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RESEARCH ARTICLE

Profitability and economic viability of commercial dairy farms in trans-Gangetic plains of India

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Abstract: A study on assessing the profitability and economic viability of sixty commercial dairy farms was carried out in the Trans-Gangetic Plains of India. The study's focus region, the Trans-Gangetic Plains, was found pivotal due to its significant dairy orientation and robust dairy development programs. The selected farms were classified into small, medium and large commercial dairy farms based on herd size category. The total cost per farm per year was worked out to be ₹90.66 lakh, ₹ 154.96 lakh and ₹254.62 lakh in small, medium and large commercial dairy farms, respectively. The net returns per farm per year were ₹ 16.10 lakh, ₹52.79 lakh and ₹95.39 lakh in small, medium and large commercial dairy farms, respectively. The net income per income per milch animal per day was ₹ 66.76, ₹130.00 and ₹ 139.13 in ascending order of herd size category. The cost of milk production per litre was estimated as ₹31.50, ₹29.10 and ₹26.97 in small, medium and large commercial dairy farms, respectively. The return per litre was ₹6.10, ₹10.57 and ₹ 11.03 in same order of farm category. Financial assessments of dairy enterprises in this region showed that as farms grow larger, they tend to have a more substantial proportion of long-term debts. The efficiency and profitability ratios indicated that all farm sizes could recover their capital invested at least once in a year. However, medium-sized farms demonstrated a better margin of safety and efficiency in herd management than smaller or larger. The findings suggest the potential for enhancing profitability through value-added milk products and the importance of managing costs for the sustained economic viability of dairy farms. Policy formulation should emphasize capacity building for small farms, promote value addition, and ensure efficient management practices across all farm sizes.

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Introduction

In the contemporary global milieu, dairy farming is undergoing significant transformations fuelled by shifting economic, demographic, and technological dynamics (Gayathri et al. 2023). This paper aims to evaluate the profitability and economic viability of commercial dairy farms, particularly in the Trans-Gangetic Plains of India, a region pivotal to the nation's dairy sector. Global milk production forecasted to an impressive 935.9 million tonnes in 2022, reflecting a growth of 0.05% (FAO, 2020). The dairy farming landscape, however, is characterized by remarkable diversity due to myriad geographical variations, making generalized assessments challenging.

A closer scrutiny of data reveals that the global number of dairy farms, which stood at approximately 119.60 million in 2016, is on a decline at a rate of 1.00% (Hemme, 2017). This decline, juxtaposed with the International Farm Comparison Network's (IFCN) classification of dairy farms into household, family, and business categories, presents an intriguing trend. Notably, business farms, which house more than 100 cows, are witnessing an annual growth rate of 1.70% from 2010 to 2016, while household farms are diminishing at 0.50% annually (Hemme, 2017).

India, often referred to as 'the oyster of the global dairy industry', leads in milk production with a staggering 221.1 million tonnes in 2021-22 (BAHS, 2022). This dominance is further bolstered by its possession of over 61% of the world's dairy farms (Hemme, 2017). Yet, the average farm size in India remains modest at 1.80 cows per farm in 2016, paling in comparison to dairy-developed nations. As India's dairy sector transitions towards commercialization, there is an imperative to understand the economic implications of this shift, especially in the context of the Trans-Gangetic Plains. This changing economic scenario shows various open challenges and various opportunities to increase milk production through breeding, feeding and scientific management of dairy farms. The success of any enterprise depends upon its management. It is the costs and returns which should be managed properly. The

production of milk at the lowest cost, as well as its marketing, is also important on the farm. The determination of economic and cash costs are the key indicators for sustainable dairy farming (Vanchalker, 2005). These costs play a significant role in determining commercial dairy farms' economic viability. Any enterprise's profitability can be increased by either increasing milk production or decreasing production costs. The dairy farm deals with higher daily expenses, so these expenses must be met with the profit which is earned on the farm. Hence, present study was undertaken to find out the profitability and economic viability of various types of farms.

Study Area and Data Collection

The present study was undertaken in Trans-Gangetic Plains of India with an objective of comprehensively analysing the economic viability and profitability of commercial dairy farms. A sample of sixty commercial dairy farms comprising twenty-five farms from Punjab and Haryana, each and ten from two districts of Rajasthan *i.e.*, Ganganagar and Hanumangarh. In the selected sample, commercial dairy farms possessed minimum 50 in-milch animals. The study conducted by the Kumar in 2009 found that the optimum herd size in dairy farms was 54 animals in Haryana. So, our sample farms satisfy the optimum size criterion. This region was chosen as the focal area due to its distinctive prominence in commercial dairy orientation and the widespread existence of dairy development programs. Statistical data further accentuated the region's significance, with states such as Punjab, Rajasthan and Haryana showcasing commendable per capita milk availabilities during the fiscal year 2021-22, with figures standing at 1271g/day, 1150g/day, and 1051g/day, respectively (BAH&S, 2022).

In the research endeavor, a structured personal interview approach was employed to gather comprehensive data from commercial dairy farmers, focusing on predetermined survey schedules. This data encompassed a range of dimensions, including livestock counts, labour inputs, feed and fodder consumption, as well as miscellaneous expenditures like vaccination, artificial insemination and insurance premiums etc. The incurred costs associated with these facets were meticulously computed for commercial dairy enterprises, thereby facilitating the assessment of profitability.

Analytical Framework

Various components of costs and returns were described below:

Fixed Cost

In our research study, the concept of fixed costs encompassed depreciation on assets and the interest associated with fixed capital. To compute fixed costs, we employed standard procedure of the Capital Recovery Cost (CRC) method given by Sirohi et al. (2015).

The useful life of assets was assumed to be 50 years for *pucca* cattle shed, 25 years for tractor, milking machine, bulk milk cooler, and Total Mixed Ration (TMR) wagon, 15 years for fodder harvester, 10 years for *katcha* shed and power operated chaff cutter, and 6 years for manual chaff cutter. The useful life of milch animals also vary with the type of animal (local, crossbred or buffalo). Based on the advice of subject matter specialists, useful productive life of milch animals, defined in terms of age (years) and order of lactation viz. average number of calvings per animal was assumed as 10 years (6 calvings) for local cow and buffalo, and 8 years (5 calvings) for crossbred cow.

Variable Costs

This cost is subject to modification in the short term and pertains to expenses associated with variable factors of production. The primary components of variable costs encompass expenses related to feed and fodder, labour, and various miscellaneous expenditures. These costs are calculated by adopting Sirohi et al. (2015).

In case of Labour cost 1 day of woman labour = 0.67 man day (3 women = 2 men) by considering 8 working hours a day. The cost of family labour was determined on the basis of existing wage rate of permanent farm labour. Gross cost, Net cost, Gross Return, Net return and Cost of milk production were calculated using standard methodology (Sirohi et al. 2015) and presented in the table given in result section.

We also analysed the financial ratios of different farms to know the liquidity, solvency, efficiency and profitability of the farms. We have analysed the farms' ability to meet current to long term financial obligations in liquidity ratio. Standard values of different ratios were presented in Table 1. Efficiency ratios, profitability ratios, Break- even level of herd size, Margin of safety were calculated.

Results and Discussion

The financial assessment of commercial dairy enterprises offers insights into the cost-benefit dynamics, thereby elucidating the profitability of dairy farms. This foundational understanding aids in devising strategies to enhance return on investment while optimizing operational costs (Bhowmik and Sirohi 2008). The

Table 1: Standard values for the ratios

Ratios	Standard values
Current ratio	>2
Debt –equity ratio	<0.5
Net capital ratio	>2
Fixed ratio	<0.5
Gross ratio	<1
Capital turnover ratio	>5

subsequent sections elucidate the findings from this research study.

Categorization of Commercial Dairy Farms

Based on the herd size, commercial dairy enterprises were systematically classified using the cumulative square root frequency method. Sequentially, the number of Standard Animal Units (SAU) across varying dairy farms was observed to be 67-124, 125-203, and 204-382, corresponding to the ascending order of herd categories.

As evident from the Table 2, approximately 53.33% of the sampled dairy enterprises were categorized as small, succeeded by medium-sized farms (30.00%) and subsequently by large dairy enterprises (10.00%). The average per cent of milch animals was highest in medium dairy farms *i.e.,* 73.62 per cent followed by large commercial dairy farms (72.54%) and small dairy farms (68.93%).

The average SAU was registered as 96 SAU, 151 SAU, and 259 SAU for small, medium, and large dairy farms, respectively.

Distribution of commercial dairy farms

The encompassed commercial dairy farms manifested a diversified distribution comprising crossbred farms, buffalo-centric farms, mixed farms, and those hosting indigenous breeds. Remarkably, 48.33 per cent of the farms were dominated by crossbred species, shadowed by indigenous farms (21.67 per cent), mixed breed farms (16.67 per cent), and buffalo-centric farms (13.33 per cent) within the sampled cohort. In small commercial dairy farms, crossbred farms accounted for about 50 per cent, followed by indigenous farms (21.88 %), mixed farms (15.63%) and buffalo farms (12.50%). In contrast, medium-sized dairy enterprises reported 44.44% of farms as crossbred, succeeded by an equal distribution of mixed and indigenous farms (22.22% each) and a smaller fraction of buffalo farms (11.11%).

The crossbred dairy farms contribute about 50 per cent followed by indigenous and buffalo farms (20%) each and mixed farms (10.00 per cent) in large commercial dairy farms. The table 3 showed that there was dominance of crossbred dairy farms followed by indigenous dairy farms in the study area. This observation underscores the emphasis of dairy farms on commercial production, as evidenced by the predominance of crossbred dairy animals on these farms. Notably, the average milk yield in crossbred animals surpasses that of their indigenous counterparts, a finding corroborated by the Basic Animal Husbandry Survey (BAHS, 2022).

Cost and Return from Commercial Dairy Farms

The Table 4 outlines the cost and return from the commercial dairy farms. The fixed costs contributed about 14.83 per cent in large commercial dairy farms followed by small commercial dairy farms (12.92%) and medium commercial dairy farms (12.64%). This may be due to higher level of automation in large commercial dairy farms as compared to other type of farms. The total feed cost was found to be highest in small commercial dairy farms,

Table 2: Categorization of sampled commercial dairy farms

Particulars	Category of Herd Size			
	Small	Medium	Large	Overall
	(67-124)	(125-203)	(204-382)	(67-382)
Dairy farms	32	18	10	60
	(53.33)	(30.00)	(16.67)	(100)
Average SAU /farm	96	151	259	136
Average milch SAU/farm	66	111	188	100

Note: Figures in parentheses specify percentage of row total

Table 3: Distribution of commercial dairy farms according to animal type

Commercial dairy farms	Animal type				
	CB farm	Buffalo farm	Mixed farm	Indigenous Farm	Total
Small	16 (50.00)	4 (12.50)	5 (15.63)	7 (21.88)	32 (100.00)
Medium	8 (44.44)	2 (11.11)	4 (22.22)	4 (22.22)	18 (100.00)
Large	5 (50.00	2 (20.00)	1 (10.00)	2 (20.00)	10 (100.00)
Overall	29 (48.33)	8 (13.33)	10 (16.67)	13 (21.67)	60 (100.00)

Note: Figures in parentheses indicate the percentage of the row total

which accounted for 71.07 per cent, followed by medium (70.91 per cent) and large commercial dairy farms (70.69 per cent). The percentage of in-milk animals was found to be highest in small diary dairy farms as compared to other farms. This reason may be attributed to more feed cost in case of small commercial dairy farms as compared to medium and large farms. The percentage of concentrate cost was highest in small farms (62.82%) followed by large (62.28%) and medium dairy farms (57.49%). Of all the feed types, including green fodder, dry fodder, concentrates, and total supplements, concentrates accounted for the greatest portion of the overall costs which is consistent with past studies conducted by Vishnoi (2014), Kumar, (2015), Lal, (2016), Acharya, (2020) and Naresha, (2022). Labour cost was found to be lowest in large commercial dairy farms. The dependency on labour is less as large farms are capital-intensive. The total cost was around ₹ 9066.445 thousand, ₹ 15495.96 thousand and ₹ 25461.95 thousand in small, medium and large commercial dairy farms, respectively. The return from sale of milk was contributed highest in small dairy farms, followed by medium and large commercial dairy farms and percentage was around 91.12 per cent, 88.40 per cent and 84.00 per cent in ascending order of category of farms. Small commercial dairy farms have less mechanization or processing facilities and are mainly focused on selling raw milk rather than processing it into different milk products. A small chunk of milk is processed and sold in small commercial dairy farms.

The return from sale of processed food products was highest in large (10.28 %), followed by medium (6.20%) and small dairy farms (3.64%) respectively. The percentage of milk used for processing of milk products was highest in large commercial dairy farms *i.e.* 8.55 per cent followed by medium commercial dairy farms (4.87 per cent) and small commercial dairy farms (3.11 per cent). Small dairy farms' capacity building towards processing milk into different milk products is crucial for enhancing profitability as value added products fetch higher margin.

The gross return obtained from the different commercial dairy farms was around ₹ 10676.27 thousand, ₹ 20763.81thousand and ₹ 3500.40thousand per farm per year in small, medium and large dairy farms, respectively. The net return/day/farm was ₹ 4.410 thousand, ₹ 14.432 thousand and ₹ 26.135 thousand in small, medium and large commercial dairy farms, respectively. The net income per milch animal per day was highest in large commercial

Table 4: Cost and Returns from Different Commercial Dairy Farms (in 000 ₹/year/farm)

Particulars	Commercial dairy farms			Overall
	Small	Medium	Large	
Fixed cost	1171.831	1958.949	3775.969	1719.278
	(12.92)	(12.64)	(14.83)	(13.84)
Total Feed Cost	6443.563	10987.990	18000.619	8642.401
	(71.07)	(70.91)	(70.69)	(69.58)
Total Labour cost	1118.750	1955.333	2412.040	1061.940
	(12.34)	(12.62)	(9.47)	(10.16)
Total Miscellaneous Cost	239.501	373.209	628.128	272.051
	(2.64)	(2.41)	(2.47)	(4.12)
Total Variable Cost	7801.815	13316.532	21040.787	10416.392
	(86.05)	(85.94)	(82.64)	(83.86)
Total Production Cost	8973.645	15275.481	24816.756	12135.670
	(98.98)	(98.58)	(97.47)	(97.70)
Total Processing Cost	92.800	220.480	645.200	285.352
	(1.02)	(1.42)	(2.53)	(2.30)
Total Cost	9066.445	15495.961	25461.956	12421.022
	(100.00)	(100.00)	(00.00)	(100.00)
Sale of Milk	9729.170	18355.888	29402.006	12083.054
	(91.12)	(88.40)	(84.00)	(79.65)
Sale of Products	387.000	1286.500	3597.333	1650.380
	(3.64)	(6.20)	(10.28)	(10.88)
Sale of Dung	60.517	89.758	158.161	85.564
	(0.57)	(0.43)	(0.45)	(0.56)
Sale of Animals	499.581	1031.667	1843.900	1350.933
	(4.67)	(4.97)	(5.27)	(8.90)
Gross Return	10676.268	20763.813	35001.401	15169.931
	(100.00)	(100.00)	(100.00)	(100.00)
Net Return/Year	1609.823	5267.852	9539.445	2748.909
Net Return/Day	4.410	14.432	26.135	7.531
Net Income/Milch/Day	0.06676	0.130	0.139	0.075

dairy farms, followed by medium and small commercial dairy farms in the study area. The reason may be attributed to the fact that with higher processing of raw milk output. The margin and, subsequently the profit from the dairy business is enhanced. Processing and value addition of raw milk plays a crucial role here.

Cost of Milk Production from Commercial Dairy Farms

The cost of milk production is helpful to know whether farmer is able to cover per litre of cost of production. The cost of milk production is shown in Table 5. This helps in making various decisions related to profit generation as well as expansion of dairy farms. The fixed cost accounted for about 15.22 per cent, 13.06 per cent and 12.82 per cent in large, small and medium commercial dairy farms, respectively in the total cost. A higher level of automation can be attributed to higher fixed costs in large commercial dairy farms. The total variable cost accounted for about 85.83 per cent in all types of commercial dairy farms. The returns from sale of milk were around ₹ 10041.250 thousand, ₹ 19296.50 thousand and ₹ 32150.66 thousand per annum in small, medium and large commercial dairy farms, respectively. The per litre average selling price of milk was ₹37.60, ₹ 40.50 and ₹ 38.00 in small, medium and large commercial dairy farms, respectively.

The per litre cost of milk production was highest in small commercial dairy farms i.e. ₹ 31.50 followed by medium ₹ 29.10 and large commercial dairy farms (₹ 26.97/litre). The return from milk production was maximum in large commercial dairy farms, i.e. ₹ 11.03/litre, followed by medium ₹ 10.57 and small commercial dairy farms (₹ 6.10/litre), which is mainly due to the existence of economies of scale.

Economic viability of commercial dairy farms

Economic viability delineates the financial performance of a farm which was worked out by using various financial ratios such as liquidity ratio, solvency ratio, efficiency ratio and profitability ratios and break-even analysis.

Financial ratios

Financial ratios are important parameters for measuring commercial dairy farms' economic viability. Four types of ratios: liquidity ratio, solvency ratio, efficiency ratio and profitability ratio were presented in Table 6.

Liquidity ratios

A farm's aptitude to honor its short-term financial commitments can be gauged by its liquidity ratios. The 'current ratio' is a prime metric indicative of a farm's liquidity stance. For instance, small, medium, and large dairy enterprises recorded current ratios of 3.28, 2.43, and 2.11, respectively. This suggests that small dairy farms have existing assets thrice that of their current liabilities, positioning them favourably. However, larger farms seem less equipped to address their immediate liabilities than their smaller and medium-sized counterparts. Notably, all the farms surpassed the benchmark value (>2), which signifies their adeptness in meeting short-term financial demands via extant assets.

Solvency ratio

The solvency ratio measures the dairy farm's ability to meet its long-term debt obligations. Solvency ratios offer insights into a dairy farm's prowess to meet its prolonged financial commitments. Two specific metrics, the debt-equity ratio and net capital ratio, clarify these ventures' long-term solvency.

Table5: Cost and Return of Milk Production from Different Commercial Dairy Farms

Particulars	Herd Size Category			Overall
	Small	Medium	Large	
Total Fixed cost (thousand ₹/annum)	1171.831 (13.06)	1958.949 (12.82)	3775.969 (15.22)	1719.278 (14.17)
Total Variable Cost (thousand ₹ /annum)	7801.815 (86.94)	13316.532 (87.18)	21040.787 (87.78)	10416.392 (85.83)
Total Cost (thousand ₹ /annum)	8973.645 (100.00)	15275.481 (100.00)	24816.756 (100.00)	12135.670 (100.00)
Sale of Dung (thousand ₹/annum)	60.517	89.758	158.161	85.564
Sale of Animals (thousand ₹/annum)	499.581	1031.667	1843.900	1350.933
Net Cost (thousand ₹/annum)	8413.548	14154.056	22814.695	10699.173
Sale of Milk (thousand ₹/annum)	10041.250	19296.501	32150.660	12972.254
Net Return (thousand ₹/annum)	1627.703	5142.445	9335.965	2273.081
Milk Production (thousand litres/annum)	267.055	486.457	846.070	346.750
Cost (₹/litre)	31.50	29.10	26.97	30.86
Sale Price of Milk (₹/litre)	37.60	40.50	38.00	37.41
Return (₹/litre)	6.10	10.57	11.03	6.56

Debt-equity ratio

This ratio delineates the relationship between a farm's total liabilities and its equity. These ratios for small, medium, and large dairy enterprises stood at 0.38, 0.39, and 0.43 respectively. Notably, as the herd size augmented, there was a commensurate rise in the ratio. This indicates that larger farms have a more substantial proportion of long-term debts than their smaller counterparts. These findings echo the research conclusions of Sharma (2013).

Net capital ratio

This ratio represents the financial stability of a dairy farm; the net capital ratios for small, medium, and large farms were 3.55, 3.65, and 3.34, respectively. These figures, which surpass the benchmark value of 2, indicate the security of the lending agency's funds. It implies that these dairy farms are poised to honour their long-term financial obligations on time.

Efficiency ratio

The efficiency ratio measures dairy farm's ability to use their assets efficiently and effectively to generate returns. Efficiency is defined as the returns obtained by investing one rupee in the dairy farm. Fixed ratio and gross ratio were used to measure the efficiency of dairy farm. These ratios show the proportion of fixed and total costs in the total/gross returns. The optimum value of this ratio should be 0.50. Lower the value of these ratios shows higher efficiency.

Fixed ratio

Our observations revealed fixed ratios of 0.11, 0.09, and 0.12 for small, medium, and large farms, respectively.

This metric highlights the proportion of fixed costs invested to achieve a rupee of total return. The fixed ratio was 0.11, 0.09 and 0.12 in small, medium and large commercial dairy farms. Intriguingly, only 9-12% of fixed costs were needed to realize a rupee of total return across these farms. The ratio was three times less than the standard value, i.e., 0.50, on all types of commercial dairy farms.

Gross ratio

Gross ratio measures the amount of total expenses or cost incurred to gain one rupee of total profit. The ratio was 0.89, 0.77 and 0.77 in ascending order of commercial dairy farms. The gross ratio was found to be highest in small dairy farms, whereas in medium and large commercial dairy, it was found to be the same. In small commercial dairy farms, a total ₹ 89 were invested to earn a total return of ₹100, which led to a net profit of ₹ 11. The gross cost was highest in small dairy farms compared to medium and large dairy farms, with high cost of maintaining crossbred animals as in small dairy farms were dominated by crossbred animals. All the ratios were less than one, meaning all the farms invested less to generate net income.

Table 6: Different financial ratios of dairy farms

Particulars	Small	Medium	Large
a) Liquidity ratio			
Current ratio	3.28	2.43	2.11
b) Solvency ratio			
Debt-equity ratio	0.38	0.39	0.43
Net capital ratio	3.55	3.65	3.34
c) Efficiency ratio			
Fixed ratio	0.11	0.09	0.12
Gross ratio	0.89	0.77	0.77
d) Profitability ratio			
Capital-turnover ratio	1.12	1.30	1.30

Particulars	Commercial dairy farm category			Overall
	Small	Medium	Large	
Average milch animal per farm	66	111	188	100
Total fixed cost per farm (₹)	1171831	1958949	3775969	1719278
Total variable cost per animal (₹)	118102	119742	111943	104803
Total cost per animal	135841	137357	132032	122102
Gross return per animal	161615	182699	181702	153907
Break-even herd size (number)	27	31	54	35
Break-even to average herd (%)	40.77	27.98	28.80	34.66
Margin of safety (%)	59.23	72.02	71.20	65.34

Profitability ratio

This ratio is used to find out the farm's ability to gain return to its total initial investment. The ratio was found to be 1.12, 1.30 and 1.30 on small, medium and large dairy farms, respectively, indicating total cost was recovered only once in a year. There is a huge gap in the actual and standard value *i.e*. 5, but dairy farms may still improve their situation as farms are already recovering once a year. This indicates that total capital invested was recovered only once in a year. This ratio was less than the standard value, *i.e.,* 5, but dairy farms could still recover its capital invested once a year.

Break-even herd size analysis of commercial dairy farms

Break-even analysis is essential for finding the no profit and loss situation. In the present study, the break-even level of herd size calculated the minimum level required to cover its total costs. The break-even herd size in different commercial dairy farms was 27, 31 and 54 milch animals on small, medium and large commercial dairy farms, respectively. The actual herd sizes of different commercial dairy farms were found to be higher than that of break-even herd size. The actual in milch herd sizes were 66, 111 and 188 milch animals in ascending order of herd size categories. The break-even to average herd percentage was 41, 23 and 29 in small, medium and large commercial dairy farms, respectively. This indicates that medium dairy farms kept more animals than small and large dairy farms. The margin of safety was found to be lowest in small dairy farms, followed by large and medium dairy farms.

The lowest return per milch animal in small dairy farms was the main reason for less margin of safety in these farms. The margin of safety was 59.23, 72.02 and 71.20 per cent in ascending order of herd size category, respectively. The margin of safety can be improved by proper management of small dairy farms.

Conclusion

The commercial dairy farming landscape in the Trans-Gangetic Plains of India presents a dynamic and evolving sector, with an intricate interplay of economic, demographic, and technological factors. The economic analysis reveals that larger dairy farms, despite their higher initial investments, tend to have lower costs of milk production, thus benefiting from economies of scale. However, small farms, although producing milk at a slightly higher cost, still have a significant role in the dairy landscape due to their sheer number and contribution to total milk output. The solvency and liquidity ratios of the farms, irrespective of size, suggest overall financial health, but there is room for improvement, especially in terms of efficiency and profitability. The break-even analysis further elucidates that while most farms operate above their break-even point, there is a significant potential to enhance profitability.

Policy Formulation

Encouraging value addition, such as processing raw milk into various dairy products, can serve as a lucrative avenue for enhancing profitability. Small dairy farms, in particular, can benefit immensely from such ventures, given the higher margins associated with value-added products. Dairy farmers should be equipped with modern dairy farming practices, business management skills, and market access strategies. This can be achieved through targeted training programs, workshops, and exposure visits. The introduction of technology, be it in the form of automation, dairy farm management software, or advanced milking machinery, can significantly enhance the efficiency and productivity of dairy farms.

References

Acharya KK, Malhotra R, (2020) Economic analysis of milk production in peri-urban dairy farms of Odisha. Indian J Dairy Sci. 73(2):155-159

BAH&S (2022) Basic Animal Husbandry Statistics-2022. Government of India Ministry of Fisheries, Animal Husbandry & Dairying Department of Animal Husbandry and Dairying Krishi Bhawan, New Delhi

Bhowmik P, Sirohi S, (2008) Cost of milk production and returns from dairying in South Tripura. Indian J Dairy Sci 61: 303-307

FAO (2020) OECD-FAO Agricultural Outlook 2019-2028, OECD Publishing, Paris/Food and Agriculture Organization of the United Nations, Rome. https://doi.org/10.1787/agr_outlook-2020-en

Gayathri SL, Bhakat M, Mohanty TK (2023) An outlook on commercial dairy farming in India: A review. Indian J Anim Prod Mgt 37(1): 45-56

Hemme, T (ed.) (2017) IFCN Dairy Report 2017, IFCN, Kiel, Germany.

Kumari B, Malhotra R, Chauhan AK, (2016) Impact of women dairy co-operatives on economics of milk production in Begusarai district of Bihar. Indian J Dairy Sci 69: 487:491

Lal P, Chandel BS (2016) Economics of milk production and cost elasticity analysis in Sirsa district of Haryana. J Econ Affairs 61: 405-411

Narehsa N, Dixit AK, Singh A, Meena BS (2023) Economic analysis of milk production in Southern and North coastal region of Andhra Pradesh. J Dairy Sci 76: 163-168

Sirohi S, Bardhan D, Chand P (2015) Costs and returns in milk production: Developing standardized methodology and estimates for various production systems. Project Report submitted to Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Govt. of India, New Delhi.

Vancalker KJ, Berentsen PBM, Giesen GWJ, Huirne RBM (2005) Identifying and ranking attributes that determine sustainability in Dutch dairy farming. Agric Human Values 22:53-63