CHAPTER - VI

ANALYSIS OF PRODUCTION COST AND RETURNS

6.0. Introduction

The earlier chapter provided a detailed discussion on the socio economic status of the sample farmers who raise cows, the production of milk from the cows owned by the sample respondents and the activities involved in the management of cows owned has been discussed. However, the prime objective of the present piece of research is to estimate the production and productivity of the milk produce. Also, as discussed earlier, studies carried out in the context of production decision indicated that there is a close affinity between the socio economic status and the level of production. Also, continuing a business depends on the level of profitability from the business. As noted in chapter I, given the low productivity in the Indian context, and as discussed in the earlier chapter, it becomes vital to estimate the benefit cost ratio so as to understand the extent of profits involved in the business. The present chapter is devoted towards this end. To maintain the logic and the sequence of analysis, this chapter has been divided into three sections. Section I deals with the production details of milk by the milch animals of the sample respondents, the income and
expenditure incurred in milk. In *Section II* the relationship between the socio economic status and the dairy activity is made. In Section III, the benefit cost ratio is worked out. Also the problems faced by the sample respondents, namely the general problem and the problem of marketing in particular, has been discussed. The impact of factor inputs on the output is being measured by fitting a production function.
SECTION - I

6.1.1 Distribution of Milk Production

As it is seen in table 6.1, in the morning, 40.74 per cent of the respondents yield an yield of milk of 30-40 litres. In another 25.93 per cent of the sample households, the average production of the cows ranges from 10-20 litres in the morning. The cows in the 14.81 per cent of the respondents’ houses yield less than 10 litres in the morning. There are 11.11 per cent of the respondents who get a yield of 20-30 litres in the morning. In the remaining 7.41 per cent of the respondents’ houses, the cows yield above 40 litres.

In the evening, 14.81 per cent of the households get less than 10 litres of milk from their cows. In another 25.93 per cent of the sample respondents’ houses, the cows yield 10-20 litres. There are 22.22 per cent respondents whose cows give 20-30 litres of milk in the evening. While in 33.33 per cent of the respondents’ house, the cows give 30-40 litres of milk, in the remaining 3.70 per cent of the respondents’ houses, the cows yield a production of 40 litres of milk in the evening. The total production of milk from the sample households from all the 500 sample households stood at 12556 liters in the morning and 11454 litres in the evening which works out to an average of 25.11 and 22.91 liters respectively per household. At the time of data collection, the total production per day stood at 24,010
litres and this works out to an average production of 48.02 litres per household.

The above discussion indicated the distribution of milk production of households. An attempt made to identify the average production per cow shows that as discussed above, there are totally 2333 cross breed cows in milk. Working out the average milk production per cow shows that it is 5.39 litres in the morning and 4.90 litres in the evening.

**Table 6.1 Distribution of Production of Milk**

<table>
<thead>
<tr>
<th>Production (in Litres Per Day)</th>
<th>No. of Sample Households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Morning</td>
</tr>
<tr>
<td>Less than 10</td>
<td>74 (14.81)</td>
</tr>
<tr>
<td>10-20</td>
<td>129 (25.93)</td>
</tr>
<tr>
<td>20-30</td>
<td>56 (11.11)</td>
</tr>
<tr>
<td>30-40</td>
<td>204 (40.74)</td>
</tr>
<tr>
<td>Above 40</td>
<td>37 (7.41)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>500 (100.00)</td>
</tr>
<tr>
<td><strong>Total Production (in litres)</strong></td>
<td>12556</td>
</tr>
<tr>
<td><strong>Average Production per household (litres)</strong></td>
<td>25.11</td>
</tr>
<tr>
<td><strong>Average Production per cow (litres)</strong></td>
<td>5.39</td>
</tr>
</tbody>
</table>

*Source: Computed from Primary Data.*
Thus, from the analysis it can be concluded that in a majority of the houses, the average production of milk ranges from 30-40 litres with an average production of milk of 5.39 liters and 4.90 litres in the morning and evening respectively.

6.1.2 Sample Respondents by Total Production of Milk

The earlier paragraph provided a detailed discussion on the production of milk in two times namely, morning and evening for sample households. However, this did not give an idea of the total production of milk by the cows owned by the sample respondents. In the present paragraph such an attempt is being made.

Table 6.2 Distribution of Sample Respondents by Total Production of Milk

<table>
<thead>
<tr>
<th>Production (in Litres Per Day)</th>
<th>No. of Samples</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 20</td>
<td>74</td>
<td>14.80</td>
</tr>
<tr>
<td>20-40</td>
<td>129</td>
<td>25.80</td>
</tr>
<tr>
<td>40-60</td>
<td>93</td>
<td>18.60</td>
</tr>
<tr>
<td>60-80</td>
<td>185</td>
<td>37.00</td>
</tr>
<tr>
<td>above 80</td>
<td>19</td>
<td>3.80</td>
</tr>
<tr>
<td>Total</td>
<td>500</td>
<td>100</td>
</tr>
</tbody>
</table>

Total Production = 24010
Average Production = 48.02

Source: Computed from Primary Data.
As it is seen in Table 6.2, at the time of collection of primary data from the sample households, in 37 per cent of the respondents’ houses the production of milk from the cows owned by them ranges from 60-80 litres. In another 25.80 per cent of the sample houses, the cows owned by them gave 20-40 litres of milk. Similarly, the cows owned by 18.60 per cent of the sample respondents gave a total of 40-60 litres of milk per day. While in 14.80 per cent of the sample respondents’ cows gave a milk production of less than 20 litres, for the remaining 3.80 per cent of the sample respondents’ cows the production of milk was above 80 litres.

From the table, it can also be understood that the total production of the cross breed cows in milk owned by 500 sample respondents stood at 24010 litres and the average production of the per sample household is worked out to 48.02 litres. It is also revealed that 58.8 per cent of the household produce above the average. Given that there are 2333 cross breed cow, the average production per cross breed cow is 10.29 litres per day.

6.1.3 Sample Respondents by Income from Dairy Occupation

The earlier section provided a detailed discussion on the ownership of milch animals and the production and productivity
are examined. The objective of the agriculturist to raise milch animals is to earn income from these assets. Hence, in the present section it is attempted to examine the income from these cows raised, the expenditure incurred in raising these milch animals and the problems faced in raising the cows and marketing the milk produced.

6.1.4 Sample Respondents by Types of Marketing of Milk Produce

The peculiar nature of the agricultural produce is that the farmers who cultivate the agricultural produce consume some quantum of the output and sell the remaining in the market. Hence, there is a difference between the ‘marketable surplus/output” and the ‘marketed surplus/output. The extent of self consumption reduces the level of income considerably. Also, since the agricultural and allied activities are unorganized sectors, marketing also constitutes the biggest problem. Apart from these, the demand for money in the situation of emergency, the certainty in the receipt of income during the time of emergency or need do influence the type of marketing the milk produce. Based on these reasoning, in the present chapter it is attempted to examine the sources of marketing of the milk produce of the sample respondents.
As it is seen in table 6.3, in the case of personal consumption, 94.80 per cent of the respondents consume less than five litres every day. While 2.80 per cent consume 5-10 litres a day, and the remaining 2.40 per cent consume 10-15 litres a day. There are no respondents who consume 15-20 litres, 20-25 litres and above 25 litres. In all, all the sample respondents take a portion of their milk produce for self consumption. The quantity consumed by the producer, depends, of course on the size of the family of the producer.

In all, just 5.20 per cent of the respondents sell their product to neighbours. 46.15 per cent of them sell less than five litres a day, 30.77 per cent sell 5-10 litres, 11.54 per cent of sell 10-15 litres; 7.69 per cent sell 15-20 litres and the remaining 3.85 per cent sell 20-25 litres a day. There are no respondents who sell their produce to their neighbour above 25 litres.

It can be seen from the contents of the table that, at the overall level, 51.60 per cent of the respondents sell a portion of their produce to vendors or tea shops. While, 33.33 per cent of sell less than five litres a day to the vendors or to tea shops, 51.94 per cent sell 5-10 litres a day to the vendors or to tea shops. While 6.98 per cent sell 15-20 litres, the remaining 1.94 per cent of the respondents sell 20-25 litres a day. There are no
sample respondents who sell more than 25 litres to vendors or to tea shops.

In all 38% of the respondents sell a portion of their produce in other villages of them sell less than five litres; 45.26 percent; while 17.89 percent sell 5 – 10 litres; 24.21 percent sell 10-15 litres; are 10 per cent sell 15-20 litres; and 2.63 per cent sell 20 – 25 litres per day. There are no respondents who sell more than 25 litres of their milk product to other villages.

**Table 6.3 Distribution of Sample Respondents by Types of Marketing of Milk Produce**

<table>
<thead>
<tr>
<th>Milk (in Litres Per Day)</th>
<th>Selling to</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Personal Consumption</td>
</tr>
<tr>
<td>Less than 5</td>
<td>474 (94.80)</td>
</tr>
<tr>
<td>5-10</td>
<td>14 (2.80)</td>
</tr>
<tr>
<td>10-15</td>
<td>12 (2.40)</td>
</tr>
<tr>
<td>15-20</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>20-25</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>Above 25</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>Total</td>
<td>500 (100.00)</td>
</tr>
<tr>
<td>Percentage to total Sample</td>
<td>100.00</td>
</tr>
<tr>
<td>Litres marketed</td>
<td>1810</td>
</tr>
<tr>
<td>Average sales to total sales</td>
<td>7.54</td>
</tr>
</tbody>
</table>

*Source: Computed from Primary Data.*

As it could be seen in the table, a lion’s share of the milk produce is being sold to the cooperative. As given in the table,
81.80 per cent of the respondents sell more than 25 litres of their milk produce to cooperative. A discussion made with them on the reason for selling the major share of their produce to the cooperatives is that though the cooperatives provide comparatively lower price, the sample respondents are able to get a portion as advance or the cooperatives extend loans to the farmers to purchase cows or buffaloes. All the respondents sell a majority of their milk produce to cooperatives.

In all, 54.40 per cent of the respondents sell their products to private dairies. As it is also seen in the table 39.71 per cent of them sell less than five litres of their produce to private dairies; 18.75 per cent sell 20-25 liters; 15.44 per cent sell 15-20 litres; to private dairies. 13.60 per cent sell 10-15 litres and the remaining 10.29 per cent sell 5-10 litres to private dairies.

Given the distribution of sales of the milk produce, the total sale including the private consumption stood at 24010 litres per day. It could also be seen from the table, that the average share of sales stood highest with 60.08 per cent in the case of cooperatives. Another 14.16 per cent of the total production is sold to private dairies. To vendors and tea shops, 9.54 per cent of the total production is being sold. While 7.71 per cent of the total produce is sold to other villages, 7.54 per cent of
the total production is made for personal consumption. The remaining meager 0.94 per cent of the total output is sold to neighbours.

Thus from the analysis it can be concluded that a majority of the sample respondents sell their produce to the local cooperative societies.

It shall also be noted that only the cooperation and private dairies are patronized by all. Here also, while the largest percentage of those who to sell cooperatives (81.80) sell in bulk (above 25 litres per day), in the case of private dairies the largest percentage of those who sell to it (39.71) sell in small quantities (less than 5 litres per day). In the former case, the sellers are attracted by the other service provide has it and the latter reveals the efficacy of the customer relations maintained by the private dairies through there collection agent.

**6.1.5 Oneway Anova on Types of Marketing of Milk Produce**

The earlier table provided a detailed discussion on the various sources to which the milk produce is marketed. In the discussion it was found that the farmers distribute their produce to various sources. Given these sources it becomes pertinent to understand whether there is any significant difference in terms
of the supply of the milk produce among the various sources. This is being tested with the help of One Way ANOVA.

The Null Hypothesis framed for this purpose is” there is not significant difference among the various sources in terms of quantity of milk supplied”.

**Table 6.4 One way Anova on Types of Marketing of Milk Produce**

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Samples</td>
<td>28206.33</td>
<td>5</td>
<td>4701.06</td>
</tr>
<tr>
<td>Within Samples</td>
<td>613922.4</td>
<td>30</td>
<td>20464.08</td>
</tr>
<tr>
<td>Total</td>
<td>642128.7</td>
<td>35</td>
<td>F Ratio =0.23</td>
</tr>
</tbody>
</table>

The calculated ‘F’ value is 0.23. The critical value of Fv1=5, v2=30 at 5 degrees of Freedom is 2.5336 . A comparison of the calculated F value with that of the critical F value indicates that the calculated value is less than the table value and hence the Null Hypothesis that “there is not significant difference among the various sources in terms of quantity of milk supplied” has been accepted.

Thus, from the analysis it can be concluded that there is no significant difference between the quantities of milk sold among the various categories.
6.1.6 Sample Respondents by Types and by Amount of Income Earned by Marketing of Milk Produce

The earlier table provided a detailed discussion on the number of sample respondents who sells their products to various agents and the sale of production by categories.
Table 6.5 Sample Respondents by Types and by Amount of Income Earned by Marketing of Milk Produce

<table>
<thead>
<tr>
<th>Milk (in Litres Per Day)</th>
<th>Personal Consumption</th>
<th>Income (in Rs.) From the sales of Milk to Neighbour</th>
<th>Vendors/shops</th>
<th>Other Villages</th>
<th>Cooperatives</th>
<th>Private Dairies</th>
<th>Total Income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1080</td>
<td>6800</td>
<td>8000</td>
<td>660</td>
<td>7650</td>
<td>24190</td>
</tr>
<tr>
<td>Less than 5</td>
<td>0</td>
<td>1520</td>
<td>26000</td>
<td>6400</td>
<td>3795</td>
<td>4590</td>
<td>42305</td>
</tr>
<tr>
<td>5-10</td>
<td>0</td>
<td>840</td>
<td>5000</td>
<td>13000</td>
<td>3630</td>
<td>9180</td>
<td>31650</td>
</tr>
<tr>
<td>10-15</td>
<td>0</td>
<td>760</td>
<td>5600</td>
<td>7200</td>
<td>2541</td>
<td>13600</td>
<td>29701</td>
</tr>
<tr>
<td>15-20</td>
<td>0</td>
<td>480</td>
<td>2400</td>
<td>4240</td>
<td>12540</td>
<td>20400</td>
<td>38220</td>
</tr>
<tr>
<td>20-25</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>214863</td>
<td>2380</td>
<td>217243</td>
</tr>
<tr>
<td>Above 25</td>
<td>0</td>
<td>4680</td>
<td>45800</td>
<td>37000</td>
<td>238029</td>
<td>57800</td>
<td>383309</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>4680</td>
<td>45800</td>
<td>37000</td>
<td>238029</td>
<td>57800</td>
<td>383309</td>
</tr>
</tbody>
</table>

Source: Computed from Primary Data.
The prime objective of any production activity is to earn out of the output produced. Hence, in the present paragraph it is attempted to examine the category wise income of the sample respondents.

As seen in the table, there is no income from the personal consumption as the milk produce is being taken up without giving any price for their own produce.

In the case of sales to neighbourhood, while the respondents taken together earn Rs. 4680 per day, by selling the produce to vendors or tea shop owners they generate an income of Rs. 45,800 per day. The income earned by the sample respondents to other villages is 37000. The highest income of Rs. 238029 is being earned by all the sample respondents from the sale of their produce to the nearby cooperative stores. The remaining Rs.57800 has been earned by the sample respondents from the sale of the milk produce to private dairies.

Thus from the analysis it can be concluded that a majority of the sample respondents earn from the sale of the milk produce to cooperatives.
Table 6.6 Distribution of Sample Respondents by Types of Marketing of Milk Produce

<table>
<thead>
<tr>
<th>Milk (in Litres Per Day)</th>
<th>Selling to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Consumption</td>
<td>Neighbour</td>
</tr>
<tr>
<td>Less than 5</td>
<td>474 (94.80)</td>
</tr>
<tr>
<td>5-10</td>
<td>14 (2.80)</td>
</tr>
<tr>
<td>10-15</td>
<td>12 (2.40)</td>
</tr>
<tr>
<td>15-20</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>20-25</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>Above 25</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>Total</td>
<td>500 (100.00)</td>
</tr>
</tbody>
</table>

Source: Computed from Primary Data.

6.1.7 Sample Respondents by Amount of Fixed Cost Incurred

The earlier paragraphs provided a discussion on the quantity of milk production from the sample households and the money income from the sales of milk to various categories of institutions and people. However, this constitutes only one side of the analysis
as it is only in the profitable business a rational investor would be interested in venturing. Hence, a parallel analysis of the cost involved in it also becomes essential. In the present paragraph such an analysis is being made. As it is known, the cost incurred can be bifurcated into fixed cost and variable cost. In the present and in the subsequent paragraphs the fixed expenditure and the recurring expenditure are discussed in detail.

6.1.7.1 Sample Respondents by Amount of Fixed Cost Incurred

The fixed costs are one time expenditure. In the case of cattle rearing, the fixed costs involved are the expenditure incurred on the installation of shed and the purchase of vessels to collect milk, other utensils and instruments to feed cows, to collect dung etc.

As it is seen in Table 6.7, 37 per cent of the 500 respondents have made Rs.40,000 – 50,000 as the fixed cost. There are 22.20 per cent respondents who have incurred Rs.20,000-30,000 as fixed expenses. While 14.80 per cent each of the respondents have made either less than Rs.10,000 or Rs.10,000-20000, 7.40 per cent have made Rs.30,000-40,000 as the fixed expenses. The remaining 3.80 per cent have made above Rs.50,000 as the fixed expenses.
Table 6.7 Distribution of Sample Respondents by Amount of Fixed Cost Incurred

<table>
<thead>
<tr>
<th>Fixed Cost (in Rs. '000)</th>
<th>No. of Samples</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 10</td>
<td>74</td>
<td>14.80</td>
</tr>
<tr>
<td>10-20</td>
<td>74</td>
<td>14.80</td>
</tr>
<tr>
<td>20-30</td>
<td>111</td>
<td>22.20</td>
</tr>
<tr>
<td>30-40</td>
<td>37</td>
<td>7.40</td>
</tr>
<tr>
<td>40-50</td>
<td>185</td>
<td>37.00</td>
</tr>
<tr>
<td>Above 50</td>
<td>19</td>
<td>3.80</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>500</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Total Fixed cost Incurred = 13790741

Average fixed cost Incurred = 27581.50

Source: Computed from Primary Data.

The total expenses incurred by all the 500 sample respondents stood at Rs. 137.91 lakhs which works out to an average fixed expense of Rs.27581.50. The data collected on the type of fixed expenses incurred by the sample respondents indicate that more than 95 per cent of the fixed expense was being incurred in the installation of cow sheds. The discussion also indicates that the farmers are interested in maintaining the cow well but however, due to paucity of fund for investment, a majority of them have
installed tiled sheds though they are interested in constructing a concrete roofed shed.

Thus from the analysis it can be concluded that a maximum number (185) of the sample respondents have incurred Rs.40,000-50,000 as fixed cost and installation of shed has taken up the major share of the fixed cost.

6.1.7.1 Sample Respondents by Amount and by item of Variable Cost Incurred

The recurring expenses are the day to day expenditure or the expenditure that occurs periodically.

An examination of the category wise expenditure incurred indicates that in the case of expenditure on the purchase of straw, 25.80 per cent of the respondents spend Rs. 6000-7000. Another 18.60 per cent of the respondents spend Rs.4000-5000 in the purchase of straw. There are 14.80 per cent of the respondents who spend Rs.3000-4000 in the purchase of straw per month. Another 14.80 per cent each of the respondents spend either Rs.5000-6000 or above Rs.7000 per month in the purchase of straw per month. While 7.40 per cent spend Rs.2000-3000, the
remaining 3.80 per cent spend less than Rs.2000 per month in the purchase of straw.

In the case of expenditure on labour, the data collected from the sample respondents indicated that in a majority of the respondents there is no hired labour. However, the family members are involved in cow rearing. Though it is family labour, it also involves some opportunity cost. Hence in the present discussion the expenditure on labour is included. For the calculation of the expenditure on labour, the data on the hours of labour spent in cow rearing is considered. An imputed value of the labour cost is used for this, on the basis of the ongoing wage rate for the hired labour of that lace. On the basis of this calculation, the discussion is being made in the present paragraph. As it is seen in table, 35.60 per cent of the respondents spend less than Rs.2000 per month on labour. Another 27.20 percent of the respondents spend Rs.2000-3000 as labour cost. There are 12.80 per cent respondents who spend Rs.3000-4000 on labour. While 10.40 per cent of the respondents spend Rs.4000-5000, another
7.40 per cent spend Rs.5000-6000 per month on family labour. Another 4.20 per cent spend Rs.6000-7000 as labour cost. The remaining 2.40 per cent spend above Rs.7000 on labour.

In the case of the purchase of oil cake, 26.00 per cent spend Rs.4000-5000 per month. Another 26.00 per cent spend Rs.6000-7000 per month. While 22.40 per cent spend Rs.5000-6000 per month on the purchase of oil cake, another 7.40 per cent spend less than Rs.2000 in the purchase of oil cake. There are 7.20 per cent respondents who spend Rs.2000-3000 in the purchase of oil cake per month, while 7.00 per cent spend Rs.3000-4000 on it. The remaining 4.00 spend above Rs.7000 in the purchase of oil cake per month.

Fodder is another important expenditure incurred by the agriculturist in raising a cow. As it is seen in the table, 39.60 per cent spend less than Rs.2000 in the purchase of fodder per month. Another 26.00 per cent spend Rs.5000-6000. While 18.40 per cent of the sample respondents spend Rs.4000-5000, there are 7.40 per cent respondents who spend Rs.2000-3000 in the purchase of
fodder per month. In the case of 7.40 per cent of respondents the monthly expenditure on the purchase of fodder stood at Rs.6000-7000. While for 0.80 per cent it was Rs.3000-4000, for the remaining 0.40 per cent of the respondents it is above Rs.7000.

An examination of the other types of expenditure that include the purchase of grass, medical expenditure etc. indicates that 60.80 per cent spend less than Rs.2000. Another 22.40 per cent spend Rs.2000-3000. There are 7.40 per cent who incur Rs.3000-4000 per month on other categories of expenditure. While 4.20 per cent Rs.4000-5000 on this category another 3.80 per cent spend Rs.5000-6000. A negligible portion of 1.40 per cent incur above Rs.6000 on the other category.

The total and the average expenditure incurred in each of the categories indicate that Rs.25.99 lakhs is being spent by all the sample respondents per month in the purchase of straw. The sample respondents spend Rs.14.95 lakhs in hiring labour. Rs.24.64 lakhs is being spent in the purchase of oil cake. While Rs. 17.88 is being spent in the purchase of fodder, the miscellaneous expenses stood at a level of Rs.11.12 lakhs at the
time of data collection. The average level of expenditure per household per month by category wise stood at Rs. 5198, Rs.2990, Rs.4928, Rs.3576 and Rs. 2224 in the case of the purchase of Straw, imputed cost for labour, purchase of Oil Cake, purchase of fodder and in the miscellaneous expenditure.

**Table 6.8 Distribution of Sample Respondents by Amount of Recurring Expenditure Incurred by Items**

<table>
<thead>
<tr>
<th>Expenditure (in Rs.)</th>
<th>Straw</th>
<th>Labour</th>
<th>Oil Cake</th>
<th>fodder</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2000</td>
<td>19</td>
<td>178</td>
<td>37</td>
<td>198</td>
<td>304</td>
</tr>
<tr>
<td></td>
<td>(3.80)</td>
<td>(35.60)</td>
<td>(7.40)</td>
<td>(39.60)</td>
<td>(60.80)</td>
</tr>
<tr>
<td>2000-3000</td>
<td>37</td>
<td>136</td>
<td>36</td>
<td>37</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>(7.40)</td>
<td>(27.20)</td>
<td>(7.20)</td>
<td>(7.40)</td>
<td>(22.40)</td>
</tr>
<tr>
<td>3000-4000</td>
<td>74</td>
<td>64</td>
<td>35</td>
<td>4</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>(14.80)</td>
<td>(12.80)</td>
<td>(7.00)</td>
<td>(0.80)</td>
<td>(7.40)</td>
</tr>
<tr>
<td>4000-5000</td>
<td>93</td>
<td>52</td>
<td>130</td>
<td>92</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>(18.60)</td>
<td>(10.40)</td>
<td>(26.00)</td>
<td>(18.40)</td>
<td>(4.20)</td>
</tr>
<tr>
<td>5000-6000</td>
<td>74</td>
<td>37</td>
<td>112</td>
<td>130</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>(14.80)</td>
<td>(7.40)</td>
<td>(22.40)</td>
<td>(26.00)</td>
<td>(3.80)</td>
</tr>
<tr>
<td>6000-7000</td>
<td>129</td>
<td>21</td>
<td>130</td>
<td>37</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>(25.80)</td>
<td>(4.20)</td>
<td>(26.00)</td>
<td>(7.40)</td>
<td>(1.00)</td>
</tr>
<tr>
<td>Above 7000</td>
<td>74</td>
<td>12</td>
<td>20</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>(14.80)</td>
<td>(2.40)</td>
<td>(4.00)</td>
<td>(0.40)</td>
<td>(0.40)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>(100.00)</td>
<td>(100.00)</td>
<td>(100.00)</td>
<td>(100.00)</td>
<td>(100.00)</td>
</tr>
<tr>
<td><strong>Total expenditure</strong></td>
<td>25.99</td>
<td>14.95</td>
<td>24.64</td>
<td>17.88</td>
<td>11.12</td>
</tr>
<tr>
<td>(in Rs. Lakhs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average Expenditure</strong></td>
<td>5198</td>
<td>2990</td>
<td>4928</td>
<td>3576</td>
<td>2224</td>
</tr>
</tbody>
</table>

*Source: Computed from Primary Data.*
Thus from the analysis it can be concluded that the majority item of expenditure is fodder; oil cake comes next.

**6.1.7.2 Sample Respondents by Total Amount of Expenditure Incurred Per Month**

The earlier table provided a discussion on the category-wise expenditure incurred. In the present paragraph, so as to make comparison with the revenue from the sale of milk, the total expenditure has been calculated and discussed hereunder:

As is seen in Table 6.9, among the sample respondents, 37.80 per cent incur a total expenditure of Rs. 20,000-25,000 per month. There are 18.80 per cent respondents who spend above Rs. 25,000. While 16.20 per cent spend Rs. 15,000-20,000, another 13.20 per cent spend within the range of Rs.10,000-15,000. There are eight per cent respondents who spend a total of Rs.5000-10000 per month. The remaining six per cent spend less than Rs. 5000 per month.
Table 6.9 Distribution of Sample Respondents by Total Amount Expenditure Incurred Per Month

<table>
<thead>
<tr>
<th>Expenditure (in Rs. '000)</th>
<th>No. of Samples</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5</td>
<td>30</td>
<td>6.00</td>
</tr>
<tr>
<td>5-10</td>
<td>40</td>
<td>8.00</td>
</tr>
<tr>
<td>10-15</td>
<td>66</td>
<td>13.20</td>
</tr>
<tr>
<td>15-20</td>
<td>81</td>
<td>16.20</td>
</tr>
<tr>
<td>20-25</td>
<td>189</td>
<td>37.80</td>
</tr>
<tr>
<td>Above 25</td>
<td>94</td>
<td>18.80</td>
</tr>
<tr>
<td>Total</td>
<td>500.00</td>
<td></td>
</tr>
</tbody>
</table>

Total Expenditure (in Rs. Lakhs) 94.58

Average Expenditure (in Rs.) 18,916

Average expenditure per cow = 2168.27

*Source: Computed from Primary Data.*

The total expenditure incurred by all the sample respondents during the study period for one month is calculated to be Rs.94.58 lakhs. This works out to an average of Rs.18, 916 per sample household.

Thus from the analysis it can be concluded that a majority (56.60%) of the sample respondents spend Rs.20, 000-25,000 per month and above.
SECTION - II

6.2 RELATIONSHIP BETWEEN THE SOCIO ECONOMIC STATUS AND THE DAIRY ACTIVITY

The studies carried out in the context of dairy development in the Indian context could come out with a strong conclusion that the socio economic status of the farmers has a significant influence on the practice of dairy at the individual level. Hence, in the context of study area also, the need arises to examine the impact of the socio economic status on the various factors measuring the growth of small scale private dairies. In the present section such an attempt is being made. While to measure the socio economic status, the proxy variables are those of sex, number of members in the family, the type of family, and the level of Education of the farmers.

6.2.1 Relationship Between Distribution of Sex and the Number of Cows Owned

It is assumed that there is a close affinity between the distribution of sex and the number of cows raised. More specifically, it is expected that a female by the nature of the Indian culture is more attached to the family and the family activity
including the contribution to family income. Hence, it is assumed that the family managed by female is said to have more number of cows than the male managed houses. To test the significance of this relationship a chi square test has been attempted. The Null hypothesis framed for this purpose is that, “there is no significant relationship between sex and the number of cows owned”.

The calculated value for the observed frequencies provided in Table 6.10 is 10.87. The table value for 8 degrees of freedom and at 5 per cent level of significance is 15.50. A comparison of the calculated value with that of the table value indicates that the calculated value is less than the table value and hence the Null hypothesis that “there is no significant relationship between sex and the number of cows owned” been accepted.

**Table 6.10 Relationship Between Distribution of Sex and the Number of Cows Owned**

<table>
<thead>
<tr>
<th></th>
<th>Uto 5</th>
<th>5-7</th>
<th>7-9</th>
<th>9-11</th>
<th>11-13</th>
<th>13-15</th>
<th>15-17</th>
<th>17-19</th>
<th>Above 19</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>103</td>
<td>68</td>
<td>27</td>
<td>14</td>
<td>6</td>
<td>45</td>
<td>25</td>
<td>5</td>
<td>1</td>
<td>294</td>
</tr>
<tr>
<td>Female</td>
<td>67</td>
<td>40</td>
<td>15</td>
<td>18</td>
<td>6</td>
<td>25</td>
<td>28</td>
<td>7</td>
<td>0</td>
<td>206</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>108</td>
<td>42</td>
<td>32</td>
<td>12</td>
<td>70</td>
<td>53</td>
<td>12</td>
<td>1</td>
<td>500</td>
</tr>
</tbody>
</table>

*Source: Computed from Primary Data.*
Thus, from the analysis it can be concluded there is no significant relationship between sex and the number of cows owned”.

6.2.2 Relationship Between Size of Family and the Number of Cows Owned

It is assumed that there is a close affinity between the size of the family and the number of cows raised. More specifically, it is expected that more the number of members in the family, more is the availability of labour to share the household work and hence it is expected that more is the number of cows owned. Hence, it can be safely argued that the families with more number of members will have more number of cows. To test the significance of this relationship a chi square test has been attempted. The Null hypothesis framed for this purpose is that, “there is no significant relationship between the number of members in the family and the number of cows owned”.
Table 6.11 Relationship Between Size of Family and the Number of Cows Owned

<table>
<thead>
<tr>
<th></th>
<th>1-5</th>
<th>5-7</th>
<th>7-9</th>
<th>9-11</th>
<th>11-13</th>
<th>13-15</th>
<th>15-17</th>
<th>17-19</th>
<th>Above 19</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>39</td>
</tr>
<tr>
<td>4</td>
<td>37</td>
<td>35</td>
<td>15</td>
<td>12</td>
<td>2</td>
<td>18</td>
<td>15</td>
<td>3</td>
<td>0</td>
<td>137</td>
</tr>
<tr>
<td>Above 4</td>
<td>119</td>
<td>67</td>
<td>21</td>
<td>16</td>
<td>2</td>
<td>47</td>
<td>32</td>
<td>3</td>
<td>1</td>
<td>308</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>108</td>
<td>42</td>
<td>32</td>
<td>12</td>
<td>70</td>
<td>53</td>
<td>12</td>
<td>1</td>
<td>500</td>
</tr>
</tbody>
</table>

Source: Computed from Primary Data.

The calculated value for the observed frequencies provided in Table 6.11 is 79.33. The table value for 24 degrees of freedom and at 5 per cent level of significance is 36.40. A comparison of the calculated value with that of the table value indicates that the calculated value is greater than the table value and hence the Null hypothesis that “there is no significant relationship between the number of members in the family and the distribution of cows” has been rejected.

Thus from the analysis it can be concluded there is a significant relationship between the number of members in the family and the number of cows in the sample families.”
6.2.3 Relationship Between Distribution of Education Level of the Head of the Family and the Number of Cows Owned

It is assumed that there is a close affinity between the level of education and the number of cows raised. It can be viewed that higher the level of education less is the number of cows owned. This is because, a highly educated individual views that raising cows at home is below dignity and status. Hence, it can be safely argued that a highly educated individual or the head of the family, less is number of cows.

Table 6.12 Relationship Between Distribution of Education Level of the Head of the Family and the Number of Cows Owned

<table>
<thead>
<tr>
<th></th>
<th>0-5</th>
<th>5-7</th>
<th>7-9</th>
<th>9-11</th>
<th>11-13</th>
<th>13-15</th>
<th>15-17</th>
<th>17-19</th>
<th>Above 19</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>11</td>
<td>2</td>
<td>12</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>48</td>
</tr>
<tr>
<td>Primary</td>
<td>87</td>
<td>80</td>
<td>22</td>
<td>6</td>
<td>2</td>
<td>19</td>
<td>16</td>
<td>5</td>
<td>0</td>
<td>237</td>
</tr>
<tr>
<td>Middle</td>
<td>67</td>
<td>16</td>
<td>5</td>
<td>10</td>
<td>3</td>
<td>28</td>
<td>10</td>
<td>2</td>
<td>0</td>
<td>141</td>
</tr>
<tr>
<td>Secondary</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>13</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>42</td>
</tr>
<tr>
<td>HSC</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>9</td>
<td>2</td>
<td>0</td>
<td>31</td>
</tr>
<tr>
<td>Degree</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>108</td>
<td>42</td>
<td>32</td>
<td>12</td>
<td>70</td>
<td>53</td>
<td>12</td>
<td>1</td>
<td>500</td>
</tr>
</tbody>
</table>

Source: Computed from Primary Data.
To test the significance of this relationship a chi square test has been attempted. The Null hypothesis framed for this purpose is that, “there is no significant relationship between the level of educational attainment and the number of cows owed”.

The calculated value for the observed frequencies provided in Table 6.12 is 660.60. The table value for 40 degrees of freedom and at 5 per cent level of significance is 61.70. A comparison of the calculated value with that of the table value indicates that the calculated value is greater than the table value and hence the Null hypothesis that “there is no significant relationship between the level of educational attainment and the number of cows owed” has been rejected.

Thus from the analysis it can be concluded there is a significant relationship between the level of educational attainment and the number of cows owed”. 
6.2.4 Relationship Between Distribution of Type of Family and the Number of Cows Owned

It is assumed that there is a close affinity between the type of family and the number of cows raised. It can be said that in the case of nuclear family, the size of the members is less and with a less number of members; the time left for cow rearing is expected to be less, while in the case of joint families, the number of members is large and the members can share the household work. Hence, it can be safely argued that in a joint family there is expected to be more number of cows. To test the significance of this relationship a chi square test has been attempted. The Null hypothesis framed for this purpose is that, “there is no significant relationship between the type of family and the number of cows owed”.

**Table 6.13 Relationship Between Distribution of Type of Family and the Number of Cows Owned**

<table>
<thead>
<tr>
<th></th>
<th>Up to 5</th>
<th>5-7</th>
<th>7-9</th>
<th>9-11</th>
<th>11-13</th>
<th>13-15</th>
<th>15-17</th>
<th>17-19</th>
<th>Above 19</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>90</td>
<td>60</td>
<td>24</td>
<td>22</td>
<td>7</td>
<td>60</td>
<td>35</td>
<td>6</td>
<td>0</td>
<td>304</td>
</tr>
<tr>
<td>Joint</td>
<td>80</td>
<td>48</td>
<td>18</td>
<td>10</td>
<td>5</td>
<td>10</td>
<td>18</td>
<td>6</td>
<td>1</td>
<td>196</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>108</td>
<td>42</td>
<td>32</td>
<td>12</td>
<td>70</td>
<td>53</td>
<td>12</td>
<td>1</td>
<td>500</td>
</tr>
</tbody>
</table>

*Source: Computed from Primary Data.*

The calculated value for the observed frequencies provided in Table 6.13 is 27.75. The table value for 8 degrees of freedom and
at 5 per cent level of significance is 15.50. A comparison of the calculated value with that of the table value indicates that the calculated value is greater than the table value and hence the Null hypothesis that “there is no significant relationship between the type of family and the number of cows owed” has been rejected.

Thus from the analysis it can be concluded there is a significant relationship between the type of family and the number of cows owed”.

6.2.5 Relationship Between Distribution of Main Occupation of the Family and the Number of Cows Owned

It is assumed that there is a close affinity between the nature of main occupation and the number of cows raised. It can be said that cow rearing is one of the allied activities of agriculture and hence it is expected that the head of the family who is engaged in agriculture is expected to show interest in raising cows. Hence, it can be safely argued that the heads of the families who are engaged in agricultural activity are expected to rise cows than the families whose heads of the families are engaged in non agricultural activities. To test the significance of this relationship a chi square test has been attempted. The Null hypothesis framed for this purpose is that, “there is no significant relationship between the type of occupation and the number of cows owed”.
The calculated value for the observed frequencies provided in Table 6.14 is 193.52. The table value for 40 degrees of freedom and at 5 per cent level of significance is 61.70. A comparison of the calculated value with that of the table value indicates that the calculated value is greater than the table value and hence the Null hypothesis that “there is no significant relationship between the type of occupation and the number of cows owed” has been rejected.

**Table 6.14 Relationship between Distributions of Main Occupation of the Family and the Number of Cows Owned**

<table>
<thead>
<tr>
<th></th>
<th>Up to 5</th>
<th>5-7</th>
<th>7-9</th>
<th>9-11</th>
<th>11-13</th>
<th>13-15</th>
<th>15-17</th>
<th>17-19</th>
<th>Above 19</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>59</td>
<td>5</td>
<td>14</td>
<td>23</td>
<td>9</td>
<td>35</td>
<td>19</td>
<td>4</td>
<td>0</td>
<td>168</td>
</tr>
<tr>
<td>Dairying</td>
<td>101</td>
<td>96</td>
<td>22</td>
<td>6</td>
<td>2</td>
<td>33</td>
<td>31</td>
<td>5</td>
<td>0</td>
<td>296</td>
</tr>
<tr>
<td>Self employed</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Employed in Private</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Employed in Government Business</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>108</td>
<td>42</td>
<td>32</td>
<td>12</td>
<td>70</td>
<td>53</td>
<td>12</td>
<td>1</td>
<td>500</td>
</tr>
</tbody>
</table>

*Source: Computed from Primary Data.*
Thus from the analysis it can be concluded there is a significant relationship between the type of occupation and the number of cows owed”.

6.2.6 Relationship Between Distribution of Production and the Number of Cows Owned

It is expected that large the number of cows, large the quantum of production of milk. This relationship is being tested with the help of chi square test. The Null hypothesis framed for this purpose is that, “there is no significant relationship between the level of production and the number of cows owed”.

Table 6.15 Relationship Between Distribution of Production and the Number of Cows Owned

<table>
<thead>
<tr>
<th></th>
<th>Upto 5</th>
<th>5-7</th>
<th>7-9</th>
<th>9-11</th>
<th>11-13</th>
<th>13-15</th>
<th>15-17</th>
<th>17-19</th>
<th>Above 19</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 20</td>
<td>15</td>
<td>20</td>
<td>5</td>
<td>12</td>
<td>1</td>
<td>7</td>
<td>10</td>
<td>4</td>
<td>0</td>
<td>74</td>
</tr>
<tr>
<td>20-40</td>
<td>34</td>
<td>28</td>
<td>19</td>
<td>10</td>
<td>4</td>
<td>11</td>
<td>18</td>
<td>5</td>
<td>0</td>
<td>129</td>
</tr>
<tr>
<td>40-60</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>7</td>
<td>4</td>
<td>39</td>
<td>10</td>
<td>3</td>
<td>0</td>
<td>93</td>
</tr>
<tr>
<td>60-80</td>
<td>109</td>
<td>48</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>13</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>185</td>
</tr>
<tr>
<td>Above 80</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>170</td>
<td>108</td>
<td>42</td>
<td>32</td>
<td>12</td>
<td>70</td>
<td>53</td>
<td>12</td>
<td>1</td>
<td>500</td>
</tr>
</tbody>
</table>

*Source: Computed from Primary Data.*
The calculated value for the observed frequencies provided in Table 6.15 is 238.60. The table value for 32 degrees of freedom and at 5 per cent level of significance is 49.80. A comparison of the calculated value with that of the table value indicates that the calculated value is greater than the table value and hence the Null hypothesis that “there is no significant relationship between the level of production and the number of cows owed” has been rejected.

Thus from the analysis it can be concluded there is a significant relationship between the level of production and the number of cows owned”.

6.2.7 Relationship Between the Total Cost of Production and the Total Output

It is expected that larger the output of milk, larger is the cost expected. This is because; a higher production is possible only when there is no large number of cows. With more number of cows, more is expected to be the cost of maintaining them. Hence, it is expected that a higher level of production of milk is possible only when there is higher cost incurred. The Null hypothesis framed for this purpose is that, “there is no significant relationship between the level of production of milk and the total cost incurred".
The calculated value for the observed frequencies provided in Table 6.16 is 138.79. The table value for 20 degrees of freedom and at 5 per cent level of significance is 31.40. A comparison of the calculated value with that of the table value indicates that the calculated value is greater than the table value and hence the Null hypothesis that “there is no significant relationship between the level of production of milk and the total cost incurred” has been rejected.

Thus from the analysis it can be concluded there is a significant relationship between the level of production of milk and the total cost incurred.
6.2.8 Relationship Between the Number of Cows Owned and the Total Expenditure Incurred

It is expected that more is the number of cows, more is the total cost incurred. This relationship is being tested with the help of chi square test. The Null hypothesis framed for this purpose is that, “there is no significant relationship between the level of production and the total cost incurred”.

The calculated value for the observed frequencies provided in Table 6.17 is 238.60. The table value for 40 degrees of freedom and at 5 per cent level of significance is 61.70. A comparison of the calculated value with that of the table value indicates that the calculated value is greater than the table value and hence the Null hypothesis that “there is no significant relationship between the level of production and the total cost incurred” has been rejected.
Table 6.17 Relationship Between the Number of Cows Owned and the Total Expenditure Incurred

<table>
<thead>
<tr>
<th>Cows</th>
<th>Less than 5</th>
<th>5-10</th>
<th>10-15</th>
<th>15-20</th>
<th>20-25</th>
<th>Above 25</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upto 5</td>
<td>5</td>
<td>11</td>
<td>25</td>
<td>22</td>
<td>47</td>
<td>60</td>
<td>170</td>
</tr>
<tr>
<td>5-7</td>
<td>8</td>
<td>5</td>
<td>19</td>
<td>21</td>
<td>46</td>
<td>9</td>
<td>108</td>
</tr>
<tr>
<td>7-9</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>18</td>
<td>5</td>
<td>5</td>
<td>42</td>
</tr>
<tr>
<td>9-11</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>11-13</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>13-15</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>49</td>
<td>5</td>
<td>70</td>
</tr>
<tr>
<td>15-17</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>31</td>
<td>5</td>
<td>53</td>
</tr>
<tr>
<td>17-19</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Above 19</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cost</td>
<td>30</td>
<td>40</td>
<td>66</td>
<td>81</td>
<td>189</td>
<td>94</td>
<td>500</td>
</tr>
</tbody>
</table>

Source: Computed from Primary Data.

Thus from the analysis it can be concluded there is a significant relationship between the level of production and the total cost incurred.
SECTION - III

6.3.1 COST BENEFIT ANALYSIS OF MILK PRODUCTION

One of the objectives of the present piece of research is to estimate the profitability of the dairy sector. This requires the calculation of cost benefit analysis. This exercise of CBA requires the estimation of cost and the benefits accrued from the dairy sector.

To carry out the CBA further, the total farmers have been divided into three categories. The categorization is made on the basis of the quartile deviation worked out for the sample data. The use of such technique helped to divide the entire sample farmers on the basis of their production of milk. However, this categorization is limited only to the present study.

From the primary data it was understood that the output ranges from a minimum of 1.50 litres to a maximum of 27 litres. Given the individual data on the production, with the help of inter quartile deviation, the entire range of data have been divided into three equal parts. The statistical analysis provided the ranges as: upto the production of 9 litres as the small producers or farmers,
9-15 litres as the medium producers or farmers and above 15 litres as the large producers or the large farmers.

Table 6.18 Cost and Returns of Milk Production
(in Rs. per animal per annum)

<table>
<thead>
<tr>
<th></th>
<th>Small (Upto litres)</th>
<th>Medium (9-15 litres)</th>
<th>Large (above 15 litres)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fodder</td>
<td>4926</td>
<td>4656</td>
<td>4348</td>
<td>13930</td>
</tr>
<tr>
<td>Labour (including the imputed cost)</td>
<td>1482</td>
<td>1358</td>
<td>1273</td>
<td>4113</td>
</tr>
<tr>
<td>Veterinary, transport and other charges</td>
<td>1076</td>
<td>1009</td>
<td>974</td>
<td>3059</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>7484</td>
<td>7023</td>
<td>6595</td>
<td>21102</td>
</tr>
<tr>
<td>Total Fixed Cost</td>
<td>13768</td>
<td>12583</td>
<td>11588</td>
<td>37939</td>
</tr>
<tr>
<td>Depreciation on the building (for 14 YEARS @ 7.15% per annum)</td>
<td>984.412</td>
<td>899.6845</td>
<td>828.542</td>
<td>2712.6385</td>
</tr>
<tr>
<td>Interest on Investment (12% bank rate)</td>
<td>1652.16</td>
<td>1509.96</td>
<td>1390.56</td>
<td>4552.68</td>
</tr>
<tr>
<td><strong>Total Fixed Cost</strong></td>
<td>2636.572</td>
<td>2409.645</td>
<td>2219.102</td>
<td>7265.3185</td>
</tr>
<tr>
<td>Gross Cost</td>
<td>10121</td>
<td>9433</td>
<td>8814</td>
<td>28367</td>
</tr>
<tr>
<td>Total Income</td>
<td>10478</td>
<td>10514</td>
<td>10643</td>
<td>31635</td>
</tr>
<tr>
<td>Net Income</td>
<td>357.428</td>
<td>1081.356</td>
<td>1828.898</td>
<td>3267.6815</td>
</tr>
<tr>
<td>Benefit-cost ratio</td>
<td>1:0.035</td>
<td>1:0.11</td>
<td>1:0.21</td>
<td>1:0.12</td>
</tr>
<tr>
<td>Percentage Benefit-Cost Ratio (in Percentage)</td>
<td>3.53</td>
<td>11.46</td>
<td>20.75</td>
<td>11.52</td>
</tr>
</tbody>
</table>

Source: Computed from Primary Data.

From the primary data, the various costs are added up to arrive at the annual cost involved. These include under the broad category as the fixed cost and the variable cost. While in the
variable cost, the expenses on fodder, human labour, veterinary and other expenses were included. Under the fixed cost, depreciation of the cow shed (a flat rate of 7.15 per cent per annum was considered as, as discussed already, a majority of the sheds are tiled shed) and interest on fixed assets (at 12 percent per annum) were considered as major item. Similarly, the total revenue receipt has been worked out for the sale of milk and milk produce. From this information, the benefit-cost ratio has been worked out for the overall sample and for the small farmers, medium farmers and large farmers separately and provided in table 6.18.

From the table it can be understood that all the cost are declining with size of output. Similarly, the revenue increases with the size. The increasing income on the one hand and the declining cost on the other have resulted in increasing net income with increasing size. As a result, the benefit cost ratio increases with the size.

Such a result is expected, since, the farmers are supposed to enjoy the economies of scale due to higher production. That is, a better utilization of the resources / inputs by the farm groups might have helped them to enhance the returns from dairy farming.
6.3.2 Regression Co-Efficient of Cost Function

The impact of output on the cost incurred is being examined under the cost function. It helps to understand the interrelationship between cost of maintaining the milch animal and the yield.

The result of the analysis is shown in Table 6.19. The estimated results indicate that the cost of maintaining milch animal has been influenced significantly by the quantity of milk produced, for all farm households. The extent of variation in the maintenance cost explained by the independent variables varied from a high level of 7.59 per cent in the case of small farmers to a minimum of 6.94 per cent in the case of medium farmers to 5.82 per cent for large farmers. Thus, from the analysis it can be concluded that for all farm groups, the quantity of milk produced had a positive impact on the maintenance cost (i.e) one percent increase in milk produced would bring about an increase in the cost of maintaining the milch animals by 7.589 units for small farmers, 6.9427 units for medium farmers and 5.8236 units for large farmers.
Table 6.19 Regression Co-Efficient of Cost Function

<table>
<thead>
<tr>
<th>Type of farm</th>
<th>Slope Coefficient</th>
<th>S.E.</th>
<th>'t' value</th>
<th>F value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small farmers</td>
<td>7.589</td>
<td>0.621</td>
<td>12.22</td>
<td>98.60*</td>
</tr>
<tr>
<td>Medium farmers</td>
<td>6.9427</td>
<td>0.438</td>
<td>15.85</td>
<td>101.93*</td>
</tr>
<tr>
<td>Large farmers</td>
<td>5.8236</td>
<td>0.984</td>
<td>5.92</td>
<td>132.59*</td>
</tr>
</tbody>
</table>

Note: *-Significant at 1% level

Thus, from the analysis it can be concluded that the maintenance cost of milch animals increased with the increase in milk yield and this increase was higher for smaller farmers and lesser for large farmers and the increase is found to be significant for all the farmers.

6.3.3 Milk Production Function for Milch Animals

Production function was used to find out the input-output relationship. Marginal value products of inputs used are also examined to identify the resource - use efficiency in milk production in different farm groups. The multiple regression analysis in the form of Cobb Douglas production function was done to study the relative importance of various determinants of milk production in different size of farms and the results are given in Table 6.20. The results provided in the table indicate that the
The explanatory power of the models fitted ($R^2$) is 0.84, 0.89 and 0.92 for small, medium and larger farmers respectively. This indicated that 84 per cent to 86 to 92 per cent of the variations in the value of milk production in different farm groups are explained by the changes in the independent variables, which are namely, Fodder ($X_1$), Human labour ($X_2$) and Veterinary & other charges ($X_3$). The co-efficient of fodder is positive and significant for all farm groups. This means, for every one unit of increase in fodder, the milk production increases by 0.615, 0.618 and 0.770 respectively in the case of dairy farms of small, medium and large farmers respectively. The regression coefficient of 0.180, 0.2278 and 0.4298 for Human labour indicates that basically, the impact of human labour on the milk production is positive and significant for small, medium and large farmers. The coefficient indicates that, in the case of small farmers, one unit of increase in labour increases production by 0.18 units. Similarly, one unit of increase in labour input increases the milk production by 0.2278 units for small farmers. This is 0.298 in the case of large farmers.
Table 6.20 Milk Production Function for Milch Animals

<table>
<thead>
<tr>
<th></th>
<th>Small Farmers</th>
<th>Medium Farmers</th>
<th>Large Farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.852</td>
<td>1.182</td>
<td>1.237</td>
</tr>
<tr>
<td>Fodder (X₁)</td>
<td>0.615* (5.852)</td>
<td>0.618* (4.562)</td>
<td>0.770* (3.528)</td>
</tr>
<tr>
<td>Human labour (X₂)</td>
<td>0.180* (3.12)</td>
<td>0.2278* (5.98)</td>
<td>0.4298* (5.89)</td>
</tr>
<tr>
<td>Veterinary &amp; other charges (X₃)</td>
<td>0.0592* (3.37)</td>
<td>0.0684* (3.55)</td>
<td>0.0817* (8.17)</td>
</tr>
<tr>
<td>R²</td>
<td>0.84</td>
<td>0.89</td>
<td>0.92</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.83</td>
<td>0.84</td>
<td>0.90</td>
</tr>
<tr>
<td>F-Ratio</td>
<td>127.61</td>
<td>142.39</td>
<td>163.42</td>
</tr>
</tbody>
</table>

* & ** indicates significant at 1% and 5% levels respectively. Figures within parentheses indicates ‘t’ values of regression coefficients.

The regression coefficients for veterinary and other expenses indicate that the values are: 0.0592, 0.0684 and 0.0817 respectively for small, medium and large farmers. This shows that every one unit of increase in the veterinary expenses increases the milk production by 0.0592 units, 0.0684 units and 0.0817 units respectively for small, medium and large farmers.

An overall examination of the coefficients of the variables indicates that as the size of the farm increases, the coefficient value also increases. This indicates that for the given level of input, the efficiency of the input increases with the increase in the size of farms. It can also be said that all the inputs considered have
emerged as significant factors explaining variation in milk production.

Thus from the analysis it can be concluded that the impact of all the factor inputs have the expected theoretical sign and have a significant influence on the level of milk output.

6.3.4 Resource Productivity and Resource Use Efficiency

In order to test the resource use efficiency in dairy units, marginal value productivity (MVP) of fodder, and human labour were computed at the geometric mean level and they were compared with their respective factor costs, which is taken to be unity. If the ratio is one, it suggests that the resource is being used optimally. A greater than one ratio indicates that there is a possibility of increasing the resource under consideration both to increase productivity and profitability. A ratio less than one indicate that the resource could be reduced without any detrimental effect on production and productivity. The details regarding the marginal value products (MVP) of different inputs with the corresponding 't' values for different size groups of farms are presented in Table 6.21.
A perusal of Table 6.21 reveals that there had been inefficiencies in the utilization of resources by all farm groups irrespective of their sizes. The MVPs of fodder and human labour in the case of medium and large farmers are all greater than one. However, the MVP coefficients worked out in the case of small farmers for both the fodder and human labour are found to be less than one indicating the inefficiency in the use of the two factor inputs. The probable explanation to this low input coefficient is that the strong desire to increase milk yield coupled with lack of knowledge may have forced the small farmers to overfeed their animals. Thus by reducing the use of all inputs, the small farmers could increase the milk production in their dairy units. For medium farmers the MVP coefficient is higher for both the input but with a higher value in the case of fodder than the human labour. This again indicates the higher utilization productivity of fodder than the human labour. Similarly, in the case of large farmers also, the MVP coefficient of fodder is greater than one indicating the over utilization of this inputs, the MVP of fodder and human labour was less than one implying over - utilization of these
inputs. Thus for this group of farmers, yield of milk could be increased by reducing the use of fodder and human labour.

**Table 6.21 Marginal Value Products of Various Factors Affecting Milk Production**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Small Farmers</th>
<th>Medium Farmers</th>
<th>Large Farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fodder</td>
<td>0.523*</td>
<td>1.1157*</td>
<td>1.8525*</td>
</tr>
<tr>
<td></td>
<td>(3.6158)</td>
<td>(4.885)</td>
<td>(4.370)</td>
</tr>
<tr>
<td>Human labour</td>
<td>0.3581*</td>
<td>1.0683*</td>
<td>1.2421*</td>
</tr>
<tr>
<td></td>
<td>(8.978)</td>
<td>(12.864)</td>
<td>(23.5166)</td>
</tr>
</tbody>
</table>

Note: *-Significant at 1% level; **-Significant at 5% level; Figures within parentheses are ‘t’ values of regression coefficients

Thus from the analysis it can be concluded that in the case of small farmers, there is under utilization of factor inputs while in the case of medium and large farmers there is over utilization of factor inputs.

### 6.3.5 Problems Faced in Raising Livestock

The earlier paragraph provided a detailed discussion on the expenditure incurred in raising the cows and the income from them. However, any economic activity is not free from problems. Hence, an understanding of the nature of problems faced and to provide suggestions on the basis of the problems becomes essential and hence in the present paragraph it is attempted to understand the problems faced by the farmer respondents.
As it is seen in table 6.22, half of the respondents highly agree with the view that ‘it is difficult to market the product”. While 35.50 per cent moderately agree with this view, 6.40 neither agree nor disagree with the view on the difficulty in marketing. There are 4.80 per cent respondents who moderately agree with the view on the difficulty in marketing. The remaining 3.40 per cent strongly disagree with the view that it is difficult to market the product.

**Table 6.22 Composite Rank Index of the Problems Faced in Raising Livestock**

<table>
<thead>
<tr>
<th>Problems</th>
<th>Strongly Agree</th>
<th>Moderately Agree</th>
<th>Neither Agree Nor Disagree</th>
<th>Moderately Disagree</th>
<th>Strongly Disagree</th>
<th>Rank Sum total</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty in marketing</td>
<td>250 (50.00)</td>
<td>177 (35.40)</td>
<td>32 (6.40)</td>
<td>24 (4.80)</td>
<td>17 (3.40)</td>
<td>881</td>
<td>1</td>
</tr>
<tr>
<td>High cost of Animal Feed</td>
<td>34 (6.80)</td>
<td>290 (58.00)</td>
<td>86 (17.20)</td>
<td>58 (11.60)</td>
<td>32 (6.40)</td>
<td>1264</td>
<td>3</td>
</tr>
<tr>
<td>Difficult to Get Finance for maintenance and expansion</td>
<td>14 (2.80)</td>
<td>32 (6.40)</td>
<td>41 (8.20)</td>
<td>394 (78.80)</td>
<td>19 (3.80)</td>
<td>1872</td>
<td>4</td>
</tr>
<tr>
<td>Low Price for the product</td>
<td>201 (40.20)</td>
<td>230 (46.00)</td>
<td>14 (2.80)</td>
<td>18 (3.60)</td>
<td>37 (7.40)</td>
<td>960</td>
<td>2</td>
</tr>
<tr>
<td>High cost of Labour</td>
<td>8 (1.60)</td>
<td>12 (2.40)</td>
<td>14 (2.80)</td>
<td>16 (3.20)</td>
<td>450 (90.00)</td>
<td>2250</td>
<td>6</td>
</tr>
<tr>
<td>Lack of veterinary facilities</td>
<td>15 (3.00)</td>
<td>18 (3.60)</td>
<td>21 (4.20)</td>
<td>32 (6.40)</td>
<td>414 (82.80)</td>
<td>2312</td>
<td>5</td>
</tr>
<tr>
<td>Unsuitable agro climate</td>
<td>2 (0.40)</td>
<td>6 (1.20)</td>
<td>9 (1.80)</td>
<td>14 (2.80)</td>
<td>469 (93.80)</td>
<td>2345</td>
<td>7</td>
</tr>
</tbody>
</table>
In the case of the opinion that ‘price for the product is low’, 46 per cent moderately agree with this view. Similarly, a majority of the sample respondents moderately agree with the view that ‘the cost of fodder is very high’.

In the case of the factor on ‘difficult to get finance for maintaining and expanding the business’, 58 per cent moderately agree with this view. While 17.20 per cent neither agree nor disagree with this view, 11.60 per cent moderately agree with this view. There are 6.80 per cent who strongly agree with this, the remaining 6.40 per cent strongly disagree with this.

In the case of the problem on ‘lack of veterinary facility’ 78.80 per cent moderately disagree with this view. While a majority (90 per cent) of the sample respondents strongly disagree with the view that ‘the cost of labour is high’, 90 per cent of the respondents strongly disagree that ‘the cost of labour is very high’. Also, 93.80 per cent strongly disagree with the view that the climatic condition in the sample area is unsuitable for raising cows.
The different factors considered on the problem faced by the agriculturists indicated a different view and hence the overall problems in the order of the importance could not be identified. To overcome this and to identify the order of the importance of the problems, a composite rank index has been worked out and discussed.

The opinion of the respondents is arranged using the ‘Likert Scale’ has been used. The scale took the value of 1 for the opinion on ‘Strongly Agree’, value 2 for the opinion on “Moderately Agree”, value of 3 for ‘Neither Agree nor Disagree’, the value of 4 for ‘Moderately Disagree’ and value of 5 for ‘Strongly Disagree’.

The number of respondents on each of the opinion is multiplied with the respective scores to arrive the rank sum total. The sum total is then ranked in the ascending order of the rank to arrive at the Composite Rank Index. The composite rank index worked out indicates that the factor on “Difficulty in marketing” has been viewed as the foremost important problem in cow rearing. The factor on ‘Low Price for the product’ has been viewed by the
respondents as the second most important problem. The ranking of
the other factors are in the order as “High cost of Animal Feed’ (3rd),
‘Difficult to Get Finance for maintenance and expansion’ (4th) ‘Lack
of veterinary facilities’ (5th), ‘High cost of Labour (6th) and
‘Unsuitable agro climate’ (7th).

Thus from the analysis it can be concluded that marketing of
the produce has been considered as the foremost important
problem in the milk business.

6.3.6 Sample Respondents by Type of Problems Faced in
Marketing Milk Produce

The earlier paragraph provided a detailed discussion on the
general problems faced by the farmers in the process of production.
In the present paragraph it is attempted to examine the specific
problem faced by the farmers in marketing the product. Given the
varied problems in marketing the product, so as to identify the
relative importance or the order of the problem, a composite rank
index has been used.
Table 6.23 Distribution of Sample Respondents by Type of Problems Faced in Marketing Milk Produce

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>Rank Sum Total</th>
<th>Average Rank Sum Total</th>
<th>Composite Rank Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient Production</td>
<td>328</td>
<td>72</td>
<td>39</td>
<td>28</td>
<td>22</td>
<td>7</td>
<td>4</td>
<td>881</td>
<td>1.762</td>
<td>2</td>
</tr>
<tr>
<td>Long Distance to Market</td>
<td>43</td>
<td>19</td>
<td>38</td>
<td>84</td>
<td>121</td>
<td>108</td>
<td>87</td>
<td>2393</td>
<td>4.786</td>
<td>7</td>
</tr>
<tr>
<td>High cost of Transport</td>
<td>77</td>
<td>53</td>
<td>121</td>
<td>42</td>
<td>69</td>
<td>16</td>
<td>122</td>
<td>2009</td>
<td>4.018</td>
<td>5</td>
</tr>
<tr>
<td>Cultural Limitation</td>
<td>62</td>
<td>73</td>
<td>50</td>
<td>71</td>
<td>63</td>
<td>42</td>
<td>139</td>
<td>2182</td>
<td>4.364</td>
<td>6</td>
</tr>
<tr>
<td>Difficulty faced in Collection for the sale of milk</td>
<td>273</td>
<td>128</td>
<td>43</td>
<td>29</td>
<td>12</td>
<td>8</td>
<td>7</td>
<td>931</td>
<td>1.862</td>
<td>3</td>
</tr>
<tr>
<td>Difficulty in storage</td>
<td>285</td>
<td>84</td>
<td>27</td>
<td>22</td>
<td>35</td>
<td>41</td>
<td>6</td>
<td>1085</td>
<td>2.17</td>
<td>4</td>
</tr>
<tr>
<td>Low Price</td>
<td>343</td>
<td>73</td>
<td>32</td>
<td>29</td>
<td>16</td>
<td>5</td>
<td>2</td>
<td>825</td>
<td>1.65</td>
<td>1</td>
</tr>
</tbody>
</table>

As it is seen in table 6.23, from the pilot survey made it was identified from the sample respondents that Insufficient Production, Long Distance to Market, High cost of Transport, Cultural Limitation, Difficulty faced in Collection for the sale of milk and Difficulty in storage are the major problem identified. In the schedule, these problems were included and the data pertaining to these problems were obtained.
From table 6.23 it can be understood that prevailing of Low Price for the product constituted one of the foremost and important problem in marketing. The second problem of marketing is Insufficient Production. The order of other problems include: Difficulty faced in Collection for the sale of milk, Difficulty in storage, High cost of Transport, Cultural Limitation and Long Distance to Market.

Thus from the analysis, it can be concluded that prevailing of Low Price for the product constituted the foremost problem in marketing.

**6.3.7 Factors Affecting the Competitiveness of the Dairy Sector**

To assess the dairy sector’s competitiveness, a performance analysis looked at five factors: demand conditions, market structure, factor conditions, related supporting industries, and government and the enabling environment is attempted.
6.3.7.1 Demand Conditions

The demand for dairy products in the study area has been growing continuously. The trends in the positive growth in the supply of milk stand as an ample testimony to this statement. Moreover, the district per capita income of Kanyakumari has been growing at the annual rate of 5 per cent, which is one of the highest. Added with this, the district has achieved a higher level of literacy which is next only to Chennai in the Census period 2011. Hence, the demand for dairy products in the district is likely to grow significantly in the coming years, driven by more consumers, higher incomes and greater interest in nutrition.

Consumption of processed and packaged dairy products is increasing in urban areas. Because of the increasing competition from the private sector, several national brands have entered the market and expanded consumers’ expectation of quality – although only among a small proportion of the population. As discussed already, in many sample areas of the district, the views of the seller indicated that people still prefer unpacked and unprocessed milk
delivered by a local milkman because of its taste and the perception of freshness. The price elasticity for milk is high, thus demand for milk is very sensitive to price changes.

**Table 6.24 Demand Conditions in the Sample District**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market size and growth</td>
<td>Market growth is due to high per capita consumption, increasing population and health consciousness</td>
</tr>
<tr>
<td>Consumption patterns</td>
<td>Consumption of processed and packaged dairy products is increasing in urban areas</td>
</tr>
<tr>
<td>Consumption patterns</td>
<td>Unpackaged milk is still preferred because of taste and price</td>
</tr>
<tr>
<td>Sophistication of consumers</td>
<td>Consumer awareness on product quality is increasing but in a very small portion of the population</td>
</tr>
<tr>
<td>Receptivity to new products</td>
<td>Mostly urban consumers have a very low but increasing interest in new products</td>
</tr>
<tr>
<td>Price elasticity</td>
<td>Price elasticity is high</td>
</tr>
<tr>
<td>Impact of market opening on demand</td>
<td>Consumers now have a variety of quality products</td>
</tr>
</tbody>
</table>

**6.3.7.2 Market Structure in the Sample District**

As discussed already in the analysis, Cooperatives are the dominant players in the formal sector. However, the organized sector’s share in milk procurement is very low because a large proportion of the milk and milk products are sold through the informal channel. As discussed already, the informal demand absorbs a sizeable portion of the supply of milk. This reduces the
marketable surplus leaving a big gap between the supply and demand and thereby providing ample scope for expansion.

**Table 6.25 Market Structure**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>Still large share of produce of marketable surplus goes through informal channel</td>
</tr>
<tr>
<td>Quality of milk through informal channel is an issue and to some extent in formal channel as well</td>
<td></td>
</tr>
<tr>
<td>Competitive structure</td>
<td>Little competition to cooperatives because very small number of private sector industries are in the market until recently</td>
</tr>
<tr>
<td>There is a chance for the entry of supermarkets in retailing of milk which may increase the competitive structure in the study area.</td>
<td></td>
</tr>
<tr>
<td>Governance (value chain type)</td>
<td>Governance of cooperative structures causes a biggest concern and there needs efficiency and expansion of cooperatives in the study area.</td>
</tr>
<tr>
<td>Role of &quot;lead&quot; or organizing firms</td>
<td>Role of lead agency has been hampered by government interference in cooperatives</td>
</tr>
<tr>
<td>Farmer organization</td>
<td>Immense scope for improving management and governance through farmer organizations</td>
</tr>
<tr>
<td>Marketing chain capacity and efficiency</td>
<td>Scope for enhancing efficiency of distribution of the milk produce in the study area.</td>
</tr>
<tr>
<td>Distribution channels</td>
<td>Cooperatives have a well-developed distribution channel in urban areas</td>
</tr>
<tr>
<td>How market signals are conveyed or distorted</td>
<td>Government and political interference in price setting, limits prices being determined by market forces.</td>
</tr>
</tbody>
</table>

The members of the informal sector including the small farmers sell the produce in urban and peri-urban areas directly to
consumers, small private processors or hotels. They may also sell processed products, such as paneer or separated cream. The quality of the milk and milk products is not guaranteed and hence attempt can be made to improve and sustain the quality sold in loose form. It is often adulterated with several additives to control spoilage.

Cooperatives are the central players in the formal dairy sector. The cooperatives have a three-tier structure – i) primary societies at the village level, ii) unions at the district level and iii) federations at the state level. Currently, there are 14 federations in India.

The cooperatives in the state and in the study district are state owned. The government officers as managing directors are appointed by the state government. However, these officials are change of up to three times a year. Because of such governance, cooperatives are mere parastatals and do not work in the true spirit of cooperatives – with elected farmer representatives and professionals who run the organization. This governance structure influences the functioning of the entire chain, from the state federation to the village societies and thus significantly impacts farmers’ involvement in the chain.
For most of the private dairies, agents procure the milk from farmers. Some private dairies have established village societies for milk collection that follow the cooperative model. However, this model requires much larger investment and is not economically feasible, considering that cooperatives receive considerable development support from the government (such as feed subsidies). It is not uncommon for private dairies to make loans to farmers, which is a key reason for the somewhat large share of milk directed to this channel.

6.3.7.3 Factor Conditions

Factor conditions for dairying entail the quality of animals, human resources and technical skills, land availability, capital, credit, infrastructure and other inputs relevant to the value chain, as the following explains.

The quality of animals is critical in determining its milk productivity and hence overall production. As comparison of the macro level productivity with that of the productivity in the study area may indicate the low productivity per animal which hinders development of the dairy sector in the study area.

The low productivity is a result of ineffective cattle and buffalo breeding programmes, limited extension and management on dairy
development, traditional feeding practices that are not based on scientific feeding methods, and limited availability and affordability of quality feed and fodder. In addition, the limited supply of quality animals is exacerbated by policies limiting interstate movement of animals. Indigenous cattle and buffalo make up 45 percent of the country’s total milch population, in contrast to the cross-bred cows at 10 percent.

**Table 6.26 Factor Conditions**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Herd</strong></td>
<td></td>
</tr>
<tr>
<td>Herd inventory</td>
<td>Very large number of indigenous animals with low productivity and a small portion of cross-breeds</td>
</tr>
<tr>
<td>Breed</td>
<td>Lack of policy focus on strengthening indigenous breeds</td>
</tr>
<tr>
<td></td>
<td>Very poor awareness of quality feed, which hinders productivity</td>
</tr>
<tr>
<td>Feed</td>
<td>Farmers not interested in quality feed because of the low price of milk</td>
</tr>
<tr>
<td></td>
<td>Increasing feed costs</td>
</tr>
<tr>
<td>Veterinary medicine</td>
<td>Availability is not an issue</td>
</tr>
<tr>
<td>Veterinary medicine costs</td>
<td>Duplicate or cheap medicines</td>
</tr>
<tr>
<td><strong>Human Capacity</strong></td>
<td></td>
</tr>
<tr>
<td>Farmer technical capacity</td>
<td>Knowledge and new techniques are not accessible</td>
</tr>
<tr>
<td>Support services technical capacity</td>
<td>Accessibility to good quality veterinary services is an issue in many parts of the country</td>
</tr>
<tr>
<td>Organization and managerial capacity</td>
<td>Organizational and managerial capacity of farmer cooperatives is very poor</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Entrepreneurial capacity</td>
<td>Entrepreneurial capacity is hindered by a low capacity to take risks</td>
</tr>
<tr>
<td><strong>Credit or Finance Market</strong></td>
<td></td>
</tr>
<tr>
<td>Formal credit mechanisms</td>
<td>Access to formal credit mechanisms is very poor</td>
</tr>
<tr>
<td>Informal credit mechanisms</td>
<td>Accessible but at very high interest</td>
</tr>
<tr>
<td><strong>External Economies</strong></td>
<td></td>
</tr>
<tr>
<td>Transmission of learning</td>
<td>Very poor extension support services, leading to very poor knowledge transfer</td>
</tr>
<tr>
<td>Social capital and trust</td>
<td>Strong social capital and trust in the villages, which can sustain dairy farmer organizations if properly managed</td>
</tr>
</tbody>
</table>

Animal health and breeding services provision, veterinary infrastructure development and vaccinations are the responsibility of the state government. These services have traditionally been provided free or at a very subsidized rate. In the past few years, there has been increasing awareness that the state pays heavily to offer these services, which are easily available to farmers.

Concentrates used for fodder include coarse grains, such as maize, sorghum, bajra and other millets, and other cereal by-products, such as rice bran/polish and various oil meals, including groundnut cake, mustard cake, coconut cake, soybean meal, cotton seed meal and sesame cake. The escalating price of feed ingredients
is a major cause for concern. However, the cooperatives are involved in producing feed concentrate and selling to farmers at subsidized rates.

Scarcity of fodder resources is the major constraint in the development of the dairy sector in the study area. Hence, adequate measures are undertaken to augment them. Another important issue regarding feed is the lack of regulations to ensure quality. In the absence of a coherent policy, all kinds of substandard feeds are available in the market.

6.3.7.4 **Formal/Informal Credit**

Lack of access to credit to expand the herd is a critical problem for farmers. There is little access to formal credit through the cooperatives. Informal credit is available from private traders and agents of private companies, but the interest rate is very high. The commercial banks are not favourably disposed to providing credit to livestock farmers and the cooperative credit system is very weak, resulting in excessive dependence of livestock farmers on informal sources [and] usually at exorbitant interest rates. Efforts should be put on correcting these distortions and ensure timely availability of inputs and services, including credit to livestock.
6.3.7.5 Vaccines/Medicines

The Government and the private sector are involved in producing medicines and vaccines. However, quality control is a critical issue. An important policy question is whether the government should be involved in the manufacturing and production of vaccines or should it instead take on a regulatory role to ensure quality and availability at a reasonable price.