

BIOTECHNOLOGY INDUSTRY IN INDIA

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Abstract:

India's biotechnology industry has been developing towards new statures related to the recent economic outburst. The nation can possibly reform bio drug and medical services areas. The Indian Biotechnology Industry is one of the fastest growing industries in India. Data has to be collected from multiple sources of evidence to understand the importance and overview of the biotechnology industry, in addition to books, journals, various websites, and newspapers. This article presents a brief overview of the current biotechnology industry in India, Global Biotechnology Market Size, and Regional Segment Analysis of the Biotechnology Market, Current Scenario in Biotechnology industry in India and marketing challenges.

Keywords: Biotechnology, BIRAC, Bio-Agri, Bio-industrial, Bioinformatics, Bio-pharma, Bio-services.

Introduction:

India is among the first countries to set up a specialized agency i.e. department of biotechnology under the Ministry of Science and Technology for the development of research and human resources in the biotechnology sector in 1986.¹The biotechnology sector of India is highly innovative and is on a strong growth trajectory. The sector, with its immense growth potential, will continue to play a significant role as an innovative manufacturing hub. The sector is one of the most significant sectors in enhancing India's global profile as well as contributing to the growth of the economy.²And Biotechnology has vast potential to grow in India. Indian biotech sector stands 3rd in the Asia pacific region in terms of number of companies, about 40% of these are in the Biopharma segment and the rest are in Agri Biotech, Bioinformatics, industrial Biotechnology and Bioservices. These companies provide high-level services in drug discovery, validation, genomics, proteomics and other allied areas.³The Biotechnology sector is one of the

sunrise sectors in India. The government is investing substantially for creating human capital and infrastructure with a special focus on R&D to develop India into a world class bio manufacturing hub⁴.

Review of Literature:

Janice M and Mueller⁵(2008) Many Indian biotechnology companies have developed proprietary processes for manufacturing "bio-generics" or "biosimilar," i.e., copies or derivative forms of first-generation biologics such as recombinant human insulin and erythropoietin now coming off patent in the U.S. and elsewhere. Despite their success in process development, the Indian firms are not yet filing a significant number of patent applications in India. Gayatri Saberwal(2006)⁶ The biotech industry in India is becoming better established and companies are being set up at a higher rate now. Through interviews and general knowledge of the local scene, I have identified nine stimuli for biotech company formation in India at present.

Abhishek Kumar and Lav Srivastava⁷(2012) Biotechnology has touched every corner of the world laying major stress on applications to the environment, drugs, vaccines including a range of biopharmaceuticals, diagnostics, transgenic crops, improved tools for upgrading animal reproduction and quality, useful microbes and food ingredients. **Viren Konde(2008)**⁸As the purpose of this study was a survey of the public sector–private industry collaborations of the biotechnology sector in India, an organizational and functional overview of this sector was needed. Therefore, rather than studying a hypothetical biotech sector in India, the focus of this work was to study the public–private partnerships (PPP) that are occurring in India in the area of modern biotechnology. **Bambang Prasetya and Puspita - Deswina**⁹ (2009) The development of biotechnology in general, in line with progress in other sciences in Indonesia, the interest of biotechnology for two last decades has been a great interest for many scientists, academi-cian and young students. The government expected that biotechnology in the future can provide a very large impact on the agricultural, health, environment and economy in general.

Global Biotechnology Market Size:

The global biotechnology market size was estimated at USD 369.62 billion in 2016. The presence of room for partnerships in the sector is expected to drive significant progress in the industry. The companies are focusing on the development of novel techniques and their implementation by collaborating with the other participants.¹⁰and Global Biotechnology Market is estimated to reach \$726.8 billion by 2025; growing at a CAGR of 8.1% from 2017 to 2025¹¹.Thus, increasing prevalence of such chronic diseases, owing to various factors including lifestyle changes, stress and unhealthy dietary patterns, will drive the demand for effective drugs and vaccines, thus boosting the industry progress over the forecast period.¹²

Regional Segment Analysis of the Biotechnology Market:

On the basis of geography, the global biotechnology market is classified into North America, Europe, South America, Asia Pacific, and the Middle East and Africa. The North America region accounted for a significant market share of 42.92% in the year 2019. The massive amount of investment in R&D activities by major players is the primary factor for market growth in the region. The countries belonging to the region, especially the US, have high healthcare expenditure, which is contributing to the demand. Further, the availability of advanced techniques has increased the applicability of biotechnology in many dimensions. However, Asia-Pacific is expected to register the highest growth rate during the forecast period. The growing patient population owing to the prevalence of chronic diseases has led to the development of the biotechnology market in the region. Additionally, the increasing adoption of biotechnology in agriculture and industrial processing has accelerated the growth of the market¹³.

Biotechnology Market Size in India:

The sector is divided into five major segments- Bio-pharma, Bio-services, Bio-Agri, Bio-industrial, and Bioinformatics. The biopharmaceutical sector accounts for the largest share of the biotech industry with a share of 55% of total revenues, followed by bio-agri with 23% market share (2018)¹⁴ India is among the top 12 destinations for biotechnology in the world, with approximately 3% share in the global Biotechnology industry. India is also the leader in the global supply of DPT, BCG and measles vaccines. The Biotechnology industry in India comprises 2700+ Biotech start-ups and it expects to grow up to 10,000 by the year 2024. There are more than 2500+ Biotech companies in India¹⁵.

The Indian biotech industry is likely to experience significant growth on the back of increasing economic prosperity, health consciousness and a billion-plus population base. Current estimates value the industry at US\$ 7 billion in FY15, which is expected to grow at 30.46 percent Compound Annual Growth Rate (CAGR) to US\$ 100 billion by FY25.¹⁶

Current Scenario in Biotechnology industry in India:

Biotechnology is the backbone of various industrial sectors and makes a significant contribution to the modernization of the country¹⁷. India's biotechnology industry has been growing towards new heights in conjunction with the recent economic outburst. The country has the potential to revolutionize pharmaceutical and healthcare sectors¹⁸. Biotechnology also has affected the economy in a positive way due to the creation and growth of small business, generation of new jobs. Agricultural biotechnology has reduced our dependence on pesticides. Bioremediation technologies are being used to clean our environment by removing toxic substances from contaminated groundwater and soils. About 60% of the biotechnology products in the market are healthcare products and 21% are products used in agriculture and animal husbandry. A considerable amount of efforts in research are on, to use and extract benefit from this interesting and upcoming field for the betterment of human life and the environment. Many biochemical

companies are involved in the production of biotechnological products using genetic engineering techniques¹⁹. The high demand for different biotech products has also opened up scope for the foreign companies to set up base in India. and, India has emerged as a leading destination for clinical trials, contract research and manufacturing activities owing to the growth in the disservices sector.²⁰

Foreign Direct Investment (FDI) in Biotechnology industry:

To boost domestic bioscience manufacturing, the government has announced 100% FDI in medical devices. 100% FDI is acceptable for Greenfield projects in the pharmaceutical sector. 74% FDI is permitted for Brownfield projects under the automatic route. 100% FDI is permitted through automatic route to attract investments in new and existing industrial parks. The top foreign investors in India's Biotech industry are Endo Pharmaceuticals (USA), GE Healthcare (USA), United States Pharmacopeia (USA), BPI France, Takes, Finland, Bosch (Germany) and many more²¹.

Biotechnology Regulatory Authority of India (BRAI)

Biotechnology Regulatory Authority of India (BRAI), promoting the Biotechnology industry through PPP Programmes, the Biotechnology Industry Partnership Programme for Advanced Technologies, supporting SME innovation, and the Biotechnology Industry Research Assistance Council. The Authority will be responsible for regulating the research, transport, import, manufacture and use of organisms and products in health care, agriculture, veterinary and environment.²²

Biotechnology Industry Research Assistance Council (BIRAC)

Government of India as an Interface Agency to strengthen and empower the emerging Biotech enterprise to undertake strategic research and innovation, addressing nationally relevant product development needs. BIRAC is a new industry-academia interface and implements its mandate through a wide range of impact initiatives, be it providing access to risk capital through targeted funding, technology transfer, IP management and handholding schemes that help bring innovation excellence to the biotech firms and make them globally competitive.²³ BIRAC believes that the "bio-innovation capital" of the nation would come from novel ideas which have a commercialization potential and that evolve out from start-ups or academic spin-offs²⁴.

Biotechnology Patents in India:

Patents for biotechnology inventions are granted in India after complying with the patent eligibility criteria of novelty, inventive step and industrial application. Biotechnology industry in India is currently burgeoning as the statistics speak for themselves. Ranked in the top 12 destinations for biotechnology worldwide, India also prides itself on being number 3 in Asia Pacific. It is estimated that the biotech industry in India will be worth USD 100 billion by 2025²⁵.

Challenges of Biotechnology Marketing:

Biotechnology companies are facing the reality that greater emphasis must be placed on delivering products to markets as companies become increasingly evaluated on their profitability. Potential risks related to markets and technologies have to be evaluated as realistically as possible to avoid mistakes²⁶. Time is the major obstacle for the invention of a new product or a novel product from basic concepts. The time taken for an idea to be proved, prototyped and developed into beneficial invention also determines the success of the product as there are multiple competitors existing in the market. The market is the influence of the success of the product²⁷. Biotech companies have unique needs when it comes to creating product brands and raising interest and awareness for them. The challenges we see product marketing teams regularly face are: complex feature sets, diverse teams, shortened timelines, global rollouts, and varied audiences²⁸.

Figure 1: Challenges of Biotechnology Marketing



Source: <https://link.springer.com/article/10.1057/jcb.2008.13/figures/1>

In order to be recognized as a leading biotech company in today's online world, you need a strong online presence, yes. But more importantly, you need to first, stick out, and second, make your company and products irreplaceable²⁹.

Conclusion:

Over the years, the focus of research has shifted from fundamental to applied research. Hence, India can reap the fruits of applied research only when it starts investing in basic research without looking at immediate financial benefits³⁰ the biotechnology industry must continue to educate the public, regulators, and other industries about the potential of the sector. This means actively participating in the development of regulatory processes for these evolving technologies, inviting conversations with all stakeholders, and ensuring the public understands both the technology and

the benefits that it delivers³¹.The biotech business in India is getting better settled and organizations are being set up at a higher rate now.

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