

A Canvass On Innovation And Commercialization In Biotechnology Industry

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Abstract: The commercialisation phase of new innovations usually in phases designed in a waterfall approach. My approach links Commercialisation related issues and decision making of innovation development in biotechnology sector. Risks and uncertainties related to commercialisation are also taken into consideration. Many of the important outcomes like rendering features, market captivity and costs of the new innovation and its commercialization are analysed.

Keywords: commercialisation, innovation development, biotechnology sector

I. INTRODUCTION

Biotechnology covers a wide range of scientific applications used in various sectors. It is a classic exemplar of disruptive technology, similar to the steam engine, or information technology. Disruptive technologies are often initially resisted because their potential is not known. The global biotechnology industry appears to have an upside unlimited technology curve and

II. LITERATURE SURVEY

The Government of India has been continuously striving for the development of the biotech industry ever since its start and there are many R&D institutions (scientific, medical, industrial and agricultural) that have been composed during the past 30 years. The past rendition stipulates that it has excelled the extension rate of many other industries as a sequel of favorable national strategies. The Biotech Consortium India Limited survey confirmed that there are 176 biotechnology firms present in India wherein 49 per cent companies are agriculture based companies, 25 per cent companies are in the health related medical activities and 26 per cent have interests in environmental biotechnology. The Department of Biotechnology under the Ministry of Science and Technology provided a number of exonerations rendered by both the central government and various states to incite the growth of the industry in the year 1986. India's science minister instigated a program that renders tax incentives and imparts for biotech endowment and firms probing to expand and entrench the Biotechnology Parks Society of India to brace 10 biotech parks by the year 2010. Animal testing was limited to rodents previously but then augmented to encompass large animals too.

so government around the whole world are embracing biotechnology as a big innovation driver also promoting economic growth of nations. But uncertainties related to markets, technology and business exist which emerges the risk of innovation and commercialisation in this sector. Added to this biotechnology has been in controversies such as concerns related to health safety. Taking these risks into account, it is not a surprise that most innovations fail or do not achieve commercial success. There are many issues to be addressed when commercializing biotechnology innovations. The evident lack of pre-seed capital and insufficient financial support from government are not always to be blamed. In many cases, lack of commercialization skills and innovative financial tools can be the factors for insignificant value from the biotechnology laboratories. The growth and development of biotechnology spin-offs heavily depends on financial resources but supporting environment is a necessary condition too.

States have started to compete with one another for biotechnology trade with the offerings such as goodies as dispensation from VAT and other fees, financial aid with patents and subsidies on everything starting from venturing to land to serviceableness.

The biotechnology sector stands up to some major provocations in its exploration for growth. The very first hindrance is a lack of capitalize, especially for companies that are just initiated. The most probable sources of capital are government grants and venture wealth. Government grants are difficult to fix, and due to the overpriced and uncertain nature of biotechnology research, enterprise capitalists are unwilling to put money into companies that have not yet developed a commercially feasible product.

The government has confronted the problem of literate but unqualified candidates in its Draft National Biotech Development Strategy. A plan including a proposal is created by National Task Force that will work with the biotechnology industry to reconsider the modules for undergraduate and graduate study in biotechnology and life sciences. The government also declared intentions to

enlarge the number of PhD Fellowships awarded by the Department of Biotechnology to 200 per year.

III. INNOVATION

Innovation can be viewed as the use of better solutions that meet new requirements, unexpressed needs, or existing market needs. This is achieved through better and effective products, processes, services, technologies, or ideas that are quickly and easily available to markets, governments and society.

IMPEDIMENTS TO INNOVATION:

A. LACK OF RIGHT KIND OF QUALITY HUMAN RESOURCE

India's presence in the biological sciences is relatively small, and not consistent in keeping with the size of its population or capability. Few universities and research institutes pursue research in biology. Unfortunately, the Indian university system has failed to build equality in creating pinnacle in life sciences training. Deficiency in research-intensive universities and heavy teaching loads leaves almost no time for perusal of any serious research interest. Medical, agricultural and veterinary schools also face this situation. To add on these issues are rules on research associates hiring and promotions and insufficient infrastructure. The so called technologically strong institutions also fail to build research environment. However, there are some federal government research institutions for research activities to be carried on but they are not open to training. This dichotomy between teaching and research has affected the building of qualified and connected biotechnology graduates. Urgent expansion with quality is needed in research institutes as well. Also, the best students do not end their career in science and those who do lack leadership and managerial qualities. The pipeline leaks at multiple levels and hence is this deteriorating situation. India is successful in producing strong scientific workforce but not in evolving scientific leaders. But, this has been taken care now by our Government that will serve well to the future.

B. WEAK PIONEERING COMPETENCE

Most research and academic institutes do not seek keen interest in taking up translational and innovative research in action. India has constantly been upgrading its entrepreneurship but the term "firm" still lacks the discussion about research intensive universities and higher education. Unlike is the case with US universities which runs hand-in-hand with the industry which acts as economic spark to create science parks, venture wealth funds and techie

offices. Only few Indian universities foster entrepreneurial desires. This practise has its initiation in the society that frowns on set-backs and the fragile mechanisms and policy formulation for the transfer of technology between private business firms and public institutions. The irony is that new graduates are not getting jobs in the field they want or the field that can make use of their competency. The private sectors are not opening positions to the young graduates for the positions involving research practices thereby losing a chance to stimulate business inclination.

IV. COMMERCIALIZATION

Commercialization of an innovation is surrounded by many uncertainties. The particular industry aiming to produce a product, service or a process has high uncertainties of technology, business model and markets. The fact is most innovations fail and commercialization is a poorly handled task. The development cost of the new product is governed by the decisions made at the initiation phase. However, they are later realized at the time of commercialization.

IMPEDIMENTS TO COMMERCIALIZATION:

A. DEPRIVATION OF PUBLIC PRIVATE PARTNERSHIPS

India lacks in successful partnerships. Public-funded research centres are not industry-friendly. Also, industrial ventures including life science associated ventures do not seek partnerships in-house research labs but reach out to foreign countries for partnerships. This partnership lacks with respect to investment for commercialization too. Each partnership arise different expectations. At this situation, industry, academics and advertising companies too have to go hand in hand. Now-a-days, Institutions also are not interacting and are not well verse with the industry as they lack in structural units required for it. Due to all these reasons, we are only able to develop numbers of industry-academic relationships or say public-private partnerships but at the cost of one major issue to be taken care of i.e. weak nature of the same. This lack of partnership lacks for selling and making the market aware of its products and services too.

B. INDUSTRY RELUCTANT TO RISK

Indian biotechnology industry is risk-averse in nature and so is the case with its commercialization where Indian banks and investors are hesitant in commercializing biotechnology products and services procuring out from the biotechnology ventures. Industry driven commercialization efforts are still not in profusion in scope or quality. The industry is been

helped by the government but taken measures are yet not successful and industry alone too is not able to rectify this situation. The marketing department of the biotech industry has to find lucrative ways to select against risk-taking. Investment for companies who want to pursue pure research with the intention of marketing products six to seven years down the line is still difficult to find.

To sum up, India has no ignition grant system for graduates, academics, working professionals to help turn the ideas into inventions and products to be commercialized into markets or in other words to explore the business potential of a biotechnology firm.

V. CONCLUSION

Biotechnology is an industry segment wherein amidst all norms includes high failure rate also. Most industries are dependent upon government support at the initial stage whereas later they get access to product-specific investment with the help of which they are able to develop internal resources and expansion into global market segments. The success and growth of biotechnology sector is dependent upon education, science and business.

Education and entrepreneurship in the field of biotechnology is an issue with a long duration view which cannot be constrained with fewer funds. There are number

of reasons that provided the base for shifting to private sector employment or entrepreneurship which comprise of risk taking competency, work and personal experience in private industry. Although many efforts are being taken, the popularity of science, its innovation and commercialization is a daunting task. In today's time, government also helps in creating and enhancing biotech innovation and commercialization. Still there are some hopes that are in support of the issue which are growing number of science graduates, growth in scientific advancement, increasing globalization in the world, pursue collaboration and zeal to innovate and later commercialize. Nevertheless, policies should emphasize on conditions to enhance initiation, formation, consortium, and skilled employment.

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