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COW TO CONSUMER VIA COOPERATIVES AND COMPANY --- QUALITY INITIATIVES FROM ORIGIN TO END CONSUMER – A STUDY IN BANGALORE DAIRY

L. R. S. MANI PROFESSOR ACHARYA'S BANGALORE B SCHOOL BANGALORE

ABSTRACT

Milk is nature's ideal food for infants and growing children in all parts of the world. Milk is a balanced diet and has high nutritive value. Hence the quality initiatives right from the source till it is ready for consumption is of utmost importence. The aim of this study is to explore the entire supply chain of milk from the cow to consumer and the quality measures introduced at each stage. The White Revolution in India in the 1960s saw the increase in the production, productivity and quality of milk. The National Dairy Development Board initiated major policy changes in the dairy sector to achieve self sufficiency in milk production. The Karnataka Milk Federation is on the lines of AMUL in Gujarat. The scope is to cover Bangalore Dairy though there are 13 dairies under KMFL. The research is more exploratory in nature. The primary data is collected from the customers with the help of the questionnaire and also interviewing the personnel at the cooperatives and the dairy. The secondary data is collected from the documents and records of the organization as well as their website. The data collected is analyzed using basic statistical technique. Also covered in this paper is the conceptual framework on Quality and Quality Management Systems. The author concludes that the reasons for higher market share for Nandini -- the brand of KMFL - and also a higher level of customer satisfaction is due to the processes and controls deployed at each stage.

KEYWORDS

Customer Satisfaction, Process, QMS, Quality.

INTRODUCTION

the important place milk occupies in our diet has been recognized since Vedic Times and all the latest research all over the world has only reinforced and strengthened this fact. Milk is now considered not only desirable but an essential intake from the moment the child is born. The National Institution of Nutrition has recommended a minimum of 300 grams intake of milk for children between 1 to 3 years of age. Milk has high nutritive value. It supplies proteins, bone forming minerals, health giving vitamins and fats.

The quality of milk consumed by the children has a direct effect on their physical and mental health. Hence it is very important that controls are effected at each stage i.e. from cow to cooperatives to company to consumer.

Karnataka Milk Federation started in the year 1965 is modeled on the lines of AMUL at Gujarat and their brand Nandini enjoys a higher market share compared to their competitors in Karnataka. A detailed study is made at Bangalore Dairy and some of their milk cooperatives to understand the QMS adopted by them at various stages to ensure timely availability of good quality milk to the consumers across Karnataka and some neighboring states.

LITERATURE REVIEW

The review of existing literature pertaining to the research study enables one to analyze the research carried out in different dimensions. With the help of the same, the gaps in that particular area can be identified.

Kopecky (2008) in his article in Quality Digest details ten steps to creating a culture of quality. These are very much applicable to the food industry as well as the milk dairies. The ten steps detailed by him are as follows.

- 1. Guarantee that processes are controlled across the entire supply chain.
- 2. Create a risk-based system for gauging and ranking suppliers.
- 3. Realize that quality problems always exist.
- 4. Implement proper escalation procedures.
- 5. Determine the root causes of issues in the supply chain.
- 6. Apply effectiveness checks in a closed loop system.
- 7. Ensure companywide corrective and preventive action policies.
- 8. Institute a proper process for customer complaint and inquiry management.
- 9. Adopt the philosophy of Six Sigma with its proven record for continuous improvement and its ability to improve processes by removing defects.

10. To confront these challenges, organizations must create a culture of quality that receives support at the top and permeates the supply chain. Saxena (2008) in his thesis titled Total Quality Management Initiatives in Fluid Milk Industry: A Case Study of Udaipur Dairy talks about the various initiatives

taken by the Udaipur Dairy for implementing TQM and strive towards customer satisfaction. Foong (2006) goes about detailing how to interpret the eight Quality Management Principles to ISO 9001:2000 QMS. All Quality Management Systems are based on eight Quality Management Principles such as Customer Focus, Leadership, Involvement of People, Process Approach, Systems Approach, Continual Improvement, Factual Approach to Decision Making and Mutually Beneficial Supplier Relationships.

Kulkarni (2004) in a case study on AMUL – Gujarat Cooperative Milk Marketing Federation published in a book on Supply Chain Management talks more on the supply chain aspects. In this case study, they have also covered the concepts such as Kaizen, Hoshin Kanri, Small Group Activities etc. Automatic Quality checks at all levels right from collection from the farmers to the manufacturing of the finished product ensures that quality remains standard at all the stages through which the product moves.

Ghatnekars (2000) in an article Quality Management – The need of the hour for dairy industry have mentioned that in the quest for higher quality and more profitability, the dairy business is passing through revolutionary upgradation and that the need for such upgradation has been well realized. Since the dairy industry in India plays an important role in the national economy and also because it is likely to have a major share in exports, it is imperative for the dairy industry to adopt various quality standards.

Gaps Identified In Existing Research – It is observed that there is no detailed and exhaustive study on Quality Management in Milk Dairy covering all stages i.e. from Cow to Consumer. Also there is no detailed research on the customer satisfaction through surveys by collecting data from the users of various dairy products.

MILK SUPPLY CHAIN & MANUFACTURING PROCESS

It is basically a four-tiered structure in which the farmers or individual milk producers organize themselves into dairy cooperative societies at the village level. These village level cooperatives are further organized into district level unions. The individual milk producers and the village level cooperative societies jointly share the responsibilities of animal health, animal feed and their breeding.

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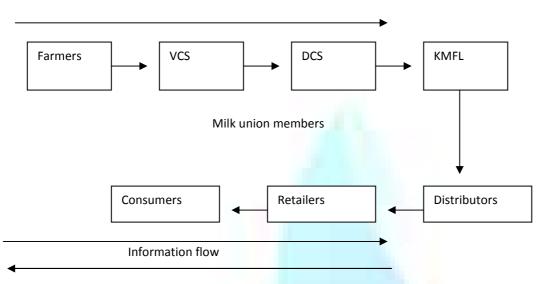
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After the milk is collected at the dairies, they undergo quality checks before they are taken up for processing and packaging. Then they are distributed through the State Milk Marketing Federation and reach the consumers.

The supply chain can be represented diagrammatically as follows:

Milk flow



Some of the features more specific to the supply chain of milk as opposed to the supply chain for engineering products are as follows:

a. The shelf life is very limited. Hence the actions at each stage need to be coordinated very closely.

b. Special refrigerated vehicles are required for the transportations of milk.

c. People in the upstream of the supply chain i.e. the village cooperative members may not be highly educated. Hence need to be treated with more care and personal attention.

d. The time available in the last stage of the supply chain is also limited. Almost all the customers want the supply of milk at the same time.

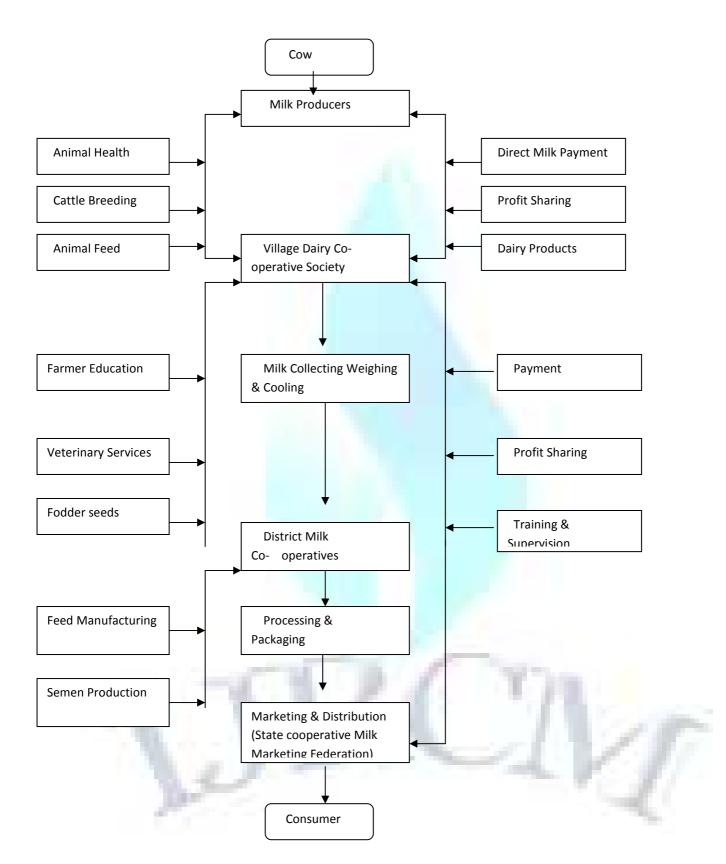
Information flow is in both directions and is an essential part of this supply chain. Also usage of information technology and computers has become a way of life. The computers run the automatic milk collection system, which ensures immediate preparation of milk payment bills, transparency of operations and greater efficiency of milk collection.

The milk is milked from Cow by the farmers and is bought to the Co-Operative Society. The milk is tested for fat content and if it is greater than 3.5% it is accepted and if not it is rejected. Once the milk is collected from the farmers at the Co-operative society collection centers, it is transported to chilling units within 4 hours to prevent it from perishing. It is then transported to Mega Dairy through vehicles, which contains sealed containers. The moment it reaches the main Dairy, the milk is again tested for Fat content and specific gravity. After the testing it is sent to the processing unit where pasteurization, cream separation & rinsing are done simultaneously. Then the milk is sent to packaging unit for packing.

At the processing and packaging stage in the dairy, more automation is introduced which takes care of problems that can arise due to too many manual intervention by the operators. Also Quality assurance measures are introduced at each stage during processing & packaging of milk.



COW TO CONSUMER FLOW CHART



QUALITY MANAGEMENT AT BANGALORE DAIRY

QUALITY CONTROL LABORATORY

The Quality Control Laboratory constantly engages themselves in the development of quality standards and upgradation of the quality standards from time to time for the NANDINI products. The QC lab is also responsible for controlling the quality at various stages. The quality standards are designed to meet the latest quality parameters in the industry.

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The quality control assesses the quality of milk and milk products manufactured by the member milk unions. They ensure the conformity to the required standards and advise on the quality parameters to be achieved.

FOUR STAGE QUALITY CONTROL

Before the Milk is distributed the quality of the Milk is tested four times.

1st Stage:-

The Milk is collected from the villages and then it is sent to the chilling centers. The milk is chilled at 3 to 4 degree Celsius. In these chilling centers the quality of the milk is checked and it is filtered.

2nd Stage:-

The milk is then brought to the Dairy in insulated milk tankers in which a temperature of 3 to 4 degree Celsius is maintained. The quality is then checked in the silos, with each silo having a capacity of 1,00,000 liters.

3rd Stage:-

The milk is then sent for processing, pasteurizing and standardizing. In the pasteurizing process the milk is heated at 70 to 73 degree Celsius to kill the bacteria if any. They use latest technology machinery for pasteurizing, processing and standardizing. 4th Stage:-

After the processing is over the milk is then sent to the packaging department. After the packaging is done they check the final quality of the product before sending it to the suppliers and distributors.

EQUIPMENTS USED IN QUALITY CONTROL

Electronic Milk Control Meter:

- It is used to check the fat content in the milk.
- Lactometer: It is used to check the density of the milk.
- Rinse Balance Tank:

The waste milk is reprocessed in this tank by which the quality is assured.

> Ultra High Temperature Equipment:

It is used to heat the milk at 135 degree Celsius to kill the minute particles or bacteria which cannot be seen with the naked eye. After the milk is heated in this equipment, the milk can be used for a further period of 40 days.

Computerized cleaning

Special technology is used to cleaning the milk tankers and silos.

Cream Separator:

The cream separator is used for separating the cream from the milk for making the butter. In this process, the cream separator removes the dust particles and bacteria which cannot be seen through naked eyes.

ANALYSIS AND INTERPRETATIONS

A sample size of 100 was chosen as a pilot study and a questionnaire got filled up by them. Based on their response, the following observations made:

1. Out of the 100 customers, 79 are buying Nandini mil. Based on this, the market share of Nandini in South Bangalore is approximately 79%.

2. A question was asked regarding the number of times the milk got spoiled at the time of boiling during 2010. Out of the 79 customers, 41 replied that not even once it happened during 2010 and 31 replied that it happened between 1 to 3 times. The remaining 7 customers said that more than 3 occasions they found the milk getting spoiled on boiling. Hence 91% of the customers were satisfied with the freshness and quality of milk.

3. Another question was asked regarding the number of times the polybags containing milk were received in leaking or torn condition. Out of the 79 customers, 43 replied that not even once it happened during 2010 and 29 replied that it happened between 1 to 3 times. The remaining 7 customers said that it happened on more than 3 occasions. Hence 91% of the customers were satisfied with the packing and handling of milk.

4. Another question was asked regarding the date on the polybag being more than a day old on the date of receipt of the milk at their end. Out of the 79 customers, 69 replied that not even once it happened during 2010 and 10 replied that it happened between 1 to 3 times. Hence 87% of the customers were totally satisfied that they were receiving the milk from the latest production batch.

SUGGESTIONS FOR FURTHER IMPROVEMENT

Following suggestions were offered based on the observations at the Dairy.

1. Continuous training and education at the farmer and village cooperative levels.

2. Inculcate the concept of triple role i.e. internal customer, internal supplier & process owner.

3. Adopt the QMS principle "Mutually beneficial supplier relationships" and develop long term relationships with the individual farmers as well as the village cooperatives.

- 4. Educate the farmers on modern cattle rearing methods.
- 5. Help the farmers to get loans from bank to setup satellite farms and purchase cows.
- 6. Monitor and trace the movements of cows with the help of GPS.
- 7. Seek customer feedback actively and incorporate the same in product improvement.

CONCLUSION

The interaction with the customers using a questionnaire and subsequent analysis confirmed the fact that the efforts taken by KMFL to maintain quality and service have really borne fruit in the form of improved customer satisfaction. This is the main reason for their improving their market share.

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