

COMPARATIVE EFFICIENCY OF DAIRY PLANTS IN THE STATES OF HARYANA AND RAJASTHAN

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ABSTRACT

Comparative efficiency of the dairy plants of Haryana and Rajasthan based on turn over ratios, computed at constant and current prices (1970-84), have been studied. For whole of H.D.D.C.F. (Haryana) capital productivity turned out to be 55 percent at constant and 49 per cent at current prices. Capital productivity was maximum (74 per cent at constant and 67 percent at current prices) for Jind milk plant. The capital productivity for whole of R.C.D.F. (Rajasthan) was 40 percent at constant and 38 percent at current prices. Capital productivity was maximum (93 percent at constant and 89 per cent at current prices) for Bikaner plant. In case of labour productivity, output per employee was found to be more than 26 thousand rupees at constant and almost double at current prices. Jind in H.D.D.C.F. and Bikaner in R.C.D.F. were most resource efficient plants.

INTRODUCTION

Economic efficiency of the milk plants depends upon the productivity of the different factors involved to generate output, since resultant output is a by-product of the joint efforts of all factors of production combined in a certain proportion, it is difficult to isolate the contribution of each of them. However, some attempts were reported in this direction. Ratio analysis was used widely, ranging from large scale industry (Raj Krishna and Mehta 1968), Indian Railways (Rao 1977), vehicle manufacturing firms (Jones 1978), food and feed products industry (Anon 1980) and Charta Ram and Kalla (1982), *bidi* producing firm (mathur and Dasot 1980) to gold mines (Perisastry 1980). But not a single study has been reported so far for measuring economic viability of milk plants. The present study is, therefore, an attempt to generate economic efficiency indicators of milk plants with the help of turn over ratios.

MATERIAL AND METHODS

Two Dairy Development cooperative federations representing two milk surplus states (Haryana and Rajasthan) were selected for the study with the tacit assumption that sufficient availability of milk may make the plant capacity utilisation at representative levels. All the ten milk plants (five each) operating upto 1983-84 in the study federations were considered. Details of the plants are summarised in Table 1.

Table 1. Date of commissioning and installed capacities of study plants.

Name of plant	Date of commissioning	Capacity (000 litre/day)	Products manufactured
HDDCF Haryana			
Jind	5.12.1970	50	Milk powder (SMP and WMP) butter, ghee and casein
Bhiwani	28.10.1972	15	Sweet and condensed milk and ghee
Ambala	29.8.1973	20	Pasturised bottled milk, sterilised flavoured milk, ice-cream and paneer
Rohtak	26.10.1976	100	Milk powder, ghee, pasteurised butter and casein.
Ballabgarh	31.3.1979	50	Pasteurised bottled milk, sterilised flavoured milk, cream and paneer.
RCDF Rajasthan			
Ajmer	14.12.1972	100	Ghee, casein and SMP
	Expansion 8.10.1975		
Jodhpur	10.6.1975	100	Ghee, SMP and butter
Bikaner	16.1.1977	100	Ghee and SMP
Alwar	17.1.1980	100	Ghee, SMP, butter and paneer
Jaipur	8.6.1981	150	Ghee, SMP, butter and paneer.

The data on aggregate expenditure and returns were collected from the balance sheets, annual reports and accounts of the dairy plants from 1970-71 to 1983-84. The annual cost data on working capital and capital investment committed by each plant were collected together with man power employment and quantity of milk procured. Ratio analysis was employed to work out average capital and labour productivity of the plants. Different ratios were computed at constant and current prices to measure spatial and temporal productivity of each plant.

Concepts

Fixed capital (FC): Value of the total operating assets (Building, plant and machinery, furniture and fixture, dairy transport assets, dairy equipments and other assets) employed by each milk plant represented the worth of fixed capital. The value of fixed assets at current and constant prices less depreciation plus any new investment in the particular year was used to evaluate the value of fixed capital in each plant.

Working capital (WC): Working capital was defined as the sum of funds used for meeting all the operational expenses incurred for supporting administrative, procurement, processing and marketing expenses of each milk plant during the year.

Total cost (TC): Includes value of items included in working capital, salary and wages, overhead expenses, interest and depreciation on fixed assets.

Productive capital (PC): Includes fixed capital + working capital.

Output (O): Includes value of milk and milk products being manufactured at study plants.

Net value added (NVA): Total value of output less expenses on raw milk, sugar, skim milk powder, chemicals, testing and packing material and miscellaneous expenses.

Productivity ratios

A. Capital productivity ratios : Two measures of capital productivity have been employed. The first measure constituted of output as related to fixed capital (TO-FC). The second measure was output per unit of productive capital (TO-PC).

B. Labour productivity ratios: Two ratios were computed to measure the labour productivity. The first was based on output per employee (TO-E) and the second, on value added per employee (VA-E).

C. Total productivity ratios: Three ratios namely total output to the total cost (TO-TC), fixed capital to number of employees (FC-E) and productive capital to working capital (PC-WC) were worked out.

RESULTS AND DISCUSSION

CAPITAL PRODUCTIVITY : The results of the capital productivity ratios presented in Table 2, revealed that among the milk plants of HDDCF, Jind plant showed the highest productivity performance. For the whole of HDDCF, the capital productivity per unit of productive capital turned out to be 55 per cent at constant and 49 percent at current prices. These ratios were uniformly greater when measured at constant prices compared to current prices.

In case of RCDF milk plants, Bikaner milk plant performed better as compared to other milk plants. For whole of RCDF, capital efficiency in terms of output per unit of productive capital was only 40 per cent at constant prices and 38 per cent at current prices.

A close perusal of interplant variations of the two federations show that while most of the milk plants of RCDF were more capital efficient as compared to HDDCF plants, yet HDDCF as a whole was more capital efficient as compared to RCDF. This may be due to exceptionally low capital productivity of Alwar milk plant which had eaten up all the profits of the federation (RCDF).

Table 2. Average capital productivity ratios of the selected plants

Milk Plants	TO-FC		TO-PC	
	At constant prices	At current prices	At constant prices	At current prices
Haryana				
Jind	2.41	2.12	0.74	0.67
Bhiwani	0.61	0.51	0.34	0.34
Ambala	0.71	0.60	0.37	0.33
Rohtak	2.41	1.91	0.65	0.58
Ballabgarh	1.23	0.94	0.51	0.44
HDDCF	1.28	1.03	0.55	0.49
Rajasthan				
Ajmer	2.07	1.88	0.60	0.54
Jodhpur	5.41	4.67	0.93	0.86
Bikaner	10.19	8.45	0.93	0.89
Alwar	0.48	0.34	0.29	0.25
Jaipur	1.49	1.74	0.63	0.55
RCDF	1.91	1.39	0.41	0.38

Labour productivity : Results of both the ratios of labour productivity viz. output per man power (To-E To-E) and value added per man power (VA-E) (Table 3) revealed that Jind and Rohtak milk plants of HDDCF were more labour efficient as compared to other milk plants. For the whole of HDDCF, output per employee was over 26 thousand rupees per annum at constant and over 53 thousand rupees at current prices. In the case of RCDF, out put per employee was better than HDDCF,

Table 3. Average labour productivity ratios of the selected plants

(Rs. 000)

Milk plants	TO-E		VA-E	
	At constant prices	At current prices	At constant prices	At current prices
Haryana				
Jind	42.9	65.6	9.4	11.8
Bhiwani	15.2	25.0	2.2	3.6
Ambala	30.5	58.0	1.1	1.4
Rohtak	57.8	107.9	8.5	6.8
Ballabgarh	41.6	86.3	0.8	1.5
HDDCF	26.1	53.3	5.4	7.2
Rajasthan				
Ajmer	90.0	161.7	12.7	21.1
Jodhpur	93.1	173.7	22.5	35.4
Bikaner	175.7	363.6	20.0	39.1
Alwar	174.0	367.9	-45.8	-1.2
Jaipur	129.1	298.1	18.6	41.4
RCDF	126.3	254.0	-10.0	-16.3

but value added per employee was negative indicating inefficiency of labour in terms of value added per employee. Interplant analysis of RCDF plants revealed that Bikaner was the most labour efficient plant as its output per employee was more than 175 thousand rupees per annum. On the other hand in Alwar milk plant labour added negatively to the value added per employee.

Total productivity : Estimates of total productivity measures (Table 4) revealed that the total output to total cost (TO-TC) measure remained more than unity in all the plants of RCDF where as this measure was less than unity for HDDCF plants. Fixed capital per employee in the plants of RCDF was more than the plants of HDDCF that is why productive capital to working capital ratio of RCDF plants was also more than HDDCF plants.

Table 4. Average total proproductivity ratios of the selected plants

Milk plants	TO-TC		FC-E		PC-WC	
	At constant prices	At current prices	At constant prices (Rs. 000)	At current prices	At constant prices	At current prices
Haryana						
Jind	1.04	1.00	17.4	28.4	0.70	0.66
Bhiwani	0.86	0.76	25.7	59.2	0.36	0.31
Ambala	0.80	0.73	45.8	100.5	0.43	0.41
Rohtak	0.90	1.00	21.3	59.4	0.65	0.62
Ballabgarh	0.80	0.90	33.9	93.4	0.58	0.52
HDDCF	0.96	0.91	27.3	43.7	0.53	0.44
Rajasthan						
Ajmer	1.07	1.75	76.7	189.7	0.57	0.52
Jodhpur	1.14	1.94	17.2	37.6	0.82	0.79
Bikaner	1.07	1.94	18.7	42.0	0.87	0.86
Alwar	0.23	1.61	39.8	106.6	0.32	0.28
Jaipur	0.97	1.02	86.6	260.5	0.57	0.51
RCDF	1.09	1.65	47.8	127.2	0.63	0.59

Results of interplant variations showed that in case of HDDCF, Jind and Rohtak plants were economically more efficient than their counterparts and in case of RCDF plants Bikaner plant was the most resource efficient plant. On the basis of these results it can be inferred that these dairy units have ample scope to further improve their overall performance. Efficiency of capital and labour can be increased by increasing their capacity utilisation and decreasing the number of employees to the level of necessary minimum and employ only seasonal workers during flush season.

REFERENCES

- Anon, 1980. Manufacture of Dairy Products in India - An analysis 1960-61 to 1975-76, Dairying in India 16th Dairy Industry Conference, Pune 1-13.
- Charta, R. and Kalla, J. C. 1982. Inter plant variations in efficiency of milk processing in a cooperative federation, *Productivity* 23: 131-138.
- Jones, F. F. 1978. Our manufacturing Industry. The missing of 1,00,000 million. *National Westminster Bank Quarterly Review* (cited long range planning 13: 90-97 Aug. 1980).
- Mathur, N. D. and Dasot, P. 1980. Production analysis — A case. *Productivity* 21: 333-341.
- Perisastry, M. V. V. 1980. Measurement of Productivity in mining - A case. *Productivity* 21: 343-355.
- Rao, S. K. 1977. Productivity gains and accountability for growth in Indian Railways *Productivity* 18: 379-92.
- Raj Krishna and Mehta, S. S. 1968. Productions trends in large scale industries. *Economic and Political Weekly* 13: 1645-60.