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Value Chain Practices in Dairy Industry

Abstract

Dairy activities have traditionally been integral to India's rural economy. India is the world's largest milk producing nation which contributes about 15% of world's total milk production. It is the world's largest consumer of dairy products, consuming almost 100% of its own milk production. Almost its entire produce is consumed in the domestic market and the country is neither an importer nor an exporter, except in a marginal sense. Dairy products are a major source of cheap and nutritious food to millions of people in India and the only acceptable source of animal protein for large vegetarian segment of Indian population, particularly among the landless, small and marginal farmers and women. The Value is something for which consumer is paying money. Any company must have to deliver value in order to sustain in this competitive market. Value Chain Analysis is a process of creating a value in each phase right from processing of material, production, marketing, distribution and retailing. Application of Value Chain Analysis in Dairy Industry is an integrated process where several stakeholders of the Dairy sector such as producer, agent, retailer, processor, exporter and government work together to plan, coordinate and control dairy processing and final products from producers to consumers.

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Keywords: Value Chain Management, Value Chain Analysis, Logistic Management, Dairy products, Dairy processing, Value Addition.

Introduction

India is the largest producer of milk in the world. Despite being the world's largest producer, the dairy sector is by and large in the primitive stage of development and modernization. Dairying in the recent decades has been considered as a vital component in the diversification of agriculture and it has progressively been receiving increased emphasis in the recent years. There is growing realization that promotion of dairying not only contributes towards national health building, but also creates substantial employment opportunities. Dairying has been considered as one of the activities aimed at alleviating the poverty andunemployment especially in the rural areas in the rain-fed and drought-prone regions. In India, about three-fourth of the population live in rural areas and about 38% of them are poor. Therefore among these people, as well as the large vegetarian segment of the country's population, dairy products provide a critical source of nutrition and animal protein to millions of people in India.

Aims and Objectives of the Study

The objective of this study is to find out different Value Chain Management Practices adopted by various dairy producersand to offer recommendations for maximizing profits through Value Chain Analysis practices in Dairy industry.

Meaning of Value Chain Management

The term 'Value Chain' was used by Michael Porter in his book "Competitive Advantage: Creating and Sustaining superior Performance" (1985). The value chain analysis describes the activities the organization performs and links them to the organizations competitive position. The Value is something for which a customer is paying money. Any company must have to deliver value to order to sustain in this competitive market. A **value chain** is a set of activities that a firm operating in a specific industry performs in order to deliver a valuable product or service for the market. According *to* IfM, Cambridge, "The idea of the value chain is based on the process view of organizations, the idea of seeing a manufacturing (or service) organization as a system, made up of subsystems each with inputs, transformation processes and outputs. Inputs, transformation processes, and outputs involve the acquisition and consumption of resources - money, labour, materials, equipment, buildings, land, administration and management. How value chain activities are carried out determines costs and affects profits." In other words Value Chain Management is a process of creating a value in each phase right from the processing of material, production, marketing, distribution and retailing.

Value chain analysis describes the activities within and around an organization, and relates them to an analysis of the competitive strength of the organization. Therefore, it evaluates which value each particular activity adds to the organizations products or services. This idea was built upon the insight that an organization is more than a random compilation of machinery, equipment, people and money. Only if these things are arranged into systems and systematic activates it will become possible to produce something for which customers are willing to pay a price. Porter argues that the ability to perform particular activities and to manage the linkages between these activities is a source of competitive advantage.

Basic Model of Value Chain Analysis

Porter distinguishes between primary activities and support activities. Primary activities are directly concerned with the creation or delivery of a product or service. They can be grouped into five main areas: inbound logistics, operations, outbound logistics, marketing and sales, and service. Each of these primary activities is linked to support activities which help to improve their effectiveness or efficiency. There are four main areas of support activities: procurement, technology development (including R&D), human resource management, and infrastructure (systems for planning, finance, quality, information management etc.)

The basic model of Porters Value Chain is as follows:

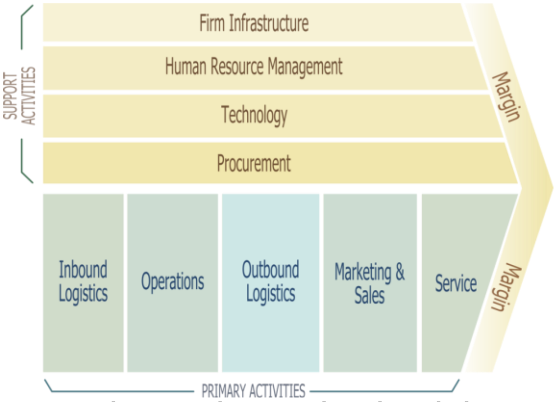

Figure 1. The Generic Value Chain

Basic Model of Value Chain (Michael Porter (1985)The term ‚Margin' implies that organizations realize a profit margin that depends on their ability to manage the linkages between all activities in the value chain. In other words, the organization is able to deliver a product / service for which the customer is willing to pay more than the sum of the costs of all activities in the value chain.

In his book, Porter said a business's activities could be split into two categories: primary activities and support activities. Primary activities include the following:

Inbound logistics

This refers to everything involved in receiving, storing and distributing the raw materials used in the production process.

Operations

This is the stage where raw products are turned into the final product.

Outbound logistics

This is the distribution of the final product to consumers.

Marketing and sales

This stage involves activities like advertising, promotions, sales-force organization, selecting distribution channels, pricing, and managing customer relationships of the final product to ensure it is targeted to the correct consumer groups.

Service

This refers to the activities that are needed to maintain the product's performance after it has been produced. This stage includes things like installation, training, maintenance, repair, warranty and after-sales services.

The support activities help the primary functions and comprise the following:

Procurement

This is how the raw materials for the product are obtained.

Technology Development

Technology can be used across the board in the development of a product, including in the research and development stage, in how new products are developed and designed, and process automation.

Human Resource Management

These are the activities involved in hiring and retaining the proper employees to help design, build and market the product.

Firm Infrastructure

This refers to an organization's structure and its management, planning, accounting, finance and quality-control mechanisms.

Significance of Value Chain Analysis

The application of the value chain can divide a firm’s activities into different items, and this makes it possible that firms see clearly the important variance of effecting costs and compare differences in the unit costs of competing firms in the chain.

1. Value chain management makes the production process and distribution process systematic and qualitative so that the final consumer gets value in terms of right product, right price at right place and right delivery.
2. Value chain management not only delivers value in terms of quality production but it also delivers valuable information about customer satisfaction levels, market, prices, new needs and wants.
3. A big advantage is that the value chain is a very flexible strategy tool for looking at your business, your competitors and the respective places in the industry’s value system.
4. The value chain can be used to diagnose and create competitive advantages on both cost and differentiation.
5. It helps you to understand the organisation issues involved with the promise of making customer value commitments and

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promises because it focuses attention on the activities needed to deliver the value proposition.

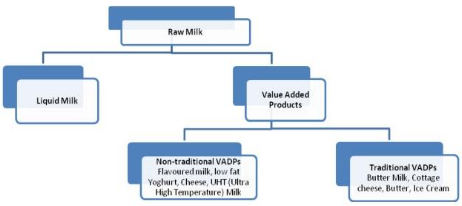
6. Comparing your business model with your competitors using the value chain can give you a much deeper understanding of your strengths and weaknesses to be included in your SWOT Analysis.
7. Efficiency in production is only a necessary condition for successfully penetrating global markets.
8. Entry into global markets, which allows for sustained income growth, requires an understanding of dynamic factors within the whole value chain.
9. With the growing markets, which allows for sustained income growth, requires an understanding of dynamic factors within the whole value chain.

Indian Diary Industry

India is the world leader in milk production with annual output of 130 million tons. It has the largest milk producing animal population of over 118 million. Driven by steady population growth and rising income, milk consumption continues to rise in India.Rising consumption coupled with better margins in the value added dairy products (VADPs) are driving the dairy players to get into the growth and higher profitable trajectory. Change in demographics and rapid urbanization have resulted into manifold surge in the demand for VADPs.

Milk products such as curd which were largely home products are currently available under various brands. Due to convenience, health benefits and increased consumerism, milk derivatives like buttermilk, low fat yogurt and flavored milk are nowadays part of regular consumption.

Categorization of the dairy products:



Traditionally dairy players in India have beenengaged in the liquid milk processing activity only. Backed by operation White Flood in 1970s, the milk industry in India witnessed the first wave of development in the milk production which gave India its status of the largest milk producer in the world.

This was spearheaded by the 'Co-operatives model' which was supported by the GoI. Ownership being with the farmers instilled trust among the member milk producers in the cooperative model, which also ensured transparent returns. In addition, cooperatives also provided various services like cattle vaccination, cattle insurance, artificial insemination, installation of coolers at village level etc to improve productivity.

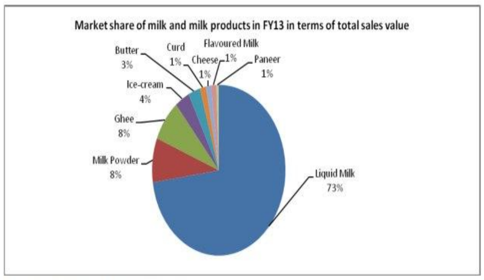
Further, there was minimal involvement of private players in the industry as approximately 80% of the retail price of the liquid milk went back to the farmers leading to low operating margins (4-5%). This was despite the consistent upsurge in the retail prices of the liquid milk. Consequently, the dairy companies were left with insufficient internal funds to plough back into the operations for adoption of modern technologies or development of milk variants.

The above reasons coupled with factors such as evolving tastes and preferences, higher affordability, etc, lead to the entities venturing into the VADP segment for better profitability.

Over the past decade, significant transformation took place in the Indian demographic space which led to heightened consumer interest in VADPs. This shift in the dynamics of the industry proved beneficial for the manufacturers since margins in VADPs are more than double the margins in the liquid milk segment. The profitability in liquid milk space ranges from 4-5%, whereas the profitability in VADPs ranges from12% to 18%, attracting private participation in the industry.

As per the industry estimates, the share of VADP in the milk and milk derivatives segment is growing currently at around 25% every year and is expected to grow at the same rate until 2019-20.

Product innovations are likely to accelerate India's dairy market which is anticipated to improve industry margins by attaining greater scale, higher capacity use and an increasing contribution from new milk variants. Further, the development of processing and packaging technology along with improvement in retail and cold storage infrastructure has increased the shelf life of dairy products.



Source: NDDB and Ministry of Animal Husbandry

Future Prospects

As per NDDB, the Indian dairy industry is all set to experience high growth rates in the next eight years with demand likely to reach 200 million tonnes by 2022 from 132 million tonnes in 2013. Presently, only 20% of the milk production comes from the organized sector comprising co-operatives and private dairies. The paramount factors driving the growth in the dairy sector include rising disposable incomes, advent of nuclear families and fast/instant food gaining ground in India. Other factors such as structural changes in food habits, expansion of fast food chains and popularity of pizzas and pastas aided the usage of milk variants of mozzarella cheese, processed cheese and flavored milk etc.

The Indian dairy industry is chiefly constituted of 22 state milk federations, 110,000 dairy agreeable social orders including more than 12 million milk makers. There are likewise some real private players in the field which further enhanced the dairy area of the nation to be specific: Amul, Britannia, Nestle, Mother dairy and numerous local players, to give some examples. Gujarat Cooperative Milk

Marketing Federation (GCMMF) which showcases Amul brand of milk and dairy items has ascended to the rank of 15 amongst the top dairy associations of the world as per a latest survey by International Farm Comparison Network (IFCN), a main, worldwide dairy knowledge association.

Value Chain Management Practices in Dairy Industry

The steps in value chain in Indian dairy industry are as follows:

1. Supply of inputs for dairying in form of fodder, animal feed plant, veterinary aids for the animal (cattle and buffalos).
2. Milk is taken out from the mulching animal on the daily basis by the dairy farmers (large, medium and small scale farmers).
3. Collection of milk by collection centres (various milk cooperatives societies).
4. Milk collected by the cooperative societies are sent to the dairy plants where chilling of milk, processing and packaging of milk and milk product, transportation of milk and milk product is carried out.
5. The transportation of chilled milk and milk products from one place to another is done through the means of refrigerated vans, or insulated milk tankers vans of private, government and cooperatives societies.
6. Final processed milk and milk products are transported to various retails outlets, supermarkets, and to retails markets from where the processed milk and milk products finally reaches to their end customers.

Issues and Challenges in Value Chain of Dairy Industry

Issues and Challenges at the Procurement stage

1. Meeting seasonal spikes in demand and ability to measure the quality of procured milk at the source.
2. Complex logic of payments to producers based on fat, solid non-fat (SNF) and quality of milk received.
3. Keeping track of truck and tanker routes, as well as capabilities for viewing, monitoring and payment based on route or distance.
4. Visibility into the shelf life and stock-outs of raw material.

Issues and Challenges at the Production and Standardization stage

1. Manual and time-consuming processes for milk standardization calculation, handling production planning based on nonstandard raw material, addressing growing food concerns from consumers.
2. FAT accounting and effective tracking of FAT loss in the production process.

Issues and Challenges at the Small Suppliers' Level

1. Inadequate feeding of animals
2. More disease incidence
3. Low genetic potential of animals
4. Lack of chilling capacities
5. Exploitation of farmers
6. High production costs
7. Delayed payment of dues

Issues and Challenges at Collection location Level

1. Milk base mainly consisting of small holders
2. Involvement of too many intermediaries
3. Gaps in information
4. Absence of a screening system
5. Lack of Infrastructure
6. Manipulation of the quality of milk by the farmers

Issues and Challenges at the Processing stage Level

1. Seasonality of production and fluctuating supply
2. Absence quality standards
3. Adulteration and Food safety
4. Lack of trained and skilled workers

Issues and Challenges at the Storage and Logistics Stage Level

1. Lack of cold storage facilities
2. Gap in the cold chain and transport facilities
3. Issues and Challenges at the Co-operative Level
4. Less number of member farmers
5. Lower participation in the decision making process
6. Losses
7. Low prices of milk
8. Inefficient services
9. Insufficient Infrastructure

Issues and Challenges for Marketing

1. Majority of the Market is still unorganized
2. Acceptability of the Consumer base
3. Less penetration to the rural Market
4. Lack of transparent milk pricing system

Conclusion

Dairy industry is of crucial importance to India. The country is the world's largest milk producer, accounting for more than 13% of world's total milk production. Application of Value Chain Management in Dairy sector will help producers to offer great value with minimum costs. Hence it was proposed to study the application of Value Chain Management in Dairy Sector. According to the National Dairy Development Board, demand for milk is expected to increase at a compound annual growth rate or CAGR of 5% from 138 million tonnes in 2014 to 200 million tonnes in 2022. The move towards value added dairy products, offer higher margins than liquid milk for the Indian Milk Industry. Almost 75-80 % of the Indian dairy market is still unorganized and even in the organized sector, large part of the market is occupied with liquid milk. There is a need for improvement in infrastructure and adoption of new management practices. Dairy has a lot of potential to improve rural incomes, nutrition and women empowerment, and hence is a very critical area for investment. The dairy industry in India has gone through a sea change, transforming itself from import-dependent industry to a self-reliant industry. A well-developed industry will enable millions of farmers to capitalize on the emerging opportunities and make a significant impact on rural incomes. On the flip side, weak efforts towards dairy development also can have a significant but negative impact on the dairy industry. The growth rate has been sluggish over the past few years. With an increase in demand on one hand and sluggish supply on the other, there is a likely shortfall in demand in the coming years. A well-developed industry will enable millions of farmers to capitalize on the emerging opportunities and make a significant impact on rural incomes. On the flip side, weak efforts towards dairy development also can have a significant but negative impact on the dairy industry. The growth rate has been sluggish over the past few years. With an increase in demand on one hand and sluggish supply on the other, there is a likely shortfall in demand in the coming years.

The success of dairy industry revolves around a triangle, viz. procurement, processing and marketing of dairy products. Production is the base on which the edifice of dairy industry stands. Procurement, processing and marketing are the other aspects that need to be strengthened for the healthier growth of the dairy industry to serve the consumers so that economic multiplier effects of dairying are realized. The study has observed that the procurement cost of co-operative dairy societies was higher than of the private milk collection centres due to increased costs of milk processing, transportation, chilling and reception. Value Chain Analysis is one of the Management Strategies that can reduce various costs associated with processing and can improve the quality and productivity/processing of the product, also reduces distribution cost.

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