

IP as Driver of Indian Economy:
**ROLE OF
BUSINESSES**

**BIOLOGICAL
DIVERSITY**

Act, 2002: An Overview



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IP-led Innovation as Driver of Indian Economy: **THE ROLE OF BUSINESSES**



Given the new policy initiatives by the Government of India that provide significant opportunity, Indian companies must develop IP-based innovative products and solutions that lead to business and economic growth

India is one of the fastest growing economies in the world and is projected to become the world's third largest economy by 2025. The country has made significant progress in the last 30 years. One of the key drivers for economic growth after the 1991 reforms was the increased domestic consumption led by the creation of lakhs of new jobs in the services sector and increased foreign direct investment (FDI). Growth in the last three decades has been mainly due to the services industry in the area of information and communication technology. To achieve the next phase of India's economic growth and make it sustainable, it is imperative for India and Indian companies to foster research, technology, and innovation to develop IP-led products and services for Indian and global markets.



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Why IP-led Innovation for Businesses?

IP-led innovation is critical for India's future economic growth and competitiveness. India offers multi-billion- to trillion-dollar new market opportunities for companies to develop innovative products and solutions to meet the needs of the aspirational middle class and resource-poor people. The size of the aspirational middle class in India is expected to increase from 470 million in 2010 to 570 million in 2021. The market size is expected to cross USD one trillion due to the increase in the middle-class population in India¹. Furthermore, products and solutions developed for the Indian market are going to be relevant to global markets.

A 2016 UNDP report suggests that out of the working-age population of 300 million, the Indian economy could employ only 140 million, indicating a limited capacity to generate jobs. The report estimated that by 2050, at least 280 million more would enter the job market in India². It is important to create jobs for the sustainable growth and prosperity of

India. IP-based proprietary products and solutions developed by companies have the potential to create much-needed new employment opportunities for the Indian youth.

To illustrate the impact of IP-driven industries on the US economy and job creation, we can look at the recent report by the U.S. Department of Commerce released in September 2016. The report indicates that IP-intensive industries support at least 45 million U.S. jobs and contribute more than \$6 trillion or 38.2% of U.S. gross domestic product (GDP)³. With Indian talent and determined enterprises, it is possible to create IP-driven businesses to achieve global leadership and drive the next phase of economic growth in India.

Evolution of Major Industry Sectors in India

The pharmaceutical and IT sectors in particular have contributed significantly to the rapid progress made in the last three decades. These sectors, along with many others, have created wealth and jobs, resulting in rapid economic growth. In the last decade, Indian companies have started investing in research, innovation, and IP creation for achieving competitiveness and business growth. Tracing the evolution of pharmaceutical and IT sectors in the last few decades shows the way forward for IP-led innovation in India.

(1) Indian Pharmaceutical Industry

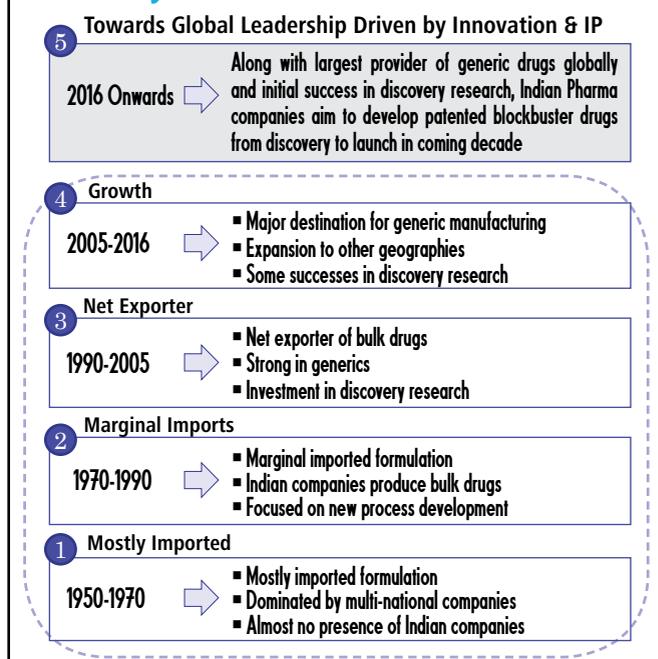
The Indian pharmaceutical industry has demonstrated remarkable growth in the past few decades. Multinational companies dominated the pharmaceutical industry in India till the 70s. The 80s and 90s witnessed the growth of Indian companies with the introduction of several generics and subsequently gained prominence in process engineering. Economic liberalization allowed FDI and provided further impetus to growth through good manufacturing practices with a rigorous focus on quality⁴. Today, India is the largest provider of generic drugs globally, accounting for 20% of global exports in terms of volume⁵. The Indian pharmaceutical market has grown to become the third largest in terms of volume and thirteenth largest in terms of value. Major Indian pharmaceutical companies have invested in discovery research to develop patented medicines. There are many success stories that encourage businesses to invest further in such research.

- Zydus is India's first pharmaceutical company to launch its own indigenously researched therapy Lipaglyn, the world's first drug for treating Diabetic Dyslipidemia that combines lipid- and glucose-lowering effects in a single molecule. Zydus also developed Exemptia, the world's

first biosimilar of Adalimumab. The company has developed a robust research pipeline of new chemical entities (NCEs), biologics, and vaccines. (www.lipaglyn.com, <http://zyduscadila.com>)

- Glenmark is a leading player in the discovery of new molecules, both NCEs and new biological entities (NBEs). The company's last experimental drug was licensed to Sanofi with a record of more than \$600 million. Glenmark has a pipeline of five NBEs and a couple of NCEs. Glenmark has received significant licensing income from its innovative research in the past and expects the same in the future. (<http://www.glenmarkpharma.com>)
- Biocon, India's largest biotech company, focuses on reducing therapy costs of chronic diseases like diabetes, cancer, and autoimmune diseases. As India's largest domestic branded biologics company, Biocon has taken quite a number of products from discovery to commercialization. The company has a robust pipeline of novel molecules and biosimilars. (http://www.biocon.com/biocon_research_pipeline.asp)
- Serum Institute and Shantha Biotech (now Sanofi) have done pioneering work in the area of vaccines.

Evolution of Indian Pharmaceutical Industry



¹ http://www.pwc.in/publications/global-emerging-middle/assets/pdfs/profitable-growth-strategies-for-gem-executive_summary_updated.pdf ² <http://www.livemint.com/Politics/Tpqlr4H1ILsusuBRJlIZHI/India-to-see-severe-shortage-of-jobs-in-the-next-35-years.html> ³ <https://www.uspto.gov/sites/default/files/documents/IPandtheUSEconomySept2016.pdf> ⁴ <http://www.indiaonward.com/the-indian-pharmaceutical-industry-the-journey-since-independence/> ⁵ <http://www.ibef.org/industry/pharmaceutical-india.aspx>

Large enterprises are not the only ones developing IP-based new products. There are new-age businesses in India that are working on cutting-edge research in the areas of pharmaceutical and biotechnology. Brief details on the efforts of these companies are provided below.

- Invictus Oncology, co-founded by Prof. Shiladitya Sengupta, faculty at Harvard Medical School, is developing a method to get a drug directly into cancer cells. Instead of just using old molecules in a new way, Invictus is developing new molecules to be used with the new method. The company focuses on developing a technology platform rather than a few drugs. (<http://www.invictusonology.com>)
- Curadev is another company working on anti-cancer molecules. The company has a few molecules under development, including those for cancer immunotherapy, for which it has filed patent applications. Curadev has developed potent small-molecule inhibitors that reduce kynurenine levels to potentiate immune responses against various types of tumors. (<http://curadev.in/>)
- Vyome Biosciences focuses on developing novel drugs for antibiotic-resistant acne and other opportunist pathogens through a unique pipeline of antibiotics that retards resistance development. Vyome has a strong pipeline of IP-based products targeting multiple indications. The lead molecule (VB 1953), which targets the huge unmet need in the drug-resistant acne prescription market, will soon be entering the clinical phase. (<http://www.vyome.in>)

In a manner similar to the pharmaceutical industry, the IT industry too has played an important role in India's economic growth. The IP-led innovation in the industry, though, can be boosted further to ensure "intellectual dividend" for new-age India.

(2) Indian IT Industry

The Indian IT industry has an extraordinary success story that steered India on the path to becoming a global economic power. Today, India is the world's largest sourcing destination for the IT industry, which employs about 10 million people. The information technology sector began in the 90s as a source of low-cost engineering talent to global companies for a routine work and to fix the Y2K bug. With the initial success, the perception about India started changing. By the early 2000s, multinational companies started looking toward India as a promising destination for product development. Soon, the Indian IT industry transitioned from product development to taking up full responsibility for the product and go-to-market strategies. This industry continues to capitalize on the gains made during the past decade. It steadily moved forward toward research and development, technology, innovation, and IP creation as a driver for the next phase of growth. In a relatively short time, India has moved from modest beginnings of fixing Y2K bugs to developing new ideas and technologies. Some Indian companies have now started developing IP-driven innovative products and solutions.

“The priorities of Indian businesses towards research, innovation, and IP will determine the trajectory of India's growth to achieve the status of a truly inclusive economic superpower”



- TCS is engaged in the research and development of technology in diverse areas, including deep learning, nanomaterials, cognitive computing, genomics, blockchain technology in banking, connected cars, and smart homes. TCS has created a patent portfolio containing more than 2800 patent applications with global filings. More than 2000 patents were filed in the last five years. TCS has received a grant of 341 patents. One of the products “ignio” that TCS launched in June 2015 is protected by 24 patents covering various aspects of neural automation system for IT operations in enterprises. Sixteen customers have bought the product within nine months of its launch.
(http://www.tcs.com/news_events/press_releases/Pages/TCS-wins-National-Intellectual-Property-Award-WIPO-Award-2016-innovative-enterprise.aspx)
- Wipro is engaged in the research and development of innovative solutions and services around multiple advanced technology areas, including commercial wearables, smart robotics, autonomous vehicles, augmented reality, virtual reality, and emerging themes in digital technology. The company is steadily building the patent portfolio with 1,085 patent applications currently filed in different geographies.
(<http://www.wipro.com/microsite/annualreport/2015-16/innovation-intellectual-capital.html>)
- The other large IT companies such as Infosys, HCL, and Tech Mahindra are engaged in research, technology, and innovation in the emerging areas of technology.

India is one of the fastest growing start-up hubs in the world. The recent NASSCOM report puts India in the third place in terms of technology-driven product startups, after USA and UK. More and more startups in India are now focusing on developing products and solutions based on innovative technology. Most of these startups are in the area of ICT.

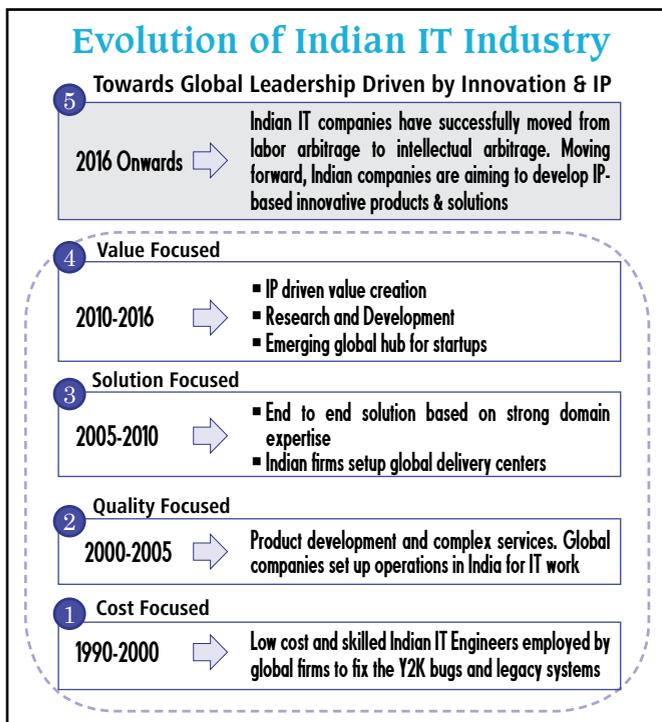
IP-led Innovation in Major Indian Industry Sectors - Summary

Indian pharmaceutical companies have been more aggressive in their efforts to develop patented drugs. Considering the significant investment and failure rates, it is a risky investment for the companies regardless of their size, but one successful discovery is highly rewarding. A single successful drug can garner billions of dollars that will help the companies, and in turn, the Indian economy. Compared to pharmaceutical companies, large Indian IT companies have not invested substantially in developing IP-based products and services, although risks associated with failure are minimal. There is going to be pressure on revenues from the services business of IT companies; it is imperative for the companies to invest in research and innovation to leverage multi-billion-dollar opportunities and sustain future growth.

A significant majority of other sectors need to catch up with the pharmaceutical sector in terms of IP-led innovation. Some of these sectors have shown potential to grow. The Indian automotive industry, for instance, has grown significantly after the establishment of Maruti Suzuki in 1983. Indian automotive companies have been innovating across the entire mobility value chain. The companies are aiming to take up bigger innovation opportunities that have a global impact. In a similar manner, other Indian sectors, including chemical and electronics manufacturing industries, too hold a potential for IP-led growth.

Conclusion

India and Indian companies have demonstrated their potential to innovate and create IP. However, their efforts so far have been limited in comparison to the size of businesses. India's competitiveness depends on the ability of the companies to innovate and create IP. The Government of India's new policy initiatives like Make-in-India, Smart Cities, Digital India, and new IPR Policy provide significant opportunities for Indian companies to develop IP-based innovative products and solutions that lead to exponential business and economic growth. Indian companies need to embrace IP and innovation-led growth agenda to achieve global scale and competitiveness. The priorities of Indian businesses towards research, innovation, and IP will determine the trajectory of India's growth to achieve the status of a truly inclusive economic superpower.



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