CHAPTER VI
FACTORS AFFECTING PROFITABILITY-4
-MARKETING OF MILK AND MILK PRODUCTS

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Introduction

Milk is an agricultural produce and milk—raw or processed—and its products are mainly consumer goods. Modern marketing of any consumer or industrial product is a very comprehensive function which includes all business activities to determine the needs and wants of customers, develop new markets, aid in product development, estimate potentials, forecast, and aid in production planning; to operate a marketing organisation, determine marketing strategy, select channels of distribution, inform and motivate customers, price, sell, and provide marketing services including order entry, customer financing, credit and collection, and both customer and product services; to provide for physical distribution, including packaging, transportation, field warehousing of finished goods, and delivery; to contribute to overall corporate planning and to plan and control this entire operation.¹

A properly planned marketing system is a pre-requisite for the operation and profitability of DDCs. Marketing of dairy produce like milk and milk products involves, in its simplest form, the selling and buying

¹ B-34 : p. 11.
of milk and milk products. The main characteristics of dairy products, vis., their bulkiness and perishability make the marketing of dairy products very complex and demand for quick transport and specific containers. Wide variations in the quantity of milk produced in the lean and flush seasons further adds to the complexity of marketing dairy products.

A continuous flow of finished products to the reach of the customers is to be maintained at reasonable price and quality. Strategy to have an enduring business in the competitive market, fetching reasonable margin to the overall turnover of a dairy plant is to be worked out. When working out this strategy for a three-tier co-operative system, it is essential to take into account the producers at one end to guarantee a remunerative return for their milk and the consumers of varied income-groups at the other end to supply them with good quality commodity at reasonable price. This can effectively be managed only by weaning out the intermediate agencies on both the sides.

Marketing Situation

Efficient organisation and management of the marketing of milk and milk products require development of suitable systems for procurement, processing and sale of
fluid milk and milk products.  

In order to make proper plans for management in each sphere mentioned, consideration needs to be given to the supply-demand situation, consumption of milk and milk products keeping in view the consumer preferences.

Current supply-demand situation: Diagram VI.1 presents India's milk production and per capita availability from which it can be seen that the milk production has increased from 20375 thousand tonnes in 1961 to 29719 thousand tonnes in 1979-80. However, the increased production lagged behind the rate of growth of human population. According to an estimate increase in milk production is taking place at the rate of 2 per cent per annum but the increase in its demand is rising at the rate of nearly 5 per cent. Consequently, the daily per capital availability of milk averages only 120 grams as against the recommended allowance of 260 grams of milk/head/day required to meet the minimum nutritional needs in the diet of an average vegetarian. Moreover, wide variations existed in

2. The system of procurement and processing have been discussed at length in Chapters III and IV respectively.


5. As per the recommendations of the Nutritional Advisory Committee of the Indian Council of Medical Research.
DIAGRAM VI. 1.3

India's Milk Production and Per Capita Availability

Milk production (000 tonnes)

Per capita availability (gms/day)


the per capita availability of milk in different states of our country, which can be judged from the data in regard to the state-wise distribution of the estimated milk production, population and per capita availability for the year 1979-80 presented in Table VI.1

If the trend in the rate of population growth continues, despite increased milk production, milk may become a rare item of our food. According to an estimate on demand projections, the annual demand for milk and milk products is expected to range between 33.77 million tonnes (low) and 44.17 million tonnes (high) by 1985 and 49.36 (low) and 64.40 (high) million tonnes by 2000 A.D.7 The problem of everrising demand for milk and milk products can be eased by improving the yield of our milk animals. Further, regional and seasonal imbalances in supply-demand add a new dimension to the problem.

The organised dairy sector should keep pace with the growing market demand for milk and milk products and should aim at meeting not only the demands of fluid milk but also of traditional and non-traditional milk products.

<table>
<thead>
<tr>
<th>No.</th>
<th>Territory</th>
<th>Production (in 1000 tonnes)</th>
<th>Population (in million)</th>
<th>Per capita availability (in Gm/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Andhra Pradesh</td>
<td>1802 (6.1)</td>
<td>50 (7.8)</td>
<td>99</td>
</tr>
<tr>
<td>2</td>
<td>Assam</td>
<td>460 (1.5)</td>
<td>19 (3.0)</td>
<td>66</td>
</tr>
<tr>
<td>3</td>
<td>Bihar</td>
<td>1926 (6.5)</td>
<td>64 (10.0)</td>
<td>83</td>
</tr>
<tr>
<td>4</td>
<td>Gujarat</td>
<td>2186 (7.4)</td>
<td>32 (5.0)</td>
<td>187</td>
</tr>
<tr>
<td>5</td>
<td>Haryana</td>
<td>1950 (6.6)</td>
<td>12 (1.9)</td>
<td>445</td>
</tr>
<tr>
<td>6</td>
<td>Himachal Pradesh</td>
<td>304 (1.0)</td>
<td>4 (0.6)</td>
<td>208</td>
</tr>
<tr>
<td>7</td>
<td>Kerala</td>
<td>854 (2.9)</td>
<td>23 (3.9)</td>
<td>94</td>
</tr>
<tr>
<td>8</td>
<td>Karnataka</td>
<td>1573 (4.6)</td>
<td>34 (5.3)</td>
<td>111</td>
</tr>
<tr>
<td>9</td>
<td>Maharashtra</td>
<td>1506 (5.1)</td>
<td>60 (9.4)</td>
<td>69</td>
</tr>
<tr>
<td>10</td>
<td>Punjab</td>
<td>3059 (10.3)</td>
<td>16 (2.5)</td>
<td>524</td>
</tr>
<tr>
<td>11</td>
<td>Orissa</td>
<td>250 (0.8)</td>
<td>26 (4.1)</td>
<td>26</td>
</tr>
<tr>
<td>12</td>
<td>Rajasthan</td>
<td>2995 (10.1)</td>
<td>31 (4.8)</td>
<td>265</td>
</tr>
<tr>
<td>13</td>
<td>Tamil Nadu</td>
<td>1860 (6.3)</td>
<td>47 (7.3)</td>
<td>108</td>
</tr>
<tr>
<td>14</td>
<td>Uttar Pradesh</td>
<td>5780 (19.4)</td>
<td>100 (15.6)</td>
<td>158</td>
</tr>
<tr>
<td>15</td>
<td>Jammu &amp; Kashmir</td>
<td>279 (0.9)</td>
<td>5 (0.8)</td>
<td>153</td>
</tr>
<tr>
<td>16</td>
<td>Madhya Pradesh</td>
<td>1850 (6.2)</td>
<td>50 (7.8)</td>
<td>101</td>
</tr>
<tr>
<td>17</td>
<td>West Bengal</td>
<td>870 (2.9)</td>
<td>53 (8.3)</td>
<td>45</td>
</tr>
<tr>
<td>18</td>
<td>Nagaland</td>
<td>3 *</td>
<td>1 (0.2)</td>
<td>8</td>
</tr>
<tr>
<td>19</td>
<td>Tripura</td>
<td>15 (0.1)</td>
<td>2 (0.3)</td>
<td>21</td>
</tr>
<tr>
<td>20</td>
<td>Meghalaya</td>
<td>54 (0.2)</td>
<td>1 (0.2)</td>
<td>148</td>
</tr>
<tr>
<td>21</td>
<td>Manipur</td>
<td>58 (0.2)</td>
<td>1 (0.2)</td>
<td>159</td>
</tr>
<tr>
<td>22</td>
<td>Sikkim</td>
<td>16 (0.1)</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>23</td>
<td>Union Territories</td>
<td>263 (0.9)</td>
<td>8 (1.2)</td>
<td>90</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>29719 (100)</td>
<td>669 (100)</td>
<td>122</td>
</tr>
</tbody>
</table>

Note: Bracketed figures indicate percentage share in the total
* = Negligible

6. E.11: p.3.
Consumer preferences: Consumer preferences for milk and milk products differ within and between regions as they are largely determined by food habits, cooking customs and level of income of the ultimate consumers. Other consumer preferences relate to convenience of home delivery, assurance of purity and cleanliness. According to income, consumers readily pay for these preferences. In the case of ready made milk products other considerations like taste, flavour, and texture materially influence consumer preferences.

Consumer satisfaction is a cardinal principle of marketing. The DDCs should make constant endeavour, subject to techno-economic feasibility, to satisfy consumer preferences. Marketing systems for milk and milk products may be developed keeping in view regional and group preferences of customers. One of the main requirements of successful marketing is the total consumer acceptance which can only be ensured by offering products of the acceptable quality standards.

Well-organised and improved marketing increases the economic value of the dairy produce by increasing consumer satisfaction just by providing the produce of form, time and location utilities most pleasing to the consumer.
Liquid Milk Marketing by DDCs

Market for liquid milk is the real foundation of the dairy industry because it is the producers' most remunerative market. In India, where milk production would not become sufficient for many years to come, potentialities of liquid milk market is enormous. Moreover, in India the percentage of utilisation of milk in fluid form is on the increase which can be seen from the Table VI.2. Nearly 45 per cent of the total milk production in the country is utilised in the fluid form.

Liquid milk marketing is quite different from the marketing of milk products. The main difference being the short shelf life of liquid milk.

The DDCs of Gujarat market their liquid milk mostly directly in towns within their respective district. The sale of liquid milk of member unions of the GCMMF outside their respective district is organised through the GCMMF. The GCMMF tries to balance the milk requirement of member unions during the different seasons to meet the consumers' demand for milk throughout the year. This helps the member unions to maintain their supplies of liquid milk even during the lean season, inspite of constraints of uneven seasonal fluctuations in production.
TABLE VI.2

Changing Pattern of Milk Utilisation in India

<table>
<thead>
<tr>
<th>Year</th>
<th>Milk</th>
<th>Ghee</th>
<th>Butter</th>
<th>Dahi</th>
<th>Khoya</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
</tr>
<tr>
<td>1940</td>
<td>28.0</td>
<td>57.0</td>
<td>1.7</td>
<td>5.2</td>
<td>3.7</td>
<td>4.4</td>
</tr>
<tr>
<td>1951</td>
<td>36.2</td>
<td>43.3</td>
<td>6.3</td>
<td>9.1</td>
<td>4.1</td>
<td>1.0</td>
</tr>
<tr>
<td>1956</td>
<td>39.1</td>
<td>40.0</td>
<td>6.1</td>
<td>6.8</td>
<td>4.4</td>
<td>1.6</td>
</tr>
<tr>
<td>1961</td>
<td>40.0</td>
<td>39.0</td>
<td>6.0</td>
<td>9.0</td>
<td>5.0</td>
<td>1.0</td>
</tr>
<tr>
<td>1966</td>
<td>44.5</td>
<td>32.7</td>
<td>6.3</td>
<td>7.8</td>
<td>4.9</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Types of liquid milk: The DDOs in Gujarat offer different types of liquid milk for sale keeping in mind the consumers' needs within their districts. As an illustration, in Table VI.3 are presented the production and sale of various kinds of liquid milk by the Surat Union for the period 1968-69 to 1975-76. It depicted that standard pasteurised milk accounted for a very major share vis-à-vis, on an average about 69% of the total liquid milk sale of the Surat Union.

Standardised milk: In our country, prior to the advent of Independence, cow or buffalo milk was mostly sold as untreated milk, which resulted in the quality of milk not

remaining the same throughout the year. Now with the advancement of science and technology and, at times, because of shortage of milk, it has been the practice of standardising the fat and solid non-fat content of milk. Standardisation is usually done downwards. In the flush season when there is plenty of surplus milk available, the surplus fat after standardisation is converted into butter or ghee. In the lean season, when there is shortage of milk, toning is done by the addition of skim milk powder to the available high fat milk or reconstituted milk by using white butter, butter oil and skim milk powder. In the industrially developed countries, standardisation is done by computerised control methods, but in India, we have to do by batch/blending system, mostly manually.

Toned milk: The basic objective of introducing toned milk is three fold. Firstly, to cheapen the milk so that the people of lower income group can afford to buy it. Secondly, to "stretch" the presently available meagre quantity of milk to feed a larger section of the society. Thirdly, to adjust the proportion of fat to non-fatty solids in buffalo milk in such a manner that final product becomes more easily digestible with the result that it becomes more useful to babies, invalids and expectant mothers.
Toned milk is quite a wholesome dairy product. It contains 5.0 per cent fat and a minimum of 8.5 per cent solids not fat; as such it is pretty high in nutritive value. It may be pointed out here that fat contributes only a part of the "sum total nutritive value of milk". It is milk proteins, lactose and minerals which count much from nutritional point of view.

Keeping in view the problem of availability of good quality milk in required quantity and nutritive value of toned milk, augmentation of milk supply through toned milk has been included in our national programmes of dairy development.

Double toned milk : Double toned milk was also introduced for the first time in Bombay. It contains 1.5 per cent fat and 9.0 per cent solids-not-fat. As compared to the toned milk, it is only 12.5 per cent less in its energy value but has a greater protein potentiality in the order of about 17.5 per cent calculated on the basis of solids other than fat in these milks. Double toned milk is much cheaper than toned milk. For instance, 2000 litres of buffalo milk having 6.0 per cent fat can be converted into 8,000 litres of double toned milk having 1.5 per cent fat and 9 per cent solids-not-fat with the help of 6,000 litres of reconstituted milk prepared by using about 600 kgs. of skimmed milk powder.
In Table VI.4 are presented the data regarding the percentage share of milk, milk products and others in the total sales of the DDCs in Gujarat, whose detailed analysis would show the following inferences:

(i) The proportion of liquid milk sales in the total sales was very much uneven over a period of 1961-62 to 1978-79.

(ii) The highest percentage share of liquid milk sale in the total sale of the DDCs of Gujarat was 56.87 in the year 1964-65 and the lowest one was 50.63 in the year 1969-70.

(iii) The average percentage share of liquid milk sale in the total sales of the DDCs of Gujarat for the period 1961-62 to 1978-79 was 59.60.

(iv) Over a period of eighteen years, the share of the liquid milk sale in the total sales of the DDCs of Gujarat declined from 51.60 per cent in the year 1961-62 to 37.97 per cent in 1978-79.
TABLE VI.4

Percentage Share of Sale of Milk, Milk Products and Others in the Total Sales of DCCs in Gujarat Between 1961-62 to 1979-80

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage share of Liquid milk</th>
<th>Percentage share of milk products</th>
<th>Percentage share of others</th>
<th>Total sales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>1961-62</td>
<td>51.60</td>
<td>48.40</td>
<td>-</td>
<td>100.00</td>
</tr>
<tr>
<td>1962-63</td>
<td>51.29</td>
<td>48.71</td>
<td>-</td>
<td>100.00</td>
</tr>
<tr>
<td>1963-64</td>
<td>49.47</td>
<td>50.53</td>
<td>-</td>
<td>100.00</td>
</tr>
<tr>
<td>1964-65</td>
<td>56.87</td>
<td>43.13</td>
<td>-</td>
<td>100.00</td>
</tr>
<tr>
<td>1965-66</td>
<td>40.47</td>
<td>53.45</td>
<td>6.08</td>
<td>100.00</td>
</tr>
<tr>
<td>1966-67</td>
<td>42.51</td>
<td>48.77</td>
<td>6.72</td>
<td>100.00</td>
</tr>
<tr>
<td>1967-68</td>
<td>34.81</td>
<td>56.00</td>
<td>7.19</td>
<td>100.00</td>
</tr>
<tr>
<td>1968-69</td>
<td>30.63</td>
<td>63.00</td>
<td>6.37</td>
<td>100.00</td>
</tr>
<tr>
<td>1969-70</td>
<td>33.09</td>
<td>57.95</td>
<td>8.96</td>
<td>100.00</td>
</tr>
<tr>
<td>1970-71</td>
<td>41.76</td>
<td>51.16</td>
<td>7.08</td>
<td>100.00</td>
</tr>
<tr>
<td>1971-72</td>
<td>38.74</td>
<td>55.70</td>
<td>5.56</td>
<td>100.00</td>
</tr>
<tr>
<td>1972-73</td>
<td>38.06</td>
<td>55.01</td>
<td>7.93</td>
<td>100.00</td>
</tr>
<tr>
<td>1973-74</td>
<td>36.74</td>
<td>52.18</td>
<td>11.08</td>
<td>100.00</td>
</tr>
<tr>
<td>1974-75</td>
<td>35.01</td>
<td>54.93</td>
<td>10.06</td>
<td>100.00</td>
</tr>
<tr>
<td>1975-76</td>
<td>31.64</td>
<td>61.49</td>
<td>6.87</td>
<td>100.00</td>
</tr>
<tr>
<td>1976-77</td>
<td>31.47</td>
<td>59.28</td>
<td>9.25</td>
<td>100.00</td>
</tr>
<tr>
<td>1977-78</td>
<td>34.42</td>
<td>55.79</td>
<td>9.79</td>
<td>100.00</td>
</tr>
<tr>
<td>1978-79</td>
<td>37.97</td>
<td>51.65</td>
<td>10.18</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Average percentage share 39.80 51.98 8.22 100.00

10. Vide foot note No. 17 : Chapter I.
Methods of retail distribution of fluid milk: The DDCs of Gujarat adopt various methods for retail distribution of liquid milk in varying degrees. These methods are briefly discussed hereafter.

Distribution of milk in bottles: Operation of dairy plants in India was organised adopting the conventional processing-cum-packaging-cum-distribution system followed in developed countries. This system requires management of pasteurising plants, bottle washers, bottle fillers, cold stores and distribution vans. More recently the dairies are looking for an alternative to bottling plant, because of several difficulties encountered in the functioning of this system under the prevailing conditions in our country.

The bottling plant requires 40-45 per cent extra floor area for receiving and storing empty bottles, bottle washer and filler, milk storage tank, cold store and bottle despatch dock and additional road area for movement of the truck within the dairy compound. For a dairy handling 10,000 litres of milk per day, the capital cost for construction of building, road, truck, parking is about Rs. 20,50 lakh, and for such equipment as bottle washers, bottle filler, milk storage tank, refrigeration plant for cold store and extended capacity of boiler for
suppling steam, amounting to about Rs. 66.40 lakh.\textsuperscript{11}

It is reported that in India an amount of 25 paise to 60 paise is added to the cost per litre for bottling and dispensing of milk.\textsuperscript{12}

There are number of operational problems in a bottling plant. It requires a large number of labourers for unloading empty bottles, loading them on to the washers, filling and capping, stacking of bottles inside the cold store, loading on to trucks. In bottling there are very critical operational times and areas which require special care. One has to keep a check on all outgoing and incoming bottles and bottle crates, and within the shortest possible time, bottles have to be loaded from cold store to the vans for distribution.

The cost of milk bottles, considerable loss due to breakage of bottles, wastage of aluminum foil, requirement of large number of labourers and vehicles add to the cost of milk for consumers. It also affects the profitability of the dairy plant adversely. Improvement in glass bottles is limited to size, shape and weight.

\textsuperscript{11} B-7 \textsuperscript{1} p.283.

\textsuperscript{12} B-19 \textsuperscript{1} p.363.
Thus, it may not be an ideal system of distribution of milk under the existing conditions. It must, however, be mentioned that bottles are easy to clean, disinfected and cream line is easily visible. Being in packed form, distribution of milk in bottles is easier and comparatively less costly if operated/managed efficiently.

Distribution of milk in cans: A simple and economical form of milk distribution is the system of dispensing milk from a milk can, preferably a dispensing can, into the customers' own vessel. The system works out to be the cheapest in terms of capital as well as running cost. For can distribution only milk cans and transport vans are required. Even a cold store is not essential since the milk can be simultaneously filled and loaded on to trucks in the morning and in the evening for local distribution. The Kaira Union has been successfully distributing in Anand more than 30,000 litres of milk per day in this manner. However, where there is a problem of getting adequate labour, particularly during the early morning hours, it may be necessary to construct a cold store for ever night storage of milk in cans which would marginally add to the capital cost of the project.

The main disadvantages of loose distribution in cans are likely to be unhygienic condition, at the distribution
centre and the ease of adulteration. However, an effective quality control can check both of these problems. If sealed cans are supplied to milk booths and seals are opened in the presence of customers, the chances of adulteration are greatly reduced. By frequent analysis of milk samples taken before despatch and during distribution, adulteration can further be checked and responsibility fixed in cases where adulteration of milk is established. When milk is taken out by a dipper for dispensing, the chances of the fat rising to the top are eliminated. Therefore, the customers getting milk of varying composition are eliminated. To avoid the unhygienic conditions of many distribution booths, the NRDB has developed can dispensers with capacity of 160 litres to 300 litres, in which milk cans are placed either in a refrigerated or in an insulated cabinet and fitted with dispenser which is essentially a positive suction type pump operated either electrically or manually. Contrivance for delivery of measured quantity of milk cans have been developed indigenously. Further studies on the subject of milk dispensing from cans can be intensified.

Distribution of milk in single service containers: In order to solve the difficulties experienced in handling of bottled milk, some of the developed countries have introduced milk packaging in non-returnable containers.
One such non-returnable container is the plastic pouch which is formed from polythene films at the time of milk packaging. This system avoids bottle washing and filling and, therefore, the space required for the purpose and capital costs involved. According to an estimate, the floor space required by a dairy is reduced by 20 per cent than that of the bottling plant and the requirement of such services as steam, water and electricity is lowered. Thus, the capital investment for pouch filling plant is around Rs. 112.35 lakh as against 134.62 lakh for a dairy having 1,00,000 litres capacity.\(^{13}\) The running cost of pouch filling system is higher than that of the bottling plants because pouches are made from low density polythene which is a petroleum derivative.

From the operational point of view, pouch filling has more or less problems similar to those of bottling plant, except that there is no unloading, washing, and checking of empties. Another limitation is that pouch fillers are available only in two sizes, viz., (i) 2,500 pack/hr and (ii) 5000 pack/hr. Therefore, for handling large quantity of milk, a large number of such machines are required in contrast to bottling machinery which is available in capacities upto 24,000 bottles per hour. In other words, a single

\(^{13}\) E-36 i p.290.
bottling plant can pack 10,000 litres of milk per hour as against 2,500 litres per hour for the large pouch filling machine which is a limitation for use in large sized dairies.

Single service containers are steadily being developed and improved for marketing pasteurised milk. The advantages of single service containers as compared to bottles are (1) resistance to tampering, (2) reduction in weight carried by the distribution vehicle, (3) elimination of return of empties or keeping of their records, (4) saving in initial capital, (5) saving in space, (6) less labour, and (7) less cleaning.

The main disadvantages associated with single service containers are (1) higher cost of containers than the bottle, (2) presence of dirt or sediment not clearly visible, (3) visibility of cream line.

The development of the Swedish Tetra-Pack has given new impetus to the single service packing and has been extensively used in developed countries. In India it will be introduced on large scale under OF programme. The Mehsana Union, during the year 1978-79, has commissioned a pouch filling machine on trial basis to fill milk in
polythene bags. Having encouraged by the public response, it has started use of labeled boys for milk distribution.

Distribution of milk in bulk vending: The system of bulk milk vending has recently been introduced in the country by the NDDB. It was first introduced in India at Delhi Mother Dairy. This system has been evolved to eliminate the problems noticed in the operation and management of bottling, pouch filling and can vending systems.

Bulk milk vending is done with use of special tokens which the customers can buy in advance or at the milk vending booth. When tokens are inserted, one at a time, measured quantity of milk is dispensed by the vending machine in consumers' own containers. As the milk remains under chilled condition until it is delivered, the quality is good. Road milk tankers deliver milk to the vending booths reducing greatly the number of distribution vehicles. This system offers the following main advantages.

(1) Cost of milk distribution goes down as milk is not packed.
(2) Milk is available almost any time during the day.
(3) Milk can be got in any quantity.

The milk transportation cost is reduced since road milk tanker can transport 8500 litres of milk from the
dairy to the booths as against 2500 to 3000 litres, for bottles and pouches.

As there is no bottling involved, the requirement of boilers, bottle washing and filling machines, cold storage space, aluminum cap, etc., are all eliminated. The floor space required in the dairy building as well as plant and machines normally required for any other type of distribution system has been totally eliminated. Although the capital costs on vending booths are high, it is reported that it would be more than compensated by reduction in investment costs on bottling lines, cold stores and insulated vans. It is reported by the MDDB that the overall saving compared to bottled milk is about 10 paise per litre. 14 Along with Delhi, this system was introduced in Anand and has recently been extended to other cities like Calcutta, Madras, Bareda, Ahmedabad and Gandhinagar. The Bareda Union possesses four bulk vending machines in addition to three milk bars to ensure milk distribution throughout the day to the milk consumers of Bareda city.

The bulk vending system has not been free from some of the following basic requirements (i) The construction of booths requires wide area/s of land. (ii) Bulk vending

booths can be located only in areas where wide roads are available for the movement of trucks and drainage lines for receiving the tank washings. (iii) Electric power must be available for the booths. (iv) The density of population must be such that 500 to 700 litres can be sold per day from a booth with a 1000 litre tank.

The capital investment, at current prices, of bulk-vending booths works out to be Rs. 139.05 lakh for a dairy of 1,00,000 litres as against the costs of Rs. 134.62 lakh and Rs. 112.35 lakh of the bottling and the pouch filling systems. Thus, the capital investment is higher than that of the other two systems but its running cost is 13.6 paisa per litre as compared to that of bottling at 24.7 paisa per litre and that of pouches at 34.7 paisa per litre. However, bulk milk vending, needs to be tested on a wide scale under different conditions and over a longer period of time for determining the optimal conditions under which it may prove to be the most suitable method for retailing milk in cities.

As an alternative to delivery of milk in bottles, can delivery suggests itself as a suitable system for
adoption under certain conditions, especially because of its simplicity and economy of operation. Milk delivery system with different kinds of milk cans and more particularly with tamper proof sanitary milk cans with devices for delivery of measured quantities, should be given trial on a wider scale, to determine the acceptability of the system to the consumers and convenience and economy of operation of the system. On the basis of the experience gained further research and development in designing and remodelling of the cans can be undertaken. Also, techno-economic feasibility and consumer acceptance studies concerning processing, packaging and delivery of milk should be taken up by the DDCs in collaboration with the NDDB, the NDRI and other institutes having well-developed dairy engineering workshops. Such studies would (i) provide information for determining which system would be most suitable for adoption under a given set of conditions and (ii) facilitate decision making.

Mix of milk marketing method: Chart VI.1 presents the various routes through which milk will reach the consumers in the coming decade. It will be available to the consumer both in packed and loose conditions. Apart from the ordinary pasteurised milk with a shelf life of a
Mix of Milk Marketing Methods

- MILK
  - PACKAGED
    - PASTEURIZED
      - BOTTLES
      - SACHETS
        - ASEP (Tetra Pck)
  - BULK
    - THRO' MINI DAIRIES
      - CANS etc.

few hours, aseptic milk with a shelf life of about a fortnight will also be available in laminated paper packaging known commonly as Tetra-Pak. During the year 1979-80 the Surat Union with the co-operation of IDC, have started, under OF II, the construction work for the Tetra pack plant (the first of its kind in India) for milk packaging, at an estimated cost of Rs. 2 crore. Because of this revolutionary process, there will be change in the conventional method of marketing milk and it would be possible to provide better services to the milk consumers.

**Milk marketing systems and costs:** In Chart VI.2 are presented the various processes involved and their attendant costs of different methods of liquid milk marketing from the rural producer to the urban consumer. The Indian markets have experienced practically all the methods of distribution except Tetra pack. The chart clearly depicts that bulk vending system is the cheaper method than the rest of the three systems, viz., bottle, sachet and Tetra pack. The consumers will have to pay a little more for Tetra pack but the additional cost, however, is

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17. A-100 : p. 3.

19. The percentage share of the marketing cost in the total cost of dairy products of the DDCs in Gujarat have been discussed in the Chapter V.
Milk Marketing Systems and Costs (per litre)

CHART VI

RURAL PRODUCER

RURAL PROCESSING AND PACKAGING
PASTEURIZED MILK
75 P
TETRA PAK
78 P

CITY PROCESSING AND PACKAGING
BOTTLE
25 P
SACHET
48 P
BULK
18 P

CONCESSIONNAIRE / RETAILER
BOTTLE
7 P
SACHET
7 P
BULK
2 P
TETRA PAK
8 P

URBAN CONSUMER
BOTTLE
703 P
SACHET
708 P
BULK
263 P
TETRA PAK
310 P

TRANSPORTATION COSTS

largely offset by added convenience in terms of time and place of purchase. These different methods of distribution systems do not necessarily replace each other but they provide the consumer various alternatives.

The needs and tastes of the consumers in future will govern the type, package, price and time of delivery of milk rather than those of the dairy processing plant owner. Consequently, the milk unions will have to adopt a system of distribution which is readily acceptable to the consumer and which is commercially viable.

The existing milk distribution systems followed by the milk unions in Gujarat have some advantages and limitations under certain conditions. Therefore, one or more of the systems may be adopted for a given processing plant keeping in view the following important factors:

(i) capacity of the dairy plant,
(ii) the distribution area,
(iii) purchasing capacity of the population,
(iv) packaging and distribution cost,
(v) capital investment in plant, equipment and buildings,
(vi) running cost, and
(vii) operational efficiency of the system in terms of labour, supervision, and risk of adulteration.
None of these factors can be considered in isolation since they are all inter-related and their degree of significance will depend, to a great extent, upon the conditions under which the milk distribution system has to function.

Marketing Milk Products Through GCMMF

As stated in Chapter I, the milk unions of Baroda, Kaira, Mehsana, Sabarkantha and Surat have formed an apex body, viz., the Gujarat Co-operative Milk Marketing Federation (GCMMF) with the following objectives to strengthen their marketing aspect and accordingly the GCMMF took over the entire marketing responsibility of milk and milk products of member unions from the year 1974-75.

1. To carry out activities for the economic development of the agriculturist by efficiently organizing marketing dairy and allied produce.

2. To achieve the aforesaid objective, the Federation may -

2.1 arrange for the sale of dairy and allied produce of the members to their best advantage;

(2.2) deal with non-members for marketing dairy and allied produce subject to such conditions as may be decided by the Board from time to time;

(2.3) prescribe and enforce standards of quality of dairy and allied produce to be marketed by the Federation;

(2.4) purchase and/or erect buildings, plant machinery and other ancillary equipments for the business of the Federation;

(2.5) study problem of mutual interest concerning marketing dairy and allied produce;

(2.6) carry out negotiations with Government and/or other organisations;

(2.7) suggest measures for increasing the productivity of the members and assist in implementing the same;

(2.8) undertake market research;

(2.9) plan overall production programme of the Federation and its members keeping in view the market strategy;

(2.10) make arrangements for transport and storage of dairy and allied produce;
(2.11) Insure against risk of all kinds for movable and immovable property of the Federation;

(2.12) Advise, assist, guide and control the members in all aspects of management, supervision and audit functions;

(2.13) Purchase or assist in purchasing raw material, processing material, packaging material, etc., and manufacture or collaborate with some one for the same when required;

(2.14) Arrange training of staff of the members and the Federation;

(2.15) Own or hold on lease or hire movable or immovable property for the business of the Federation and to dispose of the same if not required for the business of the Federation;

(2.16) Market products under its own trade mark/brand name or of its members' brand name/trade mark;

(2.17) Undertake export of dairy and allied produce;

(2.18) Render financial, technical, administrative and other necessary assistance to the members and enter into collaboration agreement;

(2.19) Advise the members on price fixation, price policy, public relation and allied matters;
(2.20) undertake consultative services in the field of marketing;
(2.21) create trusts and funds for the benefit of its employees;
(2.22) undertake or assist programme of research and development;
(2.23) organise and encourage savings scheme and carry on co-operative propaganda;
(2.24) establish a Research and Development Association having independent existence, contribute to its funds and raise funds for the same from members;
(2.25) run a dairy whenever necessary;
(2.26) provide common services to members in various fields including staff, cadre, etc.;
(2.27) work as administrator of members at the request of the Registrar or takeover management of any milk union on its request;
(2.28) establish research and quality control laboratories;
(2.29) act as Cluster-Federation for implementing the Operation Flood II programme of IDC in the State of Gujarat;
(2.30) do whatever is necessary and proper or conducive or incidental to the attainment of any of the objectives and purposes of the Federation.
Thus, the set of organisational objectives of the Federation can be summarised as follows:\footnote{21}

1. To ensure fair return to the producers.
2. To ensure and guarantee to receive all the milk offered by the member-unions.
3. To develop adequate production and processing facilities with the member-unions.
4. To process all the milk received.
5. To develop sound and judicious product-mix for sustained growth.
6. To offer products at fair prices to the consumers by achieving economy of scale and in costs.
7. To develop a milk grid for maximising the availability of liquid milk.
8. To establish appropriate marketing and distribution system for equitable supply to all parts of the country and achieve consumer confidence in our products.

As we can see from the above, the corporate objectives of the GCMMF are totally different from

\footnote{\textit{Annual Report} : GCMMF : 1979-80 : p.6.}
those of other organisations, whose corporate objectives basically centre around maximisation of profits. The Federation believes in the producers own organisation developing a sound co-operative system free from political and economic interference. The Federation is committed to develop adequate marketing capabilities, so that, at no stage, the Federation fails in fulfilling its primary objective of receiving and processing milk and marketing it in different forms to consumers.

Achievements of GCMMF: It has done commendable work in specific fields as discussed in the pages to follow:

Rationalisation of production: One of the objectives of the GCMMF was to rationalise the production of milk products and, accordingly, the GCMMF has started manufacturing and packing of Amul products, such as butter, baby foods, whole milk powder and skim milk powder at other member dairies. Production of 1/2 kg. whole milk powder and ghee under AMUL brand at Benaskantha Union. Production of roller dried skim milk powder at Surat skim milk Union (Sumil) to meet market demand for this product from the biscuit industry. GCMMF has also introduced skim milk powder and butter in consumer pack under the brand name of SAGAR (Mehsana Union) for distribution in the Calcutta and the eastern region markets. This
rationalisation of production helps the member unions in the effective utilisation of their plant capacity and also in maintaining inventories for packaging material and finished products.

Programming committee, consisting of the following has been constituted to evolve the production pattern for member unions' factories:

(1) The Managing Director of the GCMMF, who shall be the Chairman of the Committee.

(2) The General Manager of the GCMMF who shall be the Secretary of the Committee.

(3) Chief paid executive of all the ordinary members who are selling their dairy produce through GCMMF.

(4) The chief quality control officer of the GCMMF.

(5) One specialist as may be nominated by the Managing Director from amongst the staff of the ordinary members or the GCMMF.

Distribution network: The GCMMF commenced its working from the beginning of April, 1974 and has completed its seven years of operation by the end of March, 1981. During this short span of seven years, it has established its name for efficient distribution of milk and milk products manufactured by the member unions under the
brand names of AMUL and SAGAR. Milk products are marketed all over the country and have been well received by the customers. To ensure the widest possible distribution of these products in a fair manner in various parts of the country the distribution network is well organised covering over 75,000 retail outlets. Distribution, through the largest number of retailers is absolutely necessary not only for consumers' satisfaction and convenience but also for preventing mal-practices and short supply. It also ensures even distribution of members' products throughout the country through organised marketing effort.

The volume of business of the GCMMF has continuously been increasing requiring extensive efforts for equitable and wider distribution. During the year 1977-78 the GCMMF has established full-fledged offices at Calcutta and Delhi as it has assumed responsibility of distribution in Eastern and Northern India for their dairy products. The GCMMF also have full-fledged branch offices at Ahmedabad and Bombay besides a small office at Madras. It has also expanded its net work of distribution and retail coverage to maintain their share of the market for dairy products like baby food, milk powder, butter, cheese etc. As more product plants are being set up, it will be necessary for the GCMMF to
strengthen its marketing organisation and promote its brand image.

During the year 1979-80 the GCMMF has assumed direct distribution of all its dairy products except baby food. However, in Gujarat, all the products including baby food are directly distributed by it. The GCMMF has established four new full scale offices with warehousing facilities for total operations during the year at Madras, Bangalore, Cochin and Hyderabad bringing the total number of offices/depots to ten in India.

The GCMMF has maintained continuous progress in the operations alongwith the member-unions, the highlights of which are presented in Table VI.5.

The membership of the GCMMF which was six in the initial stage will expand with new district milk unions coming up in Gujarat, and accordingly three nominal members have been added.
TABLE VI.5

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Particulars</th>
<th>1975-76</th>
<th>1979-80</th>
<th>Percentage of growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Milk collection (daily average in lakh litres)</td>
<td>6.02</td>
<td>14.50</td>
<td>81</td>
</tr>
<tr>
<td>2.</td>
<td>No. of primary societies</td>
<td>2,880</td>
<td>4,821</td>
<td>67</td>
</tr>
<tr>
<td>3.</td>
<td>No. of Milk Producers (in lakh)</td>
<td>5.21</td>
<td>8.26</td>
<td>58</td>
</tr>
<tr>
<td>4.</td>
<td>Federation's total sales (Rs. in crore)</td>
<td>58.16</td>
<td>125.50</td>
<td>116</td>
</tr>
<tr>
<td>5.</td>
<td>Federation Branches/Depots (Nos.)</td>
<td>3</td>
<td>10</td>
<td>-</td>
</tr>
</tbody>
</table>

Product quality: One of the basic objectives at the time of the formation of the GCMLF was to market the products manufactured by the member-unions under a common brand name. When products under common brand names are manufactured at more than one plants of the member unions, the need for maintenance of uniform and high quality standards becomes highly essential and important. In view of this, the member-unions have naturally accorded the highest priority to this aspect. Each member-union has a well-equipped laboratory to test raw materials, packaging materials and the finished products at each stage of their manufacturing. In order to ensure production of uniformly

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high standards and specifications, the GCMMF is in the process of formulating a control system in active association with the member-unions. One of the main requirements of successful marketing is the total consumers' acceptance which can only be ensured by offering products of the highest acceptable quality standards.

Research and development—product mix: The GCMMF has to market the products in competition with the products produced by other dairies operating in private, public and co-operative sectors. Under Operation Flood many new dairies were established in public and co-operative sectors in other parts of the country. With the rapid growth of our dairy industry, it is necessary to continuously strive to analyse and determine the consumers' need for various products. Continuous efforts are being made by the GCMMF to develop new products for both the traditional and non-traditional markets at the member-unions' plants. During the year 1976-77, GCMMF launched Jeera Cheese under the brand name "CHEZEREA" and are also developing some other varieties of cheese. Efforts are also made to develop and market 'Panser' for which there is sizable market in the country. The GCMMF is also making efforts to expand marketing cocoa based products and malted foods. New
varieties of chocolate in small packs have been introduced, which have been very well received by the consumers.

The aforesaid discussion would show that the GCMMF has achieved remarkable progress in consolidating its marketing efforts. Its formation has greatly contributed to the growth of co-operative dairies in Gujarat and, particularly in the areas covered by its member-unions. The efficient functioning of the Federation has resulted in the following benefits:

1. The member-unions have been relieved of the marketing function and, hence, they can concentrate on their production and related activities.

2. The inter-union unhealthy competition has been eliminated.

3. The Federation has enabled the member unions to share the advantages of common brand names of the GCMMF and significantly avoided duplication of marketing efforts and resources.

4. GCMMF has facilitated better utilisation of the plant capacities of its member unions as the milk procured by the member unions have been efficiently collected, processed and marketed.
It enabled the member unions in strengthening their marketing activities and developing a joint-marketing system for milk and milk products.

The functioning of the GCMMF can be cited as a good example of the values of co-operation in terms of collective leadership, discipline and collective functioning. Whatever achievements have been made so far are in no small measure due to the understanding and discipline displayed by the member unions who have abided by the decisions jointly taken by them often sub-ordinating their own personal interest. In addition to the marketing services rendered by the GCMMF to its member unions, good progress has been made in the development of such services as common pool purchases, streamlining of procedures and systems and quality control.

Development of dairying on Anand pattern has been fully accepted in Gujarat and more and more DDCs are coming up. They would eventually be eligible for enrolling themselves as members of the GCMMF. The GCMMF will have, therefore, to gear up its organisational structure to accept this ever increasing responsibility and challenge of marketing more and more milk and milk products pooled from its members.
All these marketing efforts of the GCMF have directly influenced the sales realisation of the member-unions positively and thereby their profitability.

Sales Volumes

The profit which any business unit secures is basically the money which it receives for goods or services less the costs which it incurs in producing them. Thus, profit can be augmented either by reducing cost of products or by better sales realisation or by simultaneous operation of both.

In the current atmosphere of inflationary pressures on our economy the costs are continually rising and the possibilities of cost reduction, as discussed in Chapter V, by the DDCs in Gujarat are limited. Hence, the next alternative for raising their level of profitability is through increasing sales volume.

In Table VI.6 are depicted the sales volumes of the DDCs of Gujarat for the period between 1960-61 and 1979-80. A close examination of the data given in the table would reveal the following main inferences.

(1) While the sales volume of the DDCs of Gujarat showed progressive rise during the period under reference,
there were wide fluctuations in the annual rates of growth of the sales volumes.

(ii) On the base year of 1960-61, the sales volume showed sixty nine fold rise in the year 1979-80.

(iii) The number of units which was five in the year 1960-61 rose to six in 1961-62, seven in 1965-66, eight in 1971-72 and twelve in 1974-75.

(iv) The average sales per unit which was Rs. 0.52 lakh in 1960-61 witnessed thirty four-fold rise in the year 1979-80. It also showed progressive rise during the entire period covered.

When the data regarding sales of the DDCs of Gujarat for the period from 1960-61 to 1979-80 are presented graphically (vide Graph VI.1), the sales volume line in the graph showed:

(i) continuous rising trend throughout the period, and
(ii) the rise in sales was slow in the initial years upto 1970-71, but after 1970-71 the rate of growth gathered momentum and from 1973-74 onwards the sales line showed steep rise, depicting speedy growth in sales volume.

Table VI.6 depicts the yearly union-wise data of sales volume of the DDCs of Gujarat for the period 1960-61.
### TABLE VI.6

#### Year-wise Aggregate Data of Sales Volume of the DDCs in Gujarat Between 1960-61 to 1979-80

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales volume</th>
<th>Annual rate of growth (in percentage)</th>
<th>No. of Units</th>
<th>Average sales volume per unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960-61</td>
<td>2.59</td>
<td>-</td>
<td>5</td>
<td>0.52</td>
</tr>
<tr>
<td>1961-62</td>
<td>3.91</td>
<td>131</td>
<td>6</td>
<td>0.65</td>
</tr>
<tr>
<td>1962-63</td>
<td>5.14</td>
<td>131</td>
<td>6</td>
<td>0.87</td>
</tr>
<tr>
<td>1963-64</td>
<td>6.93</td>
<td>135</td>
<td>6</td>
<td>1.16</td>
</tr>
<tr>
<td>1964-65</td>
<td>7.53</td>
<td>109</td>
<td>6</td>
<td>1.26</td>
</tr>
<tr>
<td>1965-66</td>
<td>12.07</td>
<td>160</td>
<td>7</td>
<td>1.72</td>
</tr>
<tr>
<td>1966-67</td>
<td>16.23</td>
<td>134</td>
<td>7</td>
<td>2.32</td>
</tr>
<tr>
<td>1967-68</td>
<td>21.29</td>
<td>131</td>
<td>7</td>
<td>3.04</td>
</tr>
<tr>
<td>1968-69</td>
<td>33.72</td>
<td>158</td>
<td>7</td>
<td>4.82</td>
</tr>
<tr>
<td>1969-70</td>
<td>37.39</td>
<td>111</td>
<td>8</td>
<td>4.67</td>
</tr>
<tr>
<td>1970-71</td>
<td>38.29</td>
<td>102</td>
<td>8</td>
<td>4.79</td>
</tr>
<tr>
<td>1971-72</td>
<td>54.19</td>
<td>142</td>
<td>10</td>
<td>5.41</td>
</tr>
<tr>
<td>1972-73</td>
<td>62.55</td>
<td>115</td>
<td>10</td>
<td>6.25</td>
</tr>
<tr>
<td>1973-74</td>
<td>65.57</td>
<td>105</td>
<td>10</td>
<td>6.56</td>
</tr>
<tr>
<td>1974-75</td>
<td>86.68</td>
<td>135</td>
<td>12</td>
<td>8.87</td>
</tr>
<tr>
<td>1975-76</td>
<td>97.51</td>
<td>110</td>
<td>12</td>
<td>9.73</td>
</tr>
<tr>
<td>1976-77</td>
<td>106.17</td>
<td>109</td>
<td>12</td>
<td>10.62</td>
</tr>
<tr>
<td>1977-78</td>
<td>140.56</td>
<td>132</td>
<td>12</td>
<td>14.06</td>
</tr>
<tr>
<td>1978-79</td>
<td>156.13</td>
<td>111</td>
<td>12</td>
<td>15.61</td>
</tr>
<tr>
<td>1979-80</td>
<td>179.73</td>
<td>115</td>
<td>12</td>
<td>17.97</td>
</tr>
</tbody>
</table>

23. Based on the Annual Reports of the respective unions; Vide Foot Note 19 of Chapter II.
to 1979-80, whose study would bring out the following main deductions:

(i) During all the years under study, the Kaira Union had the highest sales figure, which was nearly 37 per cent of the total sales volume of all the Unions during the year 1979-80. The lowest sales volume during the year 1979-80 was that of the Ahmedabad Union, which was 0.33 per cent of the total sales of all the unions.

(ii) Except the Ahmedabad and the Gandhinagar unions, all other unions made remarkable progress in their sales volumes during the year 1979-80.

(iii) Out of ten Unions, while five unions - Baroda, Bharuch, Surat, Mehsana and Gandhinagar - could augment their sales during 1974-75 as compared to their sales during the previous year, the sales of the remaining five unions declined substantially as compared to their sales of the previous year.

(iv) During the period of twenty years under study, the Kaira Union had the highest sales during all the years. It is the largest and leading union of all the DDCs in Gujarat. It had registered nearly thirty three-fold rise in its sales volume during the period 1960-61 to 1979-80, followed
by the Mehsana Union, whose sales during the year 1979-80 accounted for 24 per cent of the total sales of all the Unions.

(v)
None of the DDCs except two, viz., - the Bulsar and the Panchmahals - could show progressive rise in their sales volumes during 1960-61 to 1979-80. During the period of twenty years the Mehsana Union achieved incremental increases in sales during eighteen years, the Ahmedabad Union during eleven years, the Bharuch Union during seventeen years, and the Surat Union during eighteen years. The Mehsana Union achieved incremental increases in sales during eighteen years out of nineteen years, the Sabarkantha Union had rises for fourteen years out of fifteen, the Banaskantha Union had such rises for ten years out of eleven, and the Rajkot and the Gandhinagar Unions had the rises for seven years out of nine years.

**Product Mix**

The DDCs in Gujarat process and sell various kinds of liquid milk and milk products in varying quantities. The individual union and the GCMMF have to make utmost efforts to improve their sales realisations by marketing milk and milk products, and changing the
product mix to capture wider markets.

As presented in earlier Table VI.4, the proportionate share of milk, milk products and others in total sales of DDCs in Gujarat for the period 1961-62 to 1979-80 varied from year to year. It was, further found that on an average the share of milk, milk products and others in total sales was 39.80 per cent, 51.98 per cent and 8.22 per cent respectively for the period covered under study.

The close-analysis of data in regard to the proportion of sales of milk, milk products and others in the total sales of individual DDC in Gujarat for the years 1977-78 and 1976-79 presented in Table VI.8 would bring out the important inferences as follows:

(i) The product mix of the DDCs in Gujarat kept on changing with the increase in yearly sales.

(ii) The Kaira, the Mehsana and the Sabarkantha Unions mostly concentrated on the production of milk products. The percentage shares of sales of milk products in the total sales of these unions at the end of June 1979 was 59.21, 79.66 and 61.53 respectively.
(iii) Liquid milk had the lion's share in the total sales of the DDCs of Ahmedabad, Baroda, Bharuch, Surat, Banaskantha, Gandhinagar, Bulsar and the Panchmahals during both the years under study. The percentage share of the sale of liquid milk in the total sales of these unions during 1976-79, was 97.90, 75.58, 92.61, 77.24, 89.39, 91.62, 99.39 and 94.00 respectively.

Production and Sale of Milk Products: The DDCs undertake production and sale of variety of milk products. The data in regard to the annual quantity of production for the period 1974-75 to 1978-79 are presented in Table IV.2 referred earlier. The analysis of data presented in the Table highlighted the fact that the production of different products registered overall increase in quantitative terms over a period of five years.

The proportions of production and sale of various milk and milk products varied from year to year. The DDCs should make efforts to maximise their sales revenue through effectively changing the proportion of their product mix for capturing wider markets and for ensuring higher profitability.
For want of the data in regard to year-wise and the product-wise sale-values of all the DDCs, as an illustration, in Table VI.9 are given figures regarding the sales revenue earned on various products by the Mehsana Union during the period 1974-75 to 1979-80, whose analysis would lead us to the following main inferences:

(i) The Mehsana Union earned maximum share of sales revenue through sale of Amul Spray which accounted for nearly 46 per cent of the total sales during the year 1979-80. The percentage share of Amul Spray sales in the total sales has increased from 10.73 in 1974-75 to 46.67 in 1979-80.

(ii) The percentage share of liquid milk sale in the total sales was the next item of the sales revenue. It was 17.20 per cent of the total sales during the year 1979-80. The percentage share of liquid milk in the total sales declined from 26.95 in 1974-75 to 13.08 in 1977-78 and, thereafter, it rose to 17.20 during the year 1979-80.

(iii) The percentage share of ghee in the total sales increased from 12.09 in 1974-75 to 18.63 during the year 1975-76 and it declined to 14.67 in 1976-77 and, thereafter, it did not witness any major
change. The average percentage share of ghee in the total sales for the period 1974-75 to 1979-80 was 14.56.

(iv) The percentage share of butter in the total sales gradually increased from 9.32 in 1974-75 to 11.65 during 1976-79 and it declined to 10.42 during the year 1979-80. The average percentage share of butter in the total sales during the period 1974-75 to 1979-80 was 10.16.

(v) The percentage share of whole milk Powder in the total sales of the Mehsana Union declined considerably from 29.50 in 1974-75 to 0.11 during the year 1977-78 and, therefore, it again rose to 5.05 during the year 1978-79 and, again declined to 1.67 during the year 1979-80.

(vi) The percentage share of Skim Milk Powder in the total sales of the Mehsana Union witnessed wide fluctuation during the period under study. For example, it rose from 0.34 in 1974-75 to 4.81 in 1975-76, declined to 0.96 during the year 1976-77 rose to 9.17 during the year 1977-78 and slowly declined to 1.78 during the year 1979-80.

(vii) The average percentage share of cattle feed sales and sales of other items in the total sales of the
Mehsana Union accounted for 7.49 and 1.09 respectively during the period 1974-75 to 1979-80.

**Pricing Milk and Milk Products**

Pricing milk and milk products for sale by the DDCs normally should be made in a way that would enable the co-operative unions to pay remunerative prices to the milk producers, cover the cost of collection, processing and distribution of milk and milk products, services rendered in connection with channelising the inputs for milk production and keep a fair margin of profit and yet make the price of milk and milk products competitive. In pricing the products, that are marketed by private enterprises, they do not take into account the price of inputs, as they do not render any service for the marketing of inputs for milk production enhancement on the lines of the DDCs. The private enterprises are generally not concerned whether the prices paid to the milk producers are remunerative or not.

In case of milk schemes, sponsored by the Government, the consumers' price is mostly administered so that it is kept as low as possible and is often much lower than the prevailing market price. (Vide: Diagram: VI.2). As a result of lower price, it is difficult to
Average Price of Milk in Major Cities

(BR/ LITRE) 1980

<table>
<thead>
<tr>
<th>City</th>
<th>Modern Dairies</th>
<th>Traditional Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bombay</td>
<td>2.66</td>
<td></td>
</tr>
<tr>
<td>Calcutta</td>
<td>2.73</td>
<td></td>
</tr>
<tr>
<td>Delhi</td>
<td>2.09</td>
<td></td>
</tr>
<tr>
<td>Madras</td>
<td>2.10</td>
<td></td>
</tr>
</tbody>
</table>

27. E-11 : p.4.
pay remunerative price to the producers and thereby induce more production and procurement. As the Government milk schemes suffer financial loss, the deficits are met from the State-exchequers. This system thoroughly vitiates commercial management of the dairies' economic consideration.

The DDCs should pursue a policy of pricing for milk and milk products that would make them viable and commercially profitable. The matter of social justice and the rendering of assistance to the weaker sections of the society should not stand in the way of efficient commercial management of the DDCs. The only method for maintenance of the competitiveness of consumer price while keeping it as low as possible. Without reducing the remunerative price for producers is to keep the marketing cost as low as possible. Lower marketing cost can be achieved through better management if efficiency is attained in procurement, processing and distribution of milk and milk products.

The DDCs of Gujarat have realised and accepted that rendering of assistance to the milk producers' for procuring the inputs required for increasing the milk production should be a function of the dairy organisation, and therefore, they aim at achieving efficiency in the performance of this function at the lowest cost.
In Gujarat the DDCs fix, on one hand, purchase price of milk with a view to paying the producers of milk the maximum possible price, and, on the other, fix the sale prices of milk and milk products keeping in view the aim of supplying to the consumers these products at the minimum possible prices. The dairy authorities claim that to them the interests of both the consumers and the suppliers are equally important and that in case of a conflict between these two interests they will sacrifice fully or partially one or the other interest depending upon the situation. For example, during May, 1976, the Surat Union raised the price of milk by ten paisa per litre but later on these rises were withdrawn on account of consumers' resistance and pressures from Government. Similarly, during the year 1980, the Baroda Union increased sale price of milk but it had to revise it downwardly on account of stiff consumers' resistance.

Time and again, the authorities of GCMMF advocate that the price of milk and milk products marketed by GCMMF were lower than that of others in the Indian Market. The GCMMF believed that their policy in
maintaining supplies at fair price inspired the confidence of consumers and helped them in building up a steady market. The GCMMF has been fixing the wholeseller/Dealers margin and final maximum consumers' price (to be printed on dairy products) marketed by them. For illustration and ready reference details of the maximum prices fixed by the GCMMF are given in Table VI.10.

The author's field work showed that as raw milk is the basic raw material for all the milk products, it constitutes the major share of the total costs of all products, the DDCs claim that the selling price of their milk products follow changes in the revision of the prices which they pay for the raw milk they procured from the milk producers and that mostly these changes were in the same direction. If prices for raw milk rise, the prices for milk products do rise. The unions further claimed that there was no one to one relationship between the change in prices charged for milk products and the changes in prices paid for raw milk in absolute terms but this relationship did exist in terms of proportionate changes. As the urban consumers of milk are more vocal and united, they could successfully resist any upward revision in the prices of fluid milk in particular and
<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the products with packaging unit</th>
<th>Maximum price per unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rs. Rs. Per</td>
</tr>
<tr>
<td>(1)</td>
<td></td>
<td>(2)</td>
</tr>
<tr>
<td>1</td>
<td>400 gms. Tinned Butter</td>
<td>13.82</td>
</tr>
<tr>
<td>2</td>
<td>400 gms. Cheese/Cheddar Tin</td>
<td>13.95</td>
</tr>
<tr>
<td>3</td>
<td>400 gms. Cheese Powder Tin</td>
<td>20.00</td>
</tr>
<tr>
<td>4</td>
<td>500 gms. Sagar S.M.P. Pkt.</td>
<td>11.94</td>
</tr>
<tr>
<td>5</td>
<td>1 Kg. Nutramul Tin</td>
<td>26.67</td>
</tr>
<tr>
<td>6</td>
<td>500 gms. Nutramul Tin</td>
<td>13.83</td>
</tr>
<tr>
<td>7</td>
<td>200 gms. Nutramul Bottle</td>
<td>6.93</td>
</tr>
<tr>
<td>8</td>
<td>500 gms. Balamul Tin</td>
<td>7.75</td>
</tr>
<tr>
<td>9</td>
<td>40 gms Milk Chocolate Pkt.</td>
<td>2.64</td>
</tr>
<tr>
<td>10</td>
<td>80 gms. Milk Chocolate Pkt.</td>
<td>5.11</td>
</tr>
<tr>
<td>11</td>
<td>40 gms. Peanut Chocolate Pkt.</td>
<td>2.42</td>
</tr>
<tr>
<td>12</td>
<td>Carton of 20x18 gms. Pkts. (Amul Milk Chocolates (All Varieties))</td>
<td>26.38 Carton</td>
</tr>
<tr>
<td>13</td>
<td>500 gms. W.M.P. Tin</td>
<td>15.22</td>
</tr>
<tr>
<td>14</td>
<td>10 Kg. W.M.P. Tin (Amul)</td>
<td>244.15</td>
</tr>
<tr>
<td>15</td>
<td>500 gms. Baby Food/Amulspray Tin</td>
<td>14.92</td>
</tr>
<tr>
<td>16</td>
<td>1 Kg. Baby Food/Amulspray Tin</td>
<td>28.39</td>
</tr>
<tr>
<td>17</td>
<td>1 Kg. Amul/Sagar Ghee Tin</td>
<td>30.49</td>
</tr>
<tr>
<td>18</td>
<td>2 Kgs. Amul/Sagar Ghee Tin</td>
<td>59.86</td>
</tr>
<tr>
<td>19</td>
<td>4 Kgs Amul/Sagar Ghee Tin</td>
<td>117.48</td>
</tr>
</tbody>
</table>

Maximum Consumer Prices are not required to be printed on the following packs of the Products.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the products with packaging unit</th>
<th>Maximum price per unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rs. Per</td>
</tr>
<tr>
<td>(1)</td>
<td></td>
<td>(2)</td>
</tr>
<tr>
<td>20</td>
<td>100 gms. Amul/Sagar Butter Pkt.</td>
<td>2.99</td>
</tr>
<tr>
<td>21</td>
<td>500 gms. Amul Butter Pkt.</td>
<td>13.97</td>
</tr>
<tr>
<td>22</td>
<td>400 gms. Sagar Butter Pkt.</td>
<td>11.17</td>
</tr>
<tr>
<td>23</td>
<td>100 x 10 gms. Butter Chiplets</td>
<td>33.89 Carton</td>
</tr>
<tr>
<td>24</td>
<td>10 x 25 gms. Cheese Chiplets</td>
<td>9.00</td>
</tr>
</tbody>
</table>

*Based on the data collected from the office of the GCIF, Anand.*
and milk products in general. The implementation of the policy of upward price-revisions of milk and milk products by the DDCs has not only become cautious but complex too.

Concluding Observations

In view of what have been discussed earlier, one would confidently say that effective marketing of milk and milk products has direct relation with profitability. To raise the level of profitability, the marketing cost should be kept as low as possible through efficiency in procurement, processing and distribution of milk and milk products. If the DDCs can produce milk and milk products at the lowest possible cost and can realise maximum price for them, they can achieve the optimal level of profitability.

In the present circumstances, there are very limited chances for the DDCs to reduce appreciably the total cost of production and/or to raise blindly the selling prices of their milk and milk products. If they exercise effective control on the marketing cost of their products and raise their sales volumes, they can certainly maintain their level of profitability. Improvement in sales volumes can be brought about by adopting
a system of distribution which is readily acceptable to the consumers and at the same time commercially viable. Techno-economic feasibility and consumer acceptance studies concerning processing, packaging and delivery of milk should be taken up by the unions. Further, the DDCs and the GCDF should make utmost efforts to improve sales realisation by effectively changing the product mix, capturing wider markets, and pursuing a policy of pricing for milk and milk products that would make them viable and commercially profitable.