

# Application and Analysis of Marketing and Management on Biotechnology

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## Abstract

*Biotechnology is seen as the major pillar of economic growth in many countries. The biotechnology products include biofuels, biopesticides, biofertilizers, biopharmaceuticals, biosensors, Nano drugs, genetic engineering products, commercial enzymes, are currently available in market. Because the biotech products are expensive, consumer awareness is less. In case of developing countries like India, efficient marketing strategies to be followed for marketing of biotechnology products. The efficient management techniques at the industry level results the production of biotech products with less expensive resulting ultimate customers benefited.*

**Keywords:** Marketing- Management- Biotechnology-Biotech – products- strategies of marketing

## Introduction

### Bio Technology a view on Marketing

The performance of business activities directed towards the flow of goods and services from producer to consumer is termed as marketing. The business steps through which goods and services progress on their way to the final consumption is concern of marketing. The existence of marketing revolutionized because of social, economic and technological changes during the 20th century.

### Features of Marketing

Different key words that come under marketing are flow of goods/ services, transfer of ownership, communicating, storage, distribution / transport of goods functions (Cooke *et al.* 1992). Marketing is an organizational function of managing customer relationships in such a way that benefits not only organization but also its stakeholders. Marketing consists of four general activities and steps 1. Identification and selection of customer needs and desires 2. Designing products or services that satisfies the customer desires with profits 3. Persuading customers to buy at the firm's offerings and 4. Storing, transporting, and displaying the goods after they leave the production site. Marketing involves managerial Process involving analysis, planning and control. Marketing is carefully formulated programs but not just random actions, the Voluntary exchange of values. The Purpose of marketing is to achieve organizational objectives and selection of target markets rather than a quixotic attempt to win every market and be all things to all men. Marketing utilizes and blends a set of tools called the marketing mix - product design, pricing, distribution and communication. The process through which business enterprise or organization Select the target customers or constituents to assesses the needs or wants and manages its resources to satisfy those customer needs or wants.

The management refers to the organization of labor, raw materials, electricity, recruitment of new employers, Purchasing inputs, Perceiving market opportunities, Managing human



Graph -1

Types of marketing through different methods with average

Source: (Management strategy 2010) Bio Technology a view on Management

resources of the firm, Managing customer and supplier relations, Managing finance, Managing production, Upgrading process and product quality, Dealing with bureaucrats, introduction of new production techniques and products, Marketing the products, maintaining of employee, product distribution in market, product development strategies etc. all the above considerations are come under management of organization.

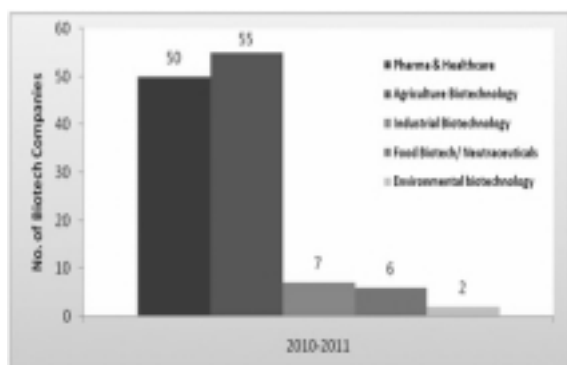
### Features of Management

Marketing cannot operate without the finance, operations, HRM (human resource management) and other functions within an organization. The management of all the mentioned features leads to successful running of organization. At the same time the different problems like Tax problem, financial problem, Capital problem, working capital problem, Marketing problem, Indulgence in fraud and cheating, Natural calamities, Negligence of entrepreneur, Government policies, Market competition are also to be considered strictly in the management of organization. The art and science of choosing target markets and getting, keeping, and growing customers through

delivering, and communicating superior customer value with controlled manner.

### Bio Technology

Biotechnology includes all components which make use of the modern biological techniques rather conventional methods to generate commercial products for agricultural productivity, human health care, animal, biopharmaceuticals and production of value-added novel compounds through genetically modified organisms, food processing and environmental services. Biotechnology has evolved over last 25-30 years into a set of powerful tools for developing and optimizing the efficiency of bioprocesses and the specific characteristics of byproducts. Biotechnology not only contributes for developing and biological processes that complementary to chemical technologies, but also providing the economical, efficient, pollution-free biological technologies. Biotechnology is proving the worth as a technology that can contribute to sustainable industrial development. The traditional biotechnology deals with the production of alcohols, enzymes and food products. But, Modern Biotechnology had already made significant contribution to health care and agriculture sector.



Source : Current Science (2010)

Chart -1

Biotechnology companies in various sectors (2010-2011)

### Biotechnology products

The application of biotechnology in different sectors to produce chemicals, plastics, textiles, food processing, pulp and paper, mining, metal refining and energy etc.

### Agricultural Bio Technology

The agricultural biotechnology products include insect resistant crops, virus resistant crops, herbicide tolerant crops, synthetic seeds, crops with improved composition (high oils and starches), and genetically modified crops to produce high value specialty chemicals, novel hybridization systems and plant tissue culture products. Plant tissue culture includes the invitro rooting, organogenesis, micro propagation,

and embryogenesis etc. lot of medicinal products also generating through the tissue culture. Molecular markers application in plants results the insect resistance is an emerging method. The first commercial agricultural biotechnology product was BT cotton reached the farmer fields in 1995.

### Environmental Bio Technology

Environmental Biotechnology products include bio-pesticides, bio-fuels, value-added products from biomass, cost effective and clean alternatives for risk assessment and quality monitoring, conversion of toxic chemicals into harmless byproducts, bioremediation of wastes, bio-plastics, vitamins, food additives, eco restoration of degraded habitats, control of biological invasion through biotechnological interventions, greener process technologies and bulk chemicals etc. the environmental biotechnology results the pollution free environment by following & applying the modern biotech principles.

### Pharmaceutical Bio Technology

The pharmaceutical Biotechnology products include the vaccines for various life threatening diseases such as tuberculosis, hepatitis, malaria. And the effective biopharmaceuticals for respiratory infections and chronic diseases affecting the heart and blood vessels, diabetes, cancer and neural, psychiatric disorders. Health care products such as new drugs for emerging diseases, vaccines, new protein molecules, PCR based diagnostics and biomolecules.

### Nano Bio Technology

The NanoBiotechnology products are biosensors, nano materials, targeted delivery and smart drugs for advanced diagnostics. The application of nanotechnology in biotechnology provides a great new range of advanced biomaterials with improved and enhanced functionality. The nano robots applicable in treatment of the diseases like cancer. The application of glucose sensors developed through nano technology used for the monitoring of diabetics.

### Bioprocess Technology

The bioprocess technology products include extraction of commercial proteins, enzymes from (plants, animals, and microbes), production of organic acids, fermentation products, milk products, soft drinks, biofuels and essential fatty acids etc. The application of fermentation principle in biotechnology results the production of the various products including drugs with cheaper costs.

### Bio Informatics

Bioinformatics provides the information regarding the full genome sequences, data from micros arrays and proteomics results the development of new drugs and vaccines. The databases developed by the bioinformatics are very useful for

the researchers for the accessing and retrieval of available scientific information. Human genome project helping the scientists for the prediction of diseases and production of new drugs.

**Genetic Engineering**

The genetic engineering products recombinant vaccines, transgenic plants, transgenic cell lines, different therapeutic products, and transgenic animal's etc. genetic engineering now applying for the various microbes for the production of heterologous proteins they treated as drugs.

S. No	Company name	Products	Employee no	Country
1	Amgen	Biopharmaceuticals	17,000	US
2	Genentech	Restriction enzymes, Monoclonal antibodies	12,000	US
3	Genzyme	Commercial enzymes	11,000	US
4	Biogen idec	Drugs for autoimmune disorders and cancer	4,850	US
5	Serono SA	Health care products	4,750	Switzerland

Table-1  
Top Biotech companies Source: Wikipedia -2011

**Need of Marketing in Biotechnology**

Biotechnology is seen as the major pillar of economic growth in many countries. Large number of therapeutic biotechnological drugs and vaccines are currently available in market, but these products not even known to the common man. So, there is a great need for marketing in biotechnology. There is great need of biotechnology for society because it provides employment, expanding entrepreneurial opportunities, intellectual wealth creation. The efficient marketing strategies are applicable to any biotechnology organization resulting the profits and branding to the host organization.

**Scope of Bio-Marketing**

Bio-marketing leads to the marketing of the new biotech products into their respective markets with the elaboration of features of products with efficient marketing strategies. The efficient marketing of the products leads to the profits ultimately the organization benefited so; there is a chance of introducing new products. It provides the platform for an equally dramatic change in the marketing of products and services linked to the dynamic competitive environments.



Graph -2 Average Returns

Source: Journal of Market Strategies - 2005

**Need of Management in Biotechnology**

Biotechnology can deliver the next wave of technological change and even more pervasive than that brought about by IT. There is growing appreciation worldwide nationally, regionally and globally that the management and utilization of natural resources need to be developed the amounts of waste and pollution generated by the human activities need to be reduced on a large scale. So there is an essential need of managing natural resources.

**Strategies for Development of Marketing in field of Biotechnology**

- i. Planning efficient product lines and product enhancements.
- ii. Management of product contracts and sales.
- iii. Branding of the product.
- iv. Setting strategic direction depending on customer needs and business goals.
- v. Interpreting strategic goals into the operational tasks.
- vi. Making new proposals to senior management regarding implications of proposed plans
- vii. Ideas generation
- viii. Working with graphic designers to create look and feel.
- ix. Developing and implementing administrative and operational matters ensuring achievement of objectives
- x. Evaluating risks and risk assessment.
- xi. Proposing contingency plans and proposals.
- xii. Analyzing business processes and creating the applications to improve or support those processes.
- xiii. Defining feature sets and scooping releases
- xiv. (MRI) market research information and development for transfer to industry

**Strategies for good Management in field of Biotechnology**

- a. Management of labor, raw materials and electricity.
- b. Gathering, analysis and dissemination of existing information with experts.
- c. Controlled production with good manufacturing practices.

- d. Support the development, implementation and communication of transparent, science based policies.
- e. Maintaining quality of the product.
- f. Technical & Managerial skills
- g. Development of scientific and technological capabilities in the field of agricultural
- h. Biotechnology with regional strategies
- I. Attracting talent to life science and biotechnology
- j. Funding - Finance & Subsidies
- k. Cooperation among countries and regions, regarding the solution to national and international problems
- l. Extensive Promotion & Support by Government
- m. Strengthening of teaching and R&D in life sciences and biotechnology in the university system
- n. Infrastructure Development and Manufacturing

### Challenges of Biotechnology Marketing

Biotech products like vaccines, biopharmaceuticals, monoclonal antibodies, heterologous proteins are highly expensive. So, marketing of these highly expensive products became challenging. Though the commercial enzymes, bio-fuels, food products are less expensive increased competition in market became challenging. Some health products like vaccines before releasing into the market they should undergo all the phases of clinical trials it take more than 5 years. The releasing of some biotech products like BT Brinjal, some vaccines are challenging in field of biotechnology.

### Challenges of Biotechnology Management

With respect to product the quality and quantity at the production or commercial level is varying when compared to the pilot level? The maintenance of purity of product became challenging because of contamination. The organization if labor, raw materials, energy, employees become challenging. The initiation of biotech organization also become challenging because it has to take ethical permissions, legal entities etc.

### Cost & value of Bio Tech in Marketing

The marketing in biotechnology provides the clear understanding of products to the customer, and provides the variation of the products prices, benefits, demerits with the other existing products existing in market.

### Conclusion

The efficient marketing and management techniques are necessary for the production and release of biotechnology products with cheap cost into their respective markets. New biotech products should be produced by the same company to sustain and facing the competition in the markets. The funding organizations like DST, DBT and UGC should encourage the researchers with the proper funding, ultimately that lead the development of new products and processes. The biotech products vaccines, new drugs are commercially available in market so; there is great need to create awareness in public. The biopesticides, biofertilizers and other biotech products to be preferred instead of chemical pesticides, fertilizers because biotech products are eco friendly and do not create any pollution.

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