiveness would depend on the intellectual property created and exploited by the Indian industry, research organizations/universities, etc. A detailed report is available¹ in book-form and can be accessed via the NISTADS website (<http://www.nistads.res.in>) under 'Report on Indian Patenting Activity'. The report is also available at the PSA office website (<http://www.psa.gov.in>) under 'reports section'. The study has brought out insights of Indian patenting activity in the US and Indian Patent Office (IPO), patenting undertaken by foreign R&D centres in India, patenting activity in industrial sectors, impact of patents granted in the US as seen through patent and journal article citations, and international patenting trends. A detailed profile of the Indian patenting activity

is available for the period 1990–2002 (Figure 1). Broad patenting trends in the Patent Cooperation Treaty (PCT) (1998–2002), European Patent Office (EPO) (1990–2002) and in the US Patent Office (USPTO) (2003–04) have been examined. Strategic options for the commercialization of patents in India were explored by examining the initiatives of CSIR in this direction. Some highlights of this study are as follows.

- Significant growth in patents granted to Indian organizations and foreign entities in India was observed during

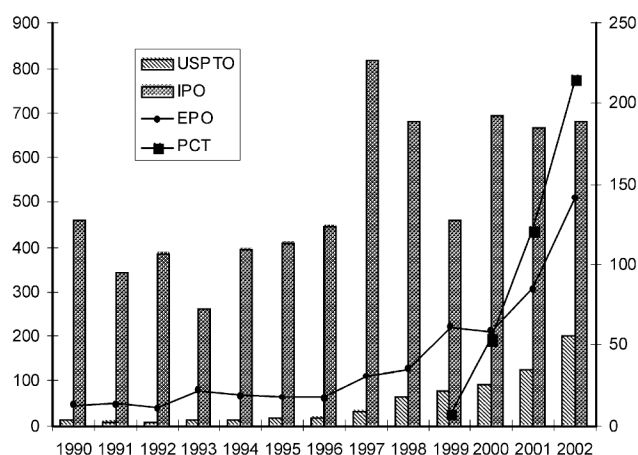


Figure 1. Patenting by Indian organizations in different patent systems: 1990–2002.

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the period 1990–2002 in the USPTO (United States Patent and Trademark Office). During this period 669 patents were granted to Indian organizations and 273 patents to foreign organizations in India. Figure 2 depicts the patents granted to Indian organizations during pre-WTO (1990–94), post-WTO (1995–98) and the period 1999–2002.

- Almost 50% of patents granted to Indian organizations in the USPTO had the US as the ‘priority country’ (country of first filing). This indicated the technological competitiveness of Indian firms.
- Foreign R&D centres in India accounted for 26% (273 patents) of the total patents from India granted in the US during the period 1990–2002. This demonstrated the success of R&D centres of foreign entities in India in creating proprietary knowledge (Figure 3).
- Patenting is possible in three categories in the US: utility patents (protecting functional characteristics), design patents (protecting ornamental features) and plant patents (protecting plant varieties). Patenting from India was mainly in utility patents. There were 16 plant patents granted to Indian organizations and individuals; India was among the few countries that were granted plant patents. A major drawback of Indian patenting activity was the insignificant number of design patents that were granted (24 design patents in all). Comparisons of international patenting trends in the US indicated that design patenting accounted for a substantial portion of overall patent profile of countries actively patenting in the USPTO.
- Process patents ($\approx 50\%$ of total patents) dominated patenting activity of Indian entities, whereas product patents ($\approx 61\%$ of total patents) dominated patenting by foreign R&D centres in India in the USPTO. Indian firms/organizations were granted product patents in pharmaceuticals (153 product patents that included 73 involving both product and process protection in pharmaceuticals). This provides a positive indication of India’s preparedness in the current scenario (Patents Amendment Act 2005), where product patents in pharmaceuticals are allowed.

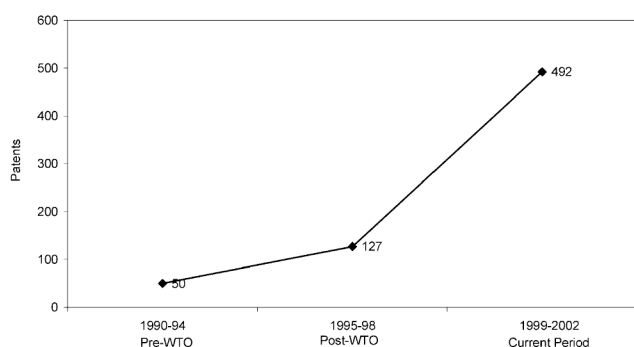


Figure 2. Patent activity of Indian organizations during pre/post-WTO and the period 1999–2002 in the USPTO.

- The main activities of Indian entities were in ‘Pharmaceuticals’ and ‘Chemical’ sectors, whereas foreign organizations had majority of patents in ‘Office Machinery and Computers’, ‘Electronics’ and ‘Electrical Equipment’ (Figure 4). Indian organizations were granted patents in ‘Biotechnology’ (53 patents), indicating innovativeness of Indian firms in this high-technology area. Indian firms/organizations were creating patent portfolios in medicinal preparations and compounds targeting diseases (diabetes, cancer, etc.), herbal formulations, catalysts and polypeptides. On the other hand, patent portfolios were created by foreign R&D centres in India in the technological domains of switching devices, digital data-processing and VLSI. Lack of patenting by Indian firms in these high-technology areas is a matter that requires urgent attention.
- Patents granted to Indian organizations in the USPTO were being noticed as observed from citation analysis. Thirty-nine per cent of patents had received citations from other patents implying that these patents played a role in defining the state-of-the-art in a said technological field. Fourteen per cent received citations from journal articles, implying the scientific significance of the cited patents.

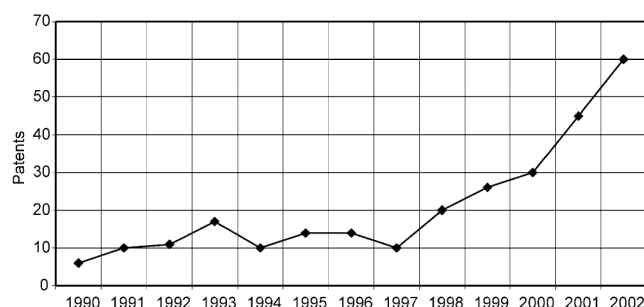


Figure 3. Patenting trend of foreign-owned patents (1990–2002) in the USPTO.

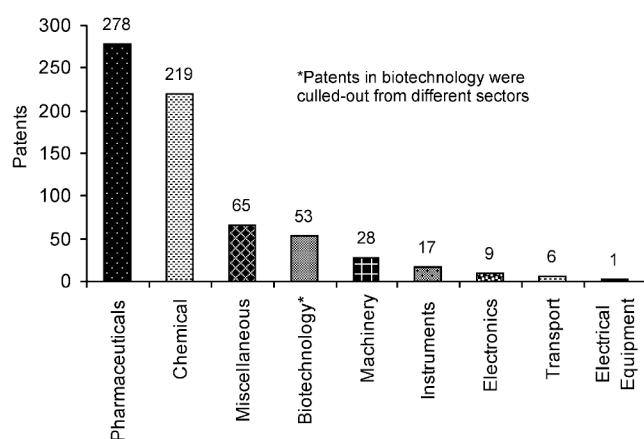


Figure 4. Patenting activity of IOP in different sectors (1990–2002) in the USPTO.

- There were 22,695 patents accepted by the Indian Patent Office (IPO) during 1990–2002. Foreign organizations dominated patenting activity with approximately 71% share of the accepted patents (Figure 5).
- In the IPO also, the period 1999–2002 contributed to maximum growth. A common aspect of patenting in both the IPO and USPTO was the involvement of only a few Indian organizations in patenting activity and highly skewed patenting across the organizations. Eight Indian organizations accounted for approx. 80% of patents in the USPTO, whereas 20 organizations accounted for approx. 60% of patents in the IPO.
- Another common feature of Indian patenting in both the patent offices was that only a few patents emerged as a result of joint collaborations. Only 38 out of 669 patents by Indian entities were a result of joint collaboration in the USPTO, whereas 35 out of 4848 patents were collaborative in the IPO. Joint patents are important as they bring complementary skills of the organizations involved and thus have better chances of commercial appropriation.
- A positive feature of patenting in the IPO was the involvement of Indian universities in the patenting process. Twenty-one universities were involved in the patenting process in the IPO in comparison to only seven universities in the USPTO (Figure 6).
- Similar to patenting in the USPTO, ‘Pharmaceuticals’ and ‘Chemicals’ were the major areas of patenting by Indian organizations in the IPO. However, a larger number of technological areas was addressed in the IPO. In the IPO along with ‘Basic Chemicals’ (which was mainly addressed in the USPTO), patents were also granted in sub-sectors such as consumer detergents/soaps, pesticides/agrochemicals. Further, patents also addressed other sectors such as ‘Machinery’, ‘Basic Metals’ and ‘Food and Beverages’ in the IPO.
- Foreigners patenting in India were found to be increasingly using the PCT route and ‘Mailbox’ provision to file patents in the IPO after 1999. Foreigners were filing patents mainly in Machinery, Chemical, and Pharmaceutical sectors in the IPO.
- CSIR emerged as the major patenting organization in the country accounting for 57% of patents (378 patents) in the USPTO and 34% of 4848 patents (i.e. 1660 patents) in the IPO during the period 1990–2002.
- The study showed that the IPR policy articulated by CSIR and steps undertaken for implementation of the policy had been instrumental in creating an innovation climate within CSIR. Significant rise in patenting activity, building-up key portfolios, leading to other tangible and intangible benefits were some important outcomes. The study also brought out some current trends of Indian patenting activity and international patenting trends.
- Indian organizations were found to be increasingly using the PCT route to file international patents. The involvement of Indian organizations in patenting activity in the USPTO had increased during the period 2003–04. Ninety-five organizations were involved in patenting activity during this two-year period, with 63 new organizations involved in patenting for the first time. Eleven universities had also contributed to the patenting activity in the USPTO during this period. Twenty-four patents were the result of joint collaboration.
- The US followed by Japan were the two main players involved in patenting activity in the USPTO. ‘Electronic Equipment’, ‘Office Machinery and Computers’, ‘Machinery’ and ‘Instruments’ were the major areas of patenting activity in the USPTO. South Korea, Brazil and China had no plant patents. Design patents were a prominent feature of patenting activity in China.

The study had provided recommendations to help in strengthening patenting activity in the country. Some of the recommendations were as follows:

- Patent data (of applications filed and granted) in the IPO by resident and non-resident inventors should be computerized and made available on-line.
- In the US, apart from utility patents, patenting is possible in the design and plant category. Software-related inventions (and mathematical algorithms in general) are also patentable in the US. The patent office and other agencies that are involved in creat-

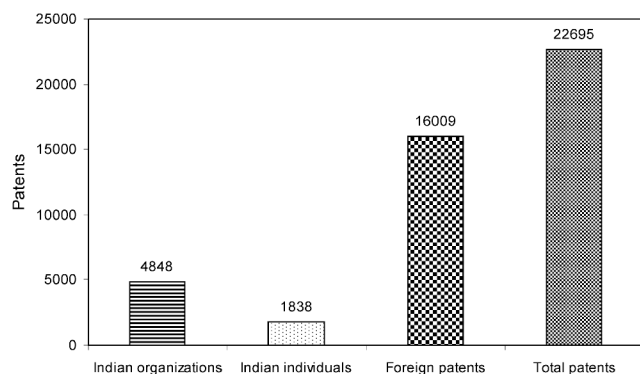


Figure 5. Distribution of patents in the IPO (1990–2002).

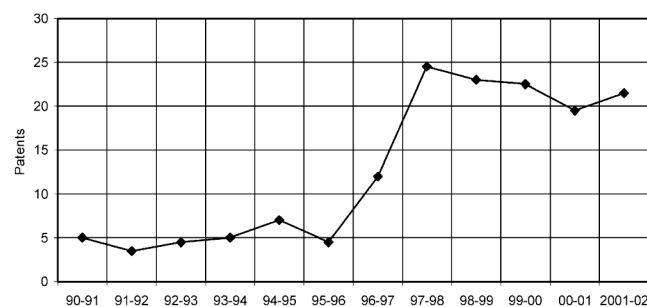


Figure 6. Patenting by universities in the IPO (1990–2002).

ing patent awareness should highlight the various types and scope of patenting available in different countries for proprietary protections.

- (iii) Foreign-owned patents (patents invented in India but assigned to foreign institutions, mainly MNCs) have demonstrated substantial activity in the areas of 'Computer and Communications' and 'Electronics'. Lack of patenting activity by Indian organizations in these areas should be addressed.
- (iv) There were only a few patents as a result of joint collaboration between different organizations. Major scientific agencies like CSIR, DST, DBT, etc. have initiated a number of network programmes for joint technology development involving research laboratories, universities and industries. These programmes

are steps in the right direction. Other organizations should replicate these efforts.

- (v) Organizations should evolve their own IPR policy. This policy should be able to guide an organization in IPR creation, management and deriving economic benefits and other returns. Policy should be designed keeping in view the mandate and mission of the organization. CSIR's intellectual property policy, strategy and implementation plan can provide necessary directions, particularly to other scientific agencies.

1. Bhattacharya, S., Garg, K. C., Sharma, S. C. and Bharvi, D., Indian patenting activity in international and domestic patent system: Contemporary scenario, NISTADS, 2005, ISBN: 81-85121-34-6.

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