

New Product Development – Opportunities and Challenges for Traditional Indian Dairy Products

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India ranks first in milk production as well as consumption in the world accounting for around 17% of the global milk production. India also stands distinct with the lowest milk production cost in the world. The milk revolution in India reveals an exceptional success story as reflected by increased milk production from 17 million tonnes in 1950 – 51 to 135 million tonnes in 2013. It is estimated that the milk production in India will grow at a CAGR of around 4% during 2011-2015 and will reach to milk production of 153 million tonnes by 2020. Indian subcontinent is among the few regions in the world where consumption of milk and milk products is historically imbibed in its culture. The history of Indian milk products is as old as Indian civilization itself. An estimated 50 to 55 % of the milk produced in India is converted into a variety of traditional milk products, using processes such as fermentation, heat and acid coagulation, heat desiccation, fat concentration, and freezing.

Consumers' demands keep on changing over time and new product development must meet consumer expectations and demand. In case of traditional Indian dairy products, these changes range from - improving food safety, improved packaging, increased shelf life, improved nutritional and therapeutic value, palatability and convenience.

New Product Development Process

Product and Process Development (commonly referred to as Product Development) is systematic, commercially oriented research to develop products and processes satisfying a known or suspected consumer need. Product development is a method of industrial research in its own right. It is a combination and application of natural sciences with the social sciences – of food science and processing with marketing and consumer science

– into one type of integrated research whose aim is the development of new products (Winger and Wall, 2006).

Published literature suggests that the product development process can be divided into different stages or phases. The goal of the new product development process is to bring a new product to marketplace with the least amount of uncertainty (Cooper and Kleinschmidt, 1986).

The most widely referenced normative product development models are:

1. Product strategy development
2. Product design and development
3. Product commercialization
4. Product launch and post-launch

Each stage has activities which produce outcomes (information) upon which management decisions are made. In practice, some of the activities performed in the product development process can be truncated, or some stages can be omitted or avoided based on a company's accumulated knowledge and experience (Winger and Wall, 2006).

Whether or not A Product is New?

It is necessary to describe 'newness' in "New Products" at the beginning of the project since the activities, risks, costs and indeed the product development process vary with the type of new product. The designation of a product as new is used to cover a wide range of product changes from major innovations to cost reduction leading to a lower priced product. Newness of a product may be judged differently according to those who perceive it. There are many ways to classify the degree of newness of a product (Table 1).



Table 1 - New Product Categories

Categories	Description
New-to-the-world	Products are innovations to society.
New product lines	Products are new to the company.
Product line extensions	Additions to company's existing product lines.
Product improvements	Replacement of a present product with an improved version.
Product repositioned	Products are targeted for a new use or application and usually a new market segment.
Product cost reductions	Repositioning as a cheaper product, with similar benefits but cheaper costs and therefore lower price.

(Source: Cooper, 1996; Crawford, 1997.)

Critical Steps in New Product Development Process (Wen Huang, 2007)

New product development is a complicated process. The following key elements need to be performed along with a typical project to ensure a successful product.

Developing a Strategic Plan: A strategic plan becomes an important document for a product development team to follow. The strategic plan establishes the vision, mission, values, goals, and the strategy of the organization.

Forming a Cross-Functional Team: A cross-functional team consists of a group of people working toward a common goal and made of people with different functional expertise.

Managing a Project: New product development is a project. It is a temporary endeavor undertaken to create a unique product or service. The duration of a project is the time from its start to its completion. A project contains three elements: mission, objectives, and constraints.

Involving Logistics in the Early Stage of the Development Process: Logistics encompasses the process of procurement, transportation and storage of goods from their source to the customer. It involves purchasing, transportation, materials management, and information management. Effective logistics impacts a product in many ways including packaging, warehousing, physical distribution, transportation, inventory location, forecasting, production planning, and inventory control.

Traditional Indian Dairy Products

In the rural India surplus milk is converted into a variety of traditional products primarily as a means of preservation. These products include curd, ghee, khoa, chhana, paneer, shrikhand and a variety of milk sweets, some of which are now increasingly produced even by the organized sector milk plants. In addition to preservation of milk solids for longer time at room temperature, manufacture of traditional dairy products add value to milk and also provide considerable employment opportunity. It is estimated that about 50% of total milk produced in India is converted into traditional milk products. Traditional dairy products not only have established market in India but also great export potential because of strong presence of Indian diaspora in many parts of the world (Rao and Raju, 2003; Pal and Raju, 2007).

The organized dairy sector has not done much in terms of investments in research and development of innovative dairy products. The product portfolio of the Indian dairy industry has hardly shown any departure from its traditional product base. The exception being some fragmented efforts in promotion of traditional milk products like Curd, Shrikhand, Gulabjamun and Buttermilk in last few years. The inadequacy of these efforts has resulted in widening gap between milk production and sale of milk and milk products (Vaswani, 2005).

Classification of Traditional Indian dairy Products

A variety of traditional milk products are manufactured in India with most of them being



region specific. The classification of traditional dairy products based on the principle of manufacture is given in Table 2.

diversification, export promotion and as value added products to make the modern dairy industry economically strong enabling the milk producer

Table 2 - Classification and Uses of Traditional Milk Products of India

Sr. No.	Principle of Manufacture	Products	Uses
1	Heat desiccation	Khoa Rabri Basundi	Khoa based sweets (Burfi, Peda, Gulabjamun, Kalakand, Milk Cake, Kunda, Thabadi, etc.) Direct consumption Direct consumption
2	Heat and acid coagulation	Chhana Paneer	Chhana based sweets (Rasogolla, Sandesh, Rasamalai, Chhana murki, Cham-cham, etc.) Culinary dishes, Direct consumption
3	Fermentation	Dahi Chakka Misti dahi	Culinary dishes, Direct consumption Shrikhand, Shrikhandvadi Direct consumption
4	Fat concentration	Makkhan Ghee	Direct consumption, Ghee making Culinary purpose, Direct consumption
5	Frozen	Kulfi/Kulfa	Direct consumption
6	Addition of cereals and desiccation	Kheer/Payasam Halvasan Doda Burfi	Direct consumption Direct consumption Direct consumption

(Source: Pal and Raju, 2007)

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Opportunities

Dairy products viz. cheese, butter, ice cream, milk powder, etc. manufactured by the organized dairy sector are reaching near saturation level in current domestic and international markets. In the Indian context, stimulating opportunities seem to arise with regard to development of new products, especially Traditional Indian Dairy Products. India's market potential and current growth rate of traditional dairy products is unmatched and all set to boom further under the technology of mass production.

Indian dairy products have not only served as a cultural link with the modern dairy industry but also provided a technological base for

to benefit from it. The framework also brings out the fact that innovative development of products is governed by number of complex factors and it will be necessary to understand these factors with particular reference to dairy industry in India. There is also need for a unified efforts at the level of industry to communicate the right consumer message on traditional dairy products to enable this product category to compete with other food and beverages.

Challenges

The commercialization aspects of new product introductions or existing products have not been adequately emphasized in the Indian marketplace. Significant investments will be required in understanding consumer behaviour and preferences; new product research and development; technology development and its management and commercialization of new



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products in the market place. The consumer acceptance of new products does not occur overnight but it requires a sustained effort to maintain quality, convenience through easy to handle packages and above all crossing consumer affordability barriers to generate economies of scale. The requirement for convenience and quality will grow with increasing disposable incomes and consumer consciousness for health and balanced diet. However, affordability will remain a critical factor influencing consumption for a large section of Indian consumers in smaller cities, towns and rural areas. These constraints/requirements of the target market will require the dairy industry to respond through appropriate interventions in the areas of quality control, innovative packaging and cost management to keep price affordable to their target markets.

New Business Model for Traditional Products

Two major interventions are required to integrate the organized dairy sector to become an integral part of supply chain for traditional milk products. Firstly, the organized dairy sector undertakes the manufacture of intermediate products on a large scale to supply to the unorganized sector for conversion into variety of ethnic products as per regional preferences of the consumers. Such reconfiguration of the supply chain will not only require introduction of technology for their large scale manufacture but also a second intervention in terms of a business model to expand the demand of traditional products in future and upscale their quality standards (Vaswani, 2005).

Innovations Made in Manufacture of Traditional Indian Dairy Products

The market of conventional indigenous milk products is increasingly getting overcrowded and our future success will depend on our ability to provide innovative products, which consumers want and need. Whatever the innovation – products, processing method or packaging – it should meet the real consumer need. We know today's families want “grab – and – go” convenience. They are also concerned about nutrition and health. Different ages and demographics want different things. Therefore,

investments at this level is essential if we are to respond rapidly to customers who are increasingly demanding new and different taste experiences from products that are competitively priced. Following are the ways by which organization can manufacture wholesome traditional dairy products at competitive prices (Patil, 2006).

- Mechanization of Manufacture of Traditional Dairy Products
- Application of Membrane Technology in Manufacture of Traditional Dairy Products
- Developments in Preservation of Traditional Dairy Products
- Developments in Packaging

Conclusion

Product development does not occur in isolation as a separate functional activity. It is a company philosophy, a basic company strategy and a multifunctional company activity. In recent years to show this all-encompassing basis, bringing together product, process, marketing and organizational innovations, there has been development of an overall innovation strategy. This innovation strategy is related to the company's overall business aims and strategy, as well as the social, economic and technological environment, and the company's own knowledge and skills.

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