SUMMARY OF
FINDINGS, RECOMMENDATIONS AND CONCLUSION

8.1. Introduction

Various quality initiatives have been undertaken by Karnataka Milk Federation and their thirteen milk unions. It is reflected in the highest market share enjoyed by ‘Nandini’ the brand of KMF. It is also reflected through the consumer satisfaction. KMF has been able to generate employment. In the present study the researcher made a thorough study of the entire process from the individual farmer level to the milk union level, quality measures adopted by the milk unions, supply chain aspects and the consumer satisfaction levels. The researcher collected data both from the milk unions as well as the end consumers. The present study covered six out of the thirteen milk unions under KMF. A sample of 3110 milk consumers in the six cities of Karnataka covering different socio economic background were interviewed to study their age, income, gender, family size and daily milk consumption and their satisfaction level on various items. The data collected was processed using statistical tools. In this chapter, researcher recapitulates the major findings and proposes certain suggestions for further improvement.
8.2. Findings of the study – Based on Secondary data

1. A single commodity ‘Milk’ has acted as a catalyst in the change in the socio-economic impact of the rural economy.

2. India is the largest producer of milk in the world, yet not the largest in terms of per capita consumption.

3. India is the largest producer of milk in the world, yet not the largest producer of milk products like chocolates.

4. The number of dairy cooperatives in India has increased more than 11 times from 13,284 in 1980-81 to 148,965 in 2011-12.

5. The number of dairy cooperatives in Karnataka has increased more than 10 times from 1267 in 1980-81 to 12925 in 2011-12.

6. The milk procurement in thousand kilograms per day in India has increased more than 11 times from 2562 in 1980-81 to 28706 in 2011-12.

7. The milk procurement in thousand kilograms per day in Karnataka has increased more than 16 times from 261 in 1908-81 to 4277 in 2011-12.

8. All the dairy plants under KMF are completely computerized and fully automated in their operations that help in maintaining the hygiene.

9. The brand recall for Nandini is very high amongst most consumers in both the rural and urban areas.

10. KMF have gone in for backward integration. They have established their own Cattle Feed Plant for manufacturing the cattle feed. In order to overcome the inconsistency in both delivery and quality of the milk packing film by their suppliers, KMF established a Pouch Film Plant.
11. KMF have set up their own Sperm Station which is engaged in production and supply of superior quality frozen semen to all the cooperative societies through the milk unions under Karnataka Milk Federation.

12. KMF has established their own Central Training Institute to impart training in different fields to the employees of milk producers who are members of the primary dairy societies.

13. KMF launched a special programme named ‘Support to Employment Programme for Women’ (STEP) towards attaining overall development of womenfolk in rural areas. The main objectives of this programme are training for the necessary skills and subsequently provide employment for women through a variety of action projects.

14. The key success factors for KMF are Quality Maintenance and High Volumes.

**8.3. Findings of the Study – Based on Primary Data**

1. Four stage Quality Control is practiced by all the milk unions under KMF.

2. All the Milk Unions have their independent Quality Control Laboratory which is responsible for controlling the quality at various stages. The QC lab also engages themselves in the development of quality standards and upgradation of quality standards from time to time for controlling the quality at various stages.

3. Out of 3110 respondents who were administered the questionnaire, 61 per cent were males and 39 per cent were females.

4. Most of the respondents i.e. 74 per cent were in the age group of 21 to 40 years. It is more or less in line with the Indian population statistics.

5. As regards family size, majority i.e. 52 per cent had either three or four members in their family.
6. Overall market share of Nandini is 75 per cent. The market share of Nandini in Mandya is 90 per cent, in Bijapur also 90 per cent and in Mysore it is 86 per cent. The market share of Nandini in Bangalore is 72 per cent. This is probably due to the influence of neighboring states like Andhra Pradesh and Tamil Nadu whose borders are not too far away from Bangalore. Similarly, the relatively lower share of 66 per cent in Dharwad and 60 per cent in Belgaum can be attributed to their closeness to Maharashtra.

7. As regards the variant of milk consumed, it is observed that 50 per cent of the consumers preferred Homogenized Toned Milk. This explains the fact that most consumers are health conscious as well as price sensitive. Homogenized Toned Milk is in the middle as regards price with Sambrudi 6% and Full Cream Milk costlier than this and Toned Milk and Double Toned Milk cheaper than Homogenized Toned Milk.

8. Majority of the consumer’s i.e 50 per cent buy around 2 litres per day followed by 18 per cent who buy around 3 litres per day.

9. Door delivery by the agent is the most preferred mode of buying at 38 per cent and those who buy from nearby convenience stores is 24 per cent.

10. Cronbach’s Alpha reliability test has shown that the instruments are reliable for the given study.

11. The thirteen attributes such as Consistency in taste, Freshness of high order with no stale smell, Consistent delivery time etc have all shown extraction figures above 0.54. This shows a positive correlation between the attributes and overall satisfaction.

12. The thirteen attributes mean value on a scale of 1 to 7 ranges from 4.80 to 5.51 and the standard deviation varies between 1.59 and 2.10. Again it shows a positive correlation
between the attributes and overall satisfaction. The least rating of 4.80 mean values is for the factor ‘Shelf Life’. The date on the poly bag most of the time is the same as the date on which it is bought or delivered.

13. The overall experience with Nandini shows a mean value of 5.46 and standard deviation 1.61. This shows that majority of customers are happy with the Nandini brand.

14. The study reveals that there is association between brand currently being used and the influence of place on the brand choice.

15. There is association between brand currently being used and the household income on the brand choice.

16. The family size also has association with brand currently being used.

17. The gender has no association with the factors such as value for money, health oriented, quantity and quality considerations etc. Both males and females are looking for the same characteristics in milk and their overall satisfaction with respect to the variables is the same.

18. All consumers irrespective of gender, age, income etc are looking for ‘value for money’. It is observed that value for money has higher relation with respect to the dependent variable in comparison with other independent variables.

19. The overall experience with respect to variant of milk has no significance. It is clear that the customers prefer a particular variant of milk and they buy the same. The variant of milk is not affecting the overall customer experience.
20. The customers preferring any other new variety of milk if launched by KMF has no relation with gender, age, income group etc. The customers do not seem to have a clear opinion on this at present.

8.4. Recommendations

Based on the research findings, the researcher is ready with recommendations which he has divided into three parts viz. Policy Recommendations, General Recommendations, Specific Recommendations.

8.4.1. Policy Recommendations

Based on primary data and secondary data findings, the researcher strongly recommends Karnataka Milk Federation to adopt improvement in three major areas which are as follows:

1. Private sector collaboration with Government departments is recommended wherein the expertise of both sectors can be leveraged to the advantage of all stakeholders. PPP is a type of collaboration between the public and private sector where the partners join together from the planning stage through the implementation stage. The partners jointly plan and execute various activities with an agenda of accomplishing certain objectives such as delivering consistently to the consumers appropriate quality of milk at affordable and reasonable price at the right time and right place while sharing the costs, benefits and risks.

2. Improvement in the utilization of various resources is suggested in the following ways:
(a). Continuous training and education at the lowest levels i.e. village cooperatives and individual farmers.

(b). Adoption of World Class Manufacturing Practices in all their milk unions.

(c.) Strengthen the supply chain through introduction of cold chains in almost all the stages till the milk reaches the end consumer.

8.4.2. General Recommendations

1. This study recommends that Karnataka Milk Federation identify few executives who are desirous of bringing about drastic changes and send them on a study tour to countries like Denmark, France, and New Zealand and study the practices adopted by them. The executives can then identify the areas of Benchmarking and prepare an action plan with a definite time frame.

2. KMF should centrally drive innovation initiatives. This is the most opportune time for milk processors to invest in all the Ps – Product, Process, Package and Promotion.

3. Wide use of ICT based tools is recommended so that information is provided at each stage of clean milk production and on prices to the dairy farmers.
8.4.3 Specific Recommendations

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

Most respondents opined that KMF needs to concentrate on improving their supply chain. At every stage of the supply chain, everyone has to play a triple role i.e. that of internal customer, internal supplier & process owner. Everyone should determine who their internal customer is, find out their requirements, make efforts to fulfill the requirements and finally get feedback as to whether there are any gaps between the requirements and the delivery. Similarly, everyone should find out who their internal supplier is, state clearly the requirements and give feedback as to whether there are any gaps between the requirements and the delivery. Also, they should take complete ownership of the activities performed by them and make an attempt to optimize the operations at their level.

By ensuring productivity, quality, speed and response at all the levels and stages in the supply chain, they can improve the overall performance of the supply chain and make it more customer-focused and customer-friendly. The business process ownership concept should be deeply entrenched not only in the employees but also in the wholesalers and retailers so that they all work together and actively participate to contribute their bit to the success of the overall supply chain.
2. Adopt Gap Model of Service Quality

Majority of respondents also felt that KMF can put more efforts to understand the requirements of their customers. A Gap Model has been developed by Parasuraman and others for analyzing the Gaps in service delivery. The first gap is between the customer requirement and understanding of the manufacturer / service provider about the customer requirement. The second gap occurs between the manufacturer/service provider’s understanding of the customer requirement and the specifications laid down for service delivery. The third gap is between the specifications and the actual service delivery execution. The fourth gap is between the actual service delivery and the customer’s perceptions of service delivery. The fifth gap is between the communication to the customers and the actual service delivery. KMF can pick up at random some of the dairies and the customers served by those dairies and conduct this gap analysis. This exercise will reveal the major gap areas and they can initiate corrective action based on the same.

3. Implementation of Cold Chain along the entire Supply Chain

More than 70 percent of the respondents felt that they are not able to store the milk in the refrigerator for more than one day. The milk needs to be maintained at the same temperature till it reaches the end consumer. Where the volumes are low and do not justify provision of a refrigerated vehicle, they can transport in refrigerated containers placed inside small pick up vehicles. KMF can also provide specially made refrigerators for storage of milk at the dealer points and the sub-dealer points.
4. **Faster rotation of funds through speedy delivery**

One of the key processes critical to the success of KMF business is timely delivery of milk and milk products across all the units in the supply chain. The distributor remits funds in advance for the material required by them. Hence, the greater the speed of delivery, the faster is the rotation of funds by the distributor and the higher is their return. An optimal route can be worked out for the delivery to the distributors/agents and small vehicles could be bought by a group of agents. For this purpose, the funding could either be made or arranged by KMF.

5. **Branding and advertising of the product**

Some of the respondents also felt that the awareness levels of consumers in some of the rural areas is low. One of the reasons for the success of Amul products is the extremely innovative campaign “Utterly Butterly Girl” which ran for over three decades and created a strong brand recall amongst the customers. KMF should encourage their distributors / agents / bulk consumers / employees to come forward with a proposal for an innovative campaign. They should then involve one reputed advertising agency and carry forward the campaign initially in Karnataka and subsequently in the neighboring states like Maharashtra, Andhra Pradesh and Goa.

6. **Quality checks for service delivery**

Bangalore Milk Union and most of the other milk unions of KMF currently have in place a reasonably good system for quality checks of their products at various stages. They should now concentrate on the quality checks at various stages for the service delivery. For this purpose, they can setup Quality Circles for their cooperatives and the
agents and ensure they meet at least once every month to discuss and improve the service delivery process. They can define the dimensions for service quality such as Response, Assurance, Tangibles, Empathy and Reliability. They should then allot different weightage for different factors. The status against these should be reviewed on periodic basis and initiate corrective actions based on the same which will go a long way towards improvement in the service delivery process.

7. **Adopt world class manufacturing practices such as Kaizen, Hoshin Kanri etc**

Kaizen in Japanese means continuous improvement for betterment. The Kaizen strategy begins and ends with people. By implementing Kaizen, an involved leadership can guide the employees to continuously improve their ability to meet expectations of high quality, on time delivery and low cost. One separate room called “Kaizen Room” could be installed in their Works where the employees could meet in an atmosphere conducive to generation of thoughts, ideas and suggestions. This room should be provided with various aids such as white boards, overhead projectors, LCD projectors, computer terminals etc. Preferably this room should not have any telephone connection and the employees should be asked to keep their cell phones outside so that there is no disturbance during the discussions.

Hoshin Kanri is a system of forms and rules that encourage employees to analyze situations, create plans for improvement, conduct performance checks, and take appropriate action. In practical application, however, it is much more than forms and rules. Hoshin is a philosophy of management. KMF should conduct Hoshin Kanri workshops for all its departmental heads and branch manager to share their vision, mission and goals and to develop and review action plans.
8. **Adopt the QMS principle “Mutually beneficial supplier relationships”**

One of the eight quality management principles talks about mutually beneficial supplier relationships i.e. long term partnership with the suppliers and dealers. KMF should encourage their suppliers i.e. the farmers, village cooperatives and district cooperatives as well as their dealers i.e. the wholesalers, retailers and agents to associate with them on long term basis. This helps not only in improving relationships but also in the overall understanding of each others’ processes. This also helps in imbibing a sense of belongingness among the suppliers and the wholesalers. KMF could think of certain additional incentives proportional to the number of years their suppliers and agents continue to be a part of their family.

9. **Adopt the famous Japanese “Five S” principles**

Most of the milk unions studied by the researcher have lot of scope in improving their housekeeping. They should recognize the importance of housekeeping and implement the Japanese system of Five S initially in their plants and subsequently in their member establishments. The Five S philosophy consisting of Seiri, Seiton, Seiso, Seiketsu and Shitsuke focuses on effective workplace organization and standardized work procedures. The adoption of Five S also simplifies work environment, improves safe working conditions, minimizes the non value added activities and reduces wastes. This will contribute to improving quality, efficiency, productivity items and safety norms.
10. **Change management to be implemented across the organization**

   It is imperative to bring about a total mindset change in the employees at all levels of the organization. There is a lot to be done towards improving the housekeeping and also increasing the productivity levels. KMF can address this issue in two ways. They can try to bring about the change by handing over that responsibility either to the internal team or by appointing an outside consultancy organization for this purpose.

11. **Encourage team work for improvement**

   The better way to do this is to select a cross functional team who believe that improvement is necessary and possible to bring about total change in their working towards customer satisfaction. The team can then visit Amul plant and / or other similar plants in the country to study the best practices adopted by them. Based on the same, they should prepare a Blue Print for Benchmarking against these plants. A detailed action plan should then be worked out by the same team clearly indicating the actions to be taken, the responsible person and the target dates. Then it becomes the total responsibility of this team to bring about the improvements in the organization. To do so, they should also specify in advance the measurement items which could show improved results over the period. A constant monitoring, measurement and control measures by this team over the period will definitely result in improved performance.

12. **Optimal use of technology including wireless sets for communication**

   KMF can think of using wireless sets to communicate with the farmers and veterinary doctors. Timely intervention of veterinary doctors can result in overall improved health of the cattle stock even in the remote villages.
13. Breeding and cross breeding of animals for better milk production

The breed of the animal has a direct correlation with the quantity and the quality of milk produced by that animal. This process helps not only in increasing the yield but more importantly quality yield. The quality and quantity of raw material is directly proportional and determines the quality and quantity of the finished product. Artificial Insemination is one of the best methods of improving the breed of the animal.

14. Seek customer feedback actively and incorporate the same in product improvement

KMF should design a customer feedback system and get regular feedback from the customers by being very open and responsive to them. After the feedback is obtained, a proper analysis should be made and workout the improvement actions. They should then take timely actions for implementing the envisaged improvements and incorporate the same in improving the products. KMF can then monitor at constant intervals the customer satisfaction levels.

15. Promotion of the SBU concept

KMF should try to promote the concept of Strategic Business Unit within their plants as well as at the village cooperatives and district cooperatives levels. They can help them to clarify the purpose, goals and objectives for each of these units. At the end of the day, two most important and overriding objectives for any unit or organization are the customer satisfaction and profitability. All the smaller units should be trained in Self Management Leadership. Again all of them should
be trained to keep proper records of the income and expenditure so that a P&amp;L statement can be prepared for each unit.

16. **Discharge the responsibility to society**

   As part of their Corporate Social Responsibility, they should endeavor towards improving the quality of life of the citizens in the villages from where they are procuring the milk. This could be done in many ways, such as, building better roads, starting primary and secondary schools, starting shuttle services from the villages to the nearest semi-urban areas etc. This will also benefit them indirectly.

17. **Marketing the organization at national level**

   After effecting the various improvements, they should also try to improve their image at the national level through different awareness programmes. It is not enough to change, work hard and effect improvements. It is equally important to project the achievements and showcase the same to the concerned at the national level. By doing so, KMF can try to run neck to neck with Amul.

18. **Spread TQM philosophy at all levels**

   In order to eliminate the root cause for disruptions in quality, there is lot of scope for taking TQM process to the farmers and involve them in the process of continuous improvement. Most organizations are implementing quality and other best practices within their organizations. Still better they could do is to take and propagate these practices to all others involved in the supply chain. In short they can involve everyone connected directly or indirectly with KMF in the whole process of implementing TQM
and other best practices. For this purpose, it is suggested that KMF should constitute a team consisting of experts from their various processes who could visit the farmers, village cooperatives, district cooperatives and the consumers on regular periodic basis. Based on the feedback from the consumers and their observations at different levels, they can design and initiate various programs to be implemented by all the channel members in the supply chain.

19. Cost reduction efforts

Most of the respondents felt that KMF should not increase the price of milk for the next few years. Karnataka Milk Federation has been effecting increase in the price of their milk from time to time. Though the increase looks justified in view of the increases in input costs as well as increase in their wage bill, it is still possible for them to study in detail the various costs incurred by them. They can try and adopt Activity Based Costing (ABC) in order to identify the various overheads pertaining to the activities and then make efforts to reduce the costs. If they are able to maintain their price for a longer period of time, they can continue to enjoy their market share.

8.5. Conclusion

The research work on Quality Management in KMF milk unions and the consumer satisfaction of Nandini milk consumers in Karnataka has given me a great opportunity to understand the Indian White Revolution in detail, the developments in this sector over the last three decades and also the efforts taken by KMF to maintain quality and win the hearts of the households in Karnataka with their Nandini products. This has also given me an opportunity to interact
with the customers to get a first hand personal account of the quality and service
offered by KMF agents. The interaction with the customers using a schedule and
subsequent analysis confirmed the fact that the efforts taken by KMF to maintain
quality and service have really borne fruit in the form of improved customer
satisfaction.

The quality system implementation like ISO 9001 and food safety
standards implementation like HACCP and ISO 22001 have become a must for
milk dairies and such other industries. Bangalore dairy is certified for both the
above standards and I could go into detail the efforts taken by Bangalore Dairy to
achieve these certifications and continue to maintain the same. Other milk dairies
under KMF should also emulate the efforts of Bangalore dairy and go in for ISO
9001, ISO 14001 and ISO 22001 certifications.

Karnataka Milk Federation has no doubt done a great job to reach this
stage. They have now grown big and a certain amount of complacency has set in.
It is time for them to relook at their working at all levels and make efforts to
further improve on quality, productivity, cost reduction and customer service.