

Dairy Cooperatives a Sustainable Agriculture System: Logistic and Management Analysis from Haryana, India

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ABSTRACT

Indian agriculture is a symbiosis of various production systems. Majority of the farmers have marginal and small land holding or are landless and cropping alone is not a profitable venture. Most families keep a few cattle for food and nutritional security and a source of income. In India, a dairy cooperative is emerging as a novel and a major rural development activity for sustainable development, especially of poor households for regular and timely cash income and allied benefits. Contribution of dairying to GDP of the country is higher than from crop husbandry. The dairy cooperatives collect milk on a daily basis from villages and convert it into various value added products which are sold through various outlets thereby benefiting both the suppliers and the consumers. The objective of the present investigation was to study the organization and management structure of dairy cooperative and ascertain the impact of dairy cooperatives on the members. The study was conducted in Haryana State, India on a sample of 200 members of dairy cooperative, comprising of 100 men and 100 women drawn from 10 villages of two districts. The dairy cooperative works under a three-tier structure i.e. dairy cooperative society (DCS) at the village level, milk unions at the district level and Federation at state level. There were 4650 DCS, 6 Milk Unions and 1 Federation registered as Haryana Dairy Development Cooperative Federation (HDDCF). HDDCF had a procurement of 6.75 lakh litres of milk per day from DCS and this was sold mainly to urban consumers as milk in poly bags, flavoured, and value added products as ghee, curd, paneer, lassi, pinni and peda. Majority of the DCS members has 3-4 cattle, and the daily production, sale and consumption of milk per DCS member was 17 litres, 12 litres and 5 litres respectively. Members were paid on daily basis on fat content of the milk and this was determined in front of them when they delivered milk at the DCS. Majority rated economic empowerment to be moderately high due to dairying enterprise and the economic impact on quality of life was evident on economic, educational and social aspects.

Keywords: Dairy cooperative society, milk collection logistics, value added products, quality of life, economic empowerment, India.

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1. INTRODUCTION

Farming is a major source of livelihood, employment and food. Livestock sector is likely to emerge as an important facet for agricultural growth in the coming decades and is also considered as a potential sector for export earning. In India, livestock sector has experienced remarkable growth during the last two decades in terms of production, value of output from livestock and trade. This sector contributes nearly 25 percent to the gross value of agricultural output at the national level and is a potential enterprise (Tiwari and Sharma, 2007; Tiwari and Sharma, 2008). It was in 1904 when the seed of cooperation was sown in India with the passage of first Cooperative Act. Before the cooperative movement began, the dairy industry in the Kaira District, Gujarat, India was being exploited by middlemen who supplied milk to the consumer. Dairy cooperatives began as a response to this exploitation and put an end to it. Today in India, there are 75,000 dairy cooperative societies, spread all over the country with a membership of 10 million. The farmer in the village is now assured of a better future due to these cooperatives (NDDDB, 2005).

In India, livestock development is emerging as a major rural development activity and more so as an activity which is likely to benefit women directly (Ramkumar et al. 2004; Chaudhary, 2005). Haryana since time immemorial has been at the top of its glory and has distinct potential of rearing promising livestock wealth. Rural farmers in the State of Haryana are engaged in agro-based activities especially where land is a limiting factor. Dairying is the best suitable alternative in this situation for ensuring regular marketing of their produce, timely payment and other benefits (Grover and Sethi, 2005; Birthal and Taneja, 2006). Although, the involvement of women in livestock production is a long-standing tradition all over the world, but livestock patterns differ widely among ecological zones, and socio-political systems (Niamir, 1990). The logistics and management analysis in the present study of the dairy cooperative societies in Haryana, India is a novel attempt which would be helpful in identifying the perceived needs of the members of dairy cooperative societies in general and women beneficiaries in particular.

2. METHODOLOGY

The study was conducted in Haryana State, India on a sample of 200 members of dairy cooperative, comprising of 100 men and 100 women drawn from 10 villages of two districts. Multistage sampling procedure was adopted for the selection of milk unions, districts, villages and respondents. Out of the six Milk Cooperative Unions of Haryana namely Milk Union Ambala, Milk Union Hisar-Jind, Milk Union Kurukshetra-Karnal, Milk Union Rohtak, Milk Union Ballabgarh, Milk Union Sirsa two were selected randomly. The selected milk unions were Milk Union Hisar-Jind and Milk Union Rohtak. One district from each Milk Cooperative Union was selected. Hisar district from Hisar-Jind Milk Cooperative Union and Mohindergarh district from Rohtak Milk Cooperative Union were selected randomly based on good performance of dairy cooperatives. Five Dairy Co-operatives from each selected districts, which is total of ten dairy cooperatives, were selected purposively. The list of dairy co-operatives under the selected district was procured from the respective Milk Cooperative Union offices. The selected Dairy Co-operative societies were Baropati, Talwandi Rana, Arya Nagar, Ladwa and Dhaima from Hisar district and Balaha Kalan, Raghunathpura, Bachhod, Silarpur and Ratta Kalan from Mahendergarh district.

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The relevant variables for the present study were selected on the basis of extensive review of literature, consultation with experts and a pilot study conducted in the area of investigation. An interview schedule was prepared and used for primary data collection from the field. While developing the schedule, relevant sources of information were carefully examined and due importance was given to formulate questions on various independent and dependent variables. The tool prepared was pre-tested on twenty respondents selected from a dairy cooperative society (DCS). Necessary changes were incorporated and schedule was finalized and used in the field for the present study. The data were collected personally with the help of pre-tested structured interview schedule and appropriate statistical tools were applied to analyze the data and inferences were drawn accordingly.

3. RESULTS AND DISCUSSION

Rural farmers in the State of Haryana are engaged in agro-based activities especially where land is a limiting factor. Dairying is the best suitable alternative in this situation for ensuring regular marketing of their produce, timely payment and other benefits. Dairy Cooperative structure in the State work under 3-tier structure i.e. Societies at Village level, Milk Unions at District level and Federation at State level. In Haryana, there are 4650 dairy cooperative societies (DCS), 6 Milk Unions and 1 Federation registered as Haryana Dairy Development Cooperative Federation (HDDCF). HDDCF has a procurement of 6.75 lakh litres of milk per day from DCS. This may be primarily due to the number of policy initiatives, which include decentralized decision making with respect to pricing of milk and launching of a number of schemes for dairy cooperatives by the government. The milk is supplied by the members of dairy cooperative society formed at village level twice a day. The price of the milk is fixed on the basis of fat content of their milk and members received payment from DCS after 15 days. From DCS, the milk is collected by the Collection Centre/ Chilling Centre for a cluster of villages located in the nearby city/ town in their own vehicles. The collection centre supplied milk to the respective Milk Unions in chilled containers on the same day. Finally, the milk is collected at the Milk Union and is processed and converted into value added products. The processed milk was sold mainly to urban consumers as milk in poly bags, flavoured and value added products as ghee, curd, paneer, lassi, pinni and peda through their authorized outlets.

3.1 Knowledge related to Brand Name, Product Prepared and Frequency of Purchase

Table 1 shows data regarding the knowledge related to brand name, product prepared and frequency of purchase of products. It revealed that cent per cent of the beneficiaries were aware about the brand name under which milk was sold i.e. 'VITA'. As far as knowledge regarding products prepared, cent per cent of members were aware about milk and ghee followed by curd (45.00% and 36.00%), paneer (35% and 18%), flavoured milk (25.00% and 15%), lassi (25.00% and 12%), pinni (8.00% and 5%), peda (5.00% and 0.00%) for men and women respectively.

Regarding frequency of purchase of products, it was noted that 95 per cent of men never purchased the products followed by seldom (5.00%) whereas cent percent women had never purchased the products. This may be so as these products are sold through sale outlets which are mainly in urban areas.

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Table 1. Gender analysis of respondents according to their knowledge related to brand name, product prepared and frequency of purchase of products

Variables and Categories	Men (N=100)		Women (N=100)	
	Frequency	Percentage	Frequency	Percentage
Knowledge				
1. Brand Name	100	100.00	100	100.00
2. Products Prepared*				
Milk	100	100.00	100	100.00
Ghee	100	100.0	100	100.00
Curd	45	45.00	36	36.00
Paneer	35	35.00	18	18.00
Flavoured Milk	25	25.00	15	15.00
Lassi	25	25.00	12	12.00
Pinni	08	08.00	05	05.00
Peda	05	05.00	00	00.00
3. Frequency of Purchase of Products				
Frequently	00	00.00	00	00.00
Seldom	05	05.00	00	00.00
Never	95	95.00	100	100.00

*Multiple responses

3.2 Herd Size Maintained

Results in Table 2 showed that the 48.00 per cent men had medium herd size followed by small (45.00%) and large (07.00%). In case of women, 53.00 per cent had low followed by medium (45.00%) and large (2.00%) respectively. Singh and Chattraj (1989) reported that majority of the members prefer to maintain a minimum of three milch animals so as to enable them to supply milk regularly to the milk society for getting supplementary income throughout the year to meet the day to day expenses.

Table 2. Gender analysis of herd size maintained by members of dairy cooperative societies

Category	Men (N=100)		Women (N=100)	
	Frequency	Percentage	Frequency	Percentage
Small (up to 2)	45	45.00	53	53.00
Medium (3 to 5)	48	48.00	45	45.00
Large (6 and above)	07	07.00	02	02.00

3.3 Daily Milk Production, Consumption and Sale

The results of the study presented in Table 3 reflect that the milk production level of 75 per cent of men and 65 per cent of women was high followed by medium (25.00% and 24.00%) for men and women respectively. It was found that the amount paid by dairy society to members was on the basis of fat content and some members had received up to Rs. 35 per litre. Regarding milk consumption 50 per cent of men and 60 per cent of women had high consumption level

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followed by medium (27.00%) and low (23.00%) in case of men and medium (23.00%) and low (17.00%) in case of women. As regards selling of milk 45.00 per cent of men and 35 per cent of women had high level of sale followed by medium (40.00%) and low (15.00%) in case of men and medium (45.00%) and low (20.00%) in case of women beneficiaries.

3.4 Opinion of Members about Profitability from Dairying

It is evident from Table 4 that 70 per cent of the men and women beneficiaries reported dairying as moderately profitable followed by somewhat profitable (25.00% and 24.00%) and highly profitable (5.00% and 6.00%) respectively. The ranks obtained by men and women have significant correlation with the gender ($r_s = 1.00$). The findings are in consonance with the results of Deepti (2002) and Pandey (2005).

Table 3. Gender analysis of daily milk production, consumption and sale (litres per day) by members of dairy cooperative societies

Category	Men (N=100)		Women (N=100)	
	Percentage		Percentage	
Production				$\chi^2 = 0.6310$
Low (1-6)	00.00		00.00	
Medium (6-12)	25.00		28.00	
High (12 and above)	75.00		65.00	
Consumption				$\chi^2 = 2.1291$
Low (up to 2)	23.00		17.00	
Medium (2 -4)	27.00		23.00	
High (4 and above)	50.00		60.00	
Sale				$\chi^2 = 2.2584$
Low (1-4)	15.00		20.00	
Medium (4 - 8)	40.00		45.00	
High (8 and above)	45.00		35.00	

χ^2 - Chi-square

Table 4. Gender analysis of opinion of members of dairy cooperative societies on profitability from dairy enterprise

Opinion	Men (N=100)		Women (N=100)	
	Percentage	Rank	Percentage	Rank
Highly Profitable	05.00	III	06.00	III
Moderately Profitable	70.00	I	70.00	I
Somewhat Profitable	25.00	II	24.00	II

$r_s = 1.00^*$

r_s = Spearman Rank Order Correlation

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3.5 Overall Empowerment of Members

The gender analysis of overall empowerment presented in Table 5 indicates that majority of men (56.00%) had medium level of empowerment followed by low (36.00%) and high (8.00%). In case of women also majority (48.00%) had medium level of overall empowerment followed by low (48.00%) and high (7.00%) respectively. Further, the ranks when tested through spearman rank order correlation depict a high consistency between ranks ($r_s = 1.00$).

3.6 Rank wise Dimensions of Empowerment

It is evident from the result presented in Table 6 that strongest component has been economic empowerment as majority of the members fell in the medium level category both for men (WMS 1.82, Rank I) and women (WMS 1.76, Rank I) followed by social (WMS 1.76, Rank II), personal (WMS 1.75, Rank III), managerial (WMS 1.72, Rank IV), political (WMS 1.71, Rank V), entrepreneurial (WMS 1.70, Rank VI), and technological (WMS 1.65, Rank VII) empowerment for men whereas in case of women personal (WMS 1.73, Rank II), social (WMS 1.65, Rank III), entrepreneurial (WMS 1.62, Rank IV), political (WMS 1.56, Rank V), technological (WMS 1.52, Rank VI) and managerial (WMS 1.48, Rank VII). Thus, it can be inferred that dairy cooperatives has been a successful model for improving the socio-economic condition of members of rural families. Further, the ranks when tested through spearman rank order correlation depict a high consistency between ranks ($r_s = 0.71$). Somjee and Somjee (1990) also predicted similar results for socio-economic condition of members.

Table 5. Gender analysis of overall empowerment of members of dairy cooperative societies

Category	Men (N=100)		Women (N=100)	
	Percentage	Rank	Percentage	Rank
Low	36.00	II	45.00	II
Medium	56.00	I	48.00	I
High	08.00	III	07.00	III

$r_s = 1.0$

r_s = Spearman Rank Order Correlation

Table 6. Rank-wise dimensions of empowerment of members of dairy cooperative societies

Sr. No.	Dimensions	Men (N=100)		Women (N=100)	
		Weighted Mean Score	Rank	Weighted Mean Score	Rank
1	Personal	1.75	III	1.73	II
2	Social	1.76	II	1.65	III
3	Economic	1.82	I	1.76	I
4	Entrepreneurial	1.70	VI	1.62	IV
5	Managerial	1.72	IV	1.48	VII
6	Political	1.71	V	1.56	V
7	Technological	1.65	VII	1.52	VI

$r_s = 0.71$

r_s = Spearman Rank Order Correlation

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3.7 Overall Impact of Dairy Cooperatives

The gender analysis of overall impact of dairy cooperatives has been presented in Table 7. The mean score data on impact of DCS indicated that their participation influenced all the selected parameters in a positive way as the mean scores of most of the parameters was high, however, the maximum impact was visualized on economic, nutrition and health aspects both for men and women. Further, the ranks when tested through spearman rank order correlation depict a high consistency between ranks ($r_s = 0.85$).

4. CONCLUSION

Various dimensions of empowerment viz. personal, social, economic, entrepreneurial, managerial, political and technological revealed that strongest component has been economic empowerment. Thus it can be inferred that dairy cooperatives has been a successful model for improving the socio-economic condition of the members of dairy cooperative societies. Impact of dairy cooperative societies on various quality of life parameters viz. economic, nutrition and health, housing, material possession, domestic violence, personal grooming, educational, social, recreational indicated that dairying influenced these in a positive way. The maximum impact was estimated on economic, nutrition and health aspects both for men and women. Dairying through cooperative mode is a novel, profitable and sustainable rural development activity. The logistic and management aspects play a crucial role since milk is a perishable commodity but through value addition on a large scale and appropriate marketing strategy benefits both dairy owners and urban consumers. The dairy cooperative members get a regular dairy market to sell milk, a remunerative price based on fat content of milk and this contributes significantly towards empowerment of both men and women and improved quality of life.

Table 7. Gender analysis of overall impact of dairy cooperatives

Sr. No.	Aspects	Men (N=100)			Women (N=100)		
		Total Mean Value	Weighted Mean Score	Rank	Total Mean Value	Weighted Mean Score	Rank
1	Economic	11.39	2.85	II	10.17	2.54	II
2	Nutrition and Health	11.67	2.92	I	11.42	2.86	I
3	Housing	11.12	2.22	VI	11.27	2.25	VII
4	Material Possession	7.30	2.43	V	7.06	2.35	VI
5	Domestic Violence	7.75	1.94	VIII	5.20	1.13	IX
6	Personal Grooming	4.28	2.14	VII	4.87	2.44	IV
7	Educational	7.32	2.44	IV	7.35	2.45	III
8	Social	10.38	2.60	III	9.70	2.43	V
9	Recreational	6.76	1.69	IX	6.39	1.60	VIII

 $r_s = 0.85^*$
 r_s = Spearman Rank Order Correlation

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