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Empowerment of Milk Producers in Dairy Co-operative Societies Through Information Technology in Jaipur District of Rajasthan

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ABSTRACT

Information Technology immense potential to for rural development and empowerment and it can help to deliver basic services in more efficient and innovative ways.The present study was conducted in Jaipur district of Rajasthan. The Jaipur dairy, is the largest computerised dairy cooperative society in Jaipur district of Rajasthan. From the Jaipur dairy two chilling centers were selected, and from each selected chilling center three milk collection routes were selected randomly. From each of the milk collection route, one computerized and one non-computerized dairy co-operative society (DCS) was selected randomly. Therefore, a total of six computerized and six non-computerized dairy co-operative societies were selected. From the selected DCSs, a total sample of 120 milk producers (60 non-computerized DCSs milk producers and 60 computerized DCSs milk producers) were selected for the present investigation. The data were collected by personal interview method. The results of the study revealed that there was asignificant difference between the computerised and non-computerised DCSs in all these indicators of access to information, facilitating improved decision making, formal credit system and use fullness of the training programme. The highest difference between the computerised and non-computerised DCSs was found in provision of immediate information about number of cattle (42.68%),computer based new information serve to change people and bridge the gap between information rich and poor (54.36%), knowledge of computer operation led to empowerment (57.08%), and training on computer handling (58.46%). The lowest difference was found in provision of data to farmers on the seasonal variation in milk production (22.66%), participatory decision about disbursing cattle insurance and loan (36.03%), smart card gives various information and detailed record about individual milk producer as well as transparency and security about milk collection (35.71%) and proper storage of milk (33.46%).The computerised DCSs was found significantly superior as compared to non-computerised DCSs.

Key words: Dairy Co-operative Societies, IT, empowerment, milk producers,

INTRODUCTION

India has emerged as the world's largest milk-producing nation. The Indian dairy industry has performed well during the last two decades. The milk output reached the level of 102 million tonnes during the year 2007-08 with providing per capita availability of milk 246 grams per day (Bhasin,2009). Milk production contributes a major share of livestock production and is only next to rice with regard to contribution to agriculture production. (Das and Pankaj, 2004). Information and Communication Technologies, if implemented in rural areas, have the power to facilitate rural development and empower rural communities with information, which will in turn enable them to contribute positively towards development of their national economics (Joseph, 2001).These technologies have the main objective of narrowing the knowledge gap between developed and developing countries. A global knowledge society can only be realized with the involvement and participation of developing countries. Rural people need to be empowered with information to assist them in the decision making process on issues that affect their social and economic well being. ICTs can enable rural communities to solve their development problems in ways that build upon local goals, cultures, strengths and processes to promote equitable and sustainable development. The term empowerment has different meaning in different social, cultural and political, context, and does not translate easily into all languages, but in the terms of computerization in dairy co-operative societies, empowerment of milk producers includes self-strength, control, self-power, self-reliance, own choice, life of dignity in accordance with one's values, capable of fighting for one's rights independence, own decision making being free, awakening access to information and capacity. Milk producers need a range of capabilities to increase their well being and security, as well as their self-confidence, The Dairy Co-operative Societies (DCS), a village-level organization of milk farmers, collect milk from members and sells the collected milk to a district-level cooperative union. Member farmers are paid on the

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basis of quantity of milk collected and its quality. The Indian dairy industry faces challenges from the international dairy market. Addressing these challenges and increasing the competitiveness of the Indian dairy industry will require both improved technology and better management. The innovative use of appropriate technologies can help the industry to produce high-quality products at a lower cost, while professional management can ensure a more optimal utilization of the industry's human and financial resources. Technology solutions will need to address the unique needs of India's dairy supply chain, which runs from its largest cities to its smallest, most remote villages, in an integrated and locally-relevant way. Pertinent to addressing this challenge the IT-based tools could increase the efficiency and productivity of the Indian dairy industry at a grassroots level in can automate the milk collection process at local dairy cooperatives. The system not only minimizes handling and increases efficiency, but also increases transparency, and creates a basis for improving the quality of the milk produced. The Jaipur diary working under the administrative control of Government of Rajasthan through Rajasthan co-operative dairy federation (RCDF), which covers highest number of dairy co- operative societies in Rajasthan State. Presently a total number of 1236 dairy cooperatives are running in Jaipur districts. Out of these 981 are computerised and 255 are non-computerised dairy *co-operative* societies are functioning.

The milk producers' cooperative societies at Jaipur introduced Electronic Milk Tester (EMT) and installed it in most of the co-operatives in phased manner from 1984-85 onwards. This enabled a prompt payment to the milk suppliers, but the problem of Management Record System (MRS) became more acute as the success resulted in more members, more milk collection and therefore more accounting activities. This initiated the bold step of providing a paradigm shift in technology by introduction of Smart Automatic Milk Collection Station (SAMCS) at village level and introduction of smart cards for its members. A smart card of Dhobalai dairy co-operative society of Rajasthan is kept in the White House of USA as an indicator of the progress that the rural Indian women have made.

The Oxfam Community Aid abroad has also recognized and appreciated the dynamics of these women dairy cooperative members and their initiatives in conducting the computerized quantitative and qualitative tests for milk. This study will help to develop empowerment of milk producer's and management pattern of the societies to enhance production and saving cost and time. Hence it was thought pertinent to study the empowerment of milk producers in dairy co-operative societies through information technology in Jaipur district of Rajasthan.

METHODOLOGY

The present study was conducted in Jaipur district of Rajasthan because of Jaipur dairy is the largest computerized dairy cooperative societies,which covers five chilling centers. Out of them two chilling centers namely Jaipur and Bindayaka were selected randomly by using simple random sampling technique. From each selected chilling center three milk collection routes were selected randomly by using simple random sampling technique. From each of the milk collection routes, one computerised and one non-computerised DCSs were selected randomly. Hence, 6 computerised and 6 non-computerised DCSs were selected randomly. From the selected DCSs, 60 milk producers from computerised dairy cooperative societies and 60 milk producers from non-computerised dairy cooperative societies were selected by using simple random sampling technique. Thus, a total sample of 120 milk producers was selected for the study purpose. An interview schedule was prepared and data were collected by personal interview method. The collected data were classified, tabulated and analyzed. The interpretations were drawn after subjecting the data to statistical analysis which led to the following major findings.

RESULTS AND DISCUSSION

Access to information in computerised and non-computerised DCSs:

The highest per cent difference (42.68%) between the computerised and non-computerised DCSs was found in provision of immediate information about number of cattle, whereas the lowest per cent difference (22.66%) was found in provision of data to farmers on the seasonal variation in milk production.

The table also indicated that the calculated overall Z-value (7.97**) *between* computerised and non-computerised DCSs is greater than the tabulated value (2.58) which is positively significant at 1 per cent level of significance, it means there was a significant difference between the non-computerised and computerised DCSs in access to information. Similarly, the Z-values of all the indicators of access to information in computerised and non-computerised DCSs are positively significant at 1% level of significance. Thus, the hypothesis formulated in the form ($H_{0.1}$) was rejected and alterative hypothesis was accepted. It means there was a significant difference in all these indicators of provision of timely information in

computerised and non-computerised DCSs and the computerised DCSs are highly significantly superior as compared to non-computerised DCSs. The above findings are in agreement with case studies of Bhatnagar (2000), Chakravarty (2000), and Singh (2005).

Table 1: Access to information in computerised and non-computerised DCSs

n= 120

Indicators	Non- computerised DCSs (n = 60)				Computerised DCSs (n = 60)				Mean diff. score	Per cent diff. score	Z Value
	Agree	Un-decided	Dis-agree	M.S.	Agree	Un-decided	Dis-agree	M.S.			
Provision of information with payment slip regarding live stock field day	10	26	24	1.77	38	18	4	2.57	0.80	31.33	6.52**
Provision of information with payment slip regarding Kisangosthi	10	24	26	1.73	36	20	4	2.53	0.80	31.62	6.47**
Provision of information with payment slip regarding Kisan mela	5	30	25	1.67	35	20	5	2.50	0.83	33.20	7.10**
Provision of information about feeding	6	29	25	1.68	40	16	4	2.60	0.92	36.80	7.93**
Provision of information about breeding	3	25	32	1.50	40	14	6	2.57	1.07	41.63	9.28**
Provision of information about management	5	28	27	1.63	44	12	4	2.67	1.04	38.95	9.18**
Provision of information about health care	5	27	28	1.62	35	20	5	2.50	0.88	35.20	7.47**
Provision of data to farmers on the seasonal variation in milk production	4	26	30	1.57	15	32	13	2.03	0.46	22.66	3.87**
Provision of immediate information about past history of milk sale	3	28	29	1.57	23	26	11	2.20	0.63	28.63	5.20**
Provision of immediate information about milk production	7	30	23	1.73	34	20	6	2.45	0.72	29.38	5.93**
Provision of immediate information about training of individual	7	29	24	1.72	36	19	5	2.52	0.80	31.74	6.69**
Provision of immediate information about number of cattle	2	23	35	1.45	37	18	5	2.53	1.08	42.68	9.75**
Credibility of information obtained from website	0	27	33	1.45	34	22	4	2.50	1.05	42.07	10.21**
Overall	5	27	28	1.62	34	20	5	2.50	0.85	34.27	7.97**

** Significant difference at 1 per cent level of significance

Facilitating improved decision making in computerised and non-computerised DCSs:

The highest per cent difference (54.36%) between the computerised and non-computerised DCSs was found in computer based new information serve to change people and bridge the gap between information rich and poor, whereas the lowest per cent difference (36.03%) was found in participatory decision about disbursing cattle insurance and loan.The data also indicated that the calculated overall Z-value (9.08**)between computerised and non-computerised DCSs is greater than the tabulated value (2.58) which is positively significant at 1 per cent level of significance it means that there was a significant difference between non-computerised and computerised DCSs in facilitating improved decision making.Similarly, the Z-values of all the indicators of facilitating improved decision making in computerised and non-computerised DCSs were positively significant at 1% level of significance. Thus the hypothesis formulated ($H_{0.2}$) was rejected and alterative hypothesis was accepted. It means that there was a significant difference in all these indicators of facilitating improved decision making in computerised and non-computerised DCSs and the computerised DCSs are highly significantly superior as compared to non-computerised DCSs. The present finding can be considered as a good indication in sustaining peoples' participation in computerised based DCSs. The participatory decision focus on improving planning and monitoring of development programmes. The results of the study have similarity with the finding of Chakravarty (2000), Meena (2005), and Singh (2005).

Table 2: Facilitating improved decision making in computerised and non-computerised DCS

n= 120

Indicators	Non- computerised DCSs (n = 60)				Computerised DCSs (n = 60)				Mean diff. score	Per cent diff. score	Z Value
	Agree	Un-decided	Dis-agree	M.S.	Agree	Un-decided	Dis-agree	M.S.			
Participatory decision about conducting training programme	4	25	31	1.55	33	23	4	2.48	0.93	37.50	8.15**
Participatory decision to supply inputs, fodder seeds for improvement of DCSs farmers	5	28	27	1.63	40	17	3	2.62	0.99	37.78	8.96**
Accurate decision about better data storing and maintaining of milk collection records	6	24	30	1.60	39	15	6	2.55	0.95	37.25	7.82**
Participatory decision about dispersing cattle insurance and loan	5	25	30	1.58	34	20	6	2.47	0.89	36.03	7.38**
Computer based new information serve to change people and bridge the gap between information rich and poor	0	9	51	1.15	37	17	6	2.52	1.37	54.36	13.95**
Ensure correct and honest payment	6	28	26	1.67	34	20	6	2.67	1.00	37.45	8.23**
Overall	4	23	32	1.53	36	19	5	2.58	1.02	40.06	9.08**

**1 per cent level of significance

Formal credit system in computerised and non-computerised DCSs

The highest per cent difference (57.08%) between the computerised and non-computerised DCSs was found in knowledge of computer operation led to empowerment; whereas the lowest per cent difference (35.71%) was found in smart card gives various information and detailed record about individual milk producer as well as transparency and security about milk collection Tabel 3.

The data also indicated that the calculated overall Z-value (9.52**) between computerised and non-computerised DCSs is greater than the tabulated value (2.58) which is positively significant at 1 per cent level of significance which means that there was a significant difference betweenthe non-computerised and computerised DCSs in formal credit system. Similarly, the Z-values of all the indicators of formal credit system in computerised and non-computerised DCSs are positively significant at 1% level of significance. Thus the hypothesis formulated ($H_{0.3}$) was rejected and alterative hypothesis was accepted. It means that there was a significant difference in all these indicators of formal credit system in computerised and non-computerised DCSs and the computerised DCSs are highly significantly superior as compared to non-computerised DCSs. The above findings are in line with the findings by Archana

and Singh (2000), Chakravarty (2000), Raina (2000) Cecchini (2002) and Singh (2005).

Table 3: Formal credit system in computerised and non-computerised DCSs

n= 120

Indicators	Non- computerised DCSs (n = 60)				Computerised DCSs (n = 60)				Mean diff. score	Per cent diff. score	Z Value
	Agree	Un-decided	Dis-agree	M.S.	Agree	Un-decided	Dis-agree	M.S.			
Provision of daily payment on the basis of record of sold milk	4	23	33	1.52	32	22	6	2.43	0.91	37.44	7.91**
Loan for purchasing animals in minimum time	5	18	37	1.47	40	15	5	2.58	1.11	43.02	9.57**
Accurate records of credits and their distribution in the society	3	29	28	1.58	37	19	4	2.55	0.97	38.03	8.71**
Smart card gives various information and detailed records about individual milk producer as well as transparency and security about milk collection	5	27	28	1.62	36	19	5	2.52	0.90	35.71	7.64**
Holding the smart card members feel empowered	3	26	31	1.53	34	21	5	2.48	0.95	38.30	8.24**
Knowledge of computer operation leads to empowerment	0	4	56	1.06	34	20	6	2.47	1.41	57.08	15.07**
Overall	3	21	35	1.46	36	19	5	2.53	1.04	41.59	9.52**

**1 per cent level of significance

Use fullness of the training programme for the member of computerised and non-computerised DCSs

The Table 4.indicated that the highest per cent difference (58.46%) between the computerised and non-computerised DCSs was found in training on computer handling, whereas the lowest per cent difference (33.46%) was found in proper storage of milk.

The data. also indicated that the calculated overall Z-value (9.12**) between computerised and non-computerised DCSs is greater than the tabulated value (2.58) which as positively significant at 1 per cent level of significance which means that there was a significant difference between non-computerised and computerised DCSs in use fullness of the training programme. Similarly, the Z-values of all the indicators of training programme in computerised and non-computerised DCSs are positively significant at 1% level of significance. Thus the hypothesis formulated ($H_{0.4}$) was rejected and alterative hypothesis was accepted. It means there was a significant difference in all these indicators of provision of timely information in computerised and non-computerised DCSs and the computerised DCSs are highly significantly superior as compared to non-computerised DCSs.

The finding revealed that the role of training had increased a significant difference in empowerment of milk producers. It was observed that training using video films, LCD projection and audio-visual equipments helped to make it interactive and more effective. Thus, the above indicators of training programmes were found highly significant with empowerment. The above findings are in agreement with findings of Raina (2000), Cecchini (2002) and ngh (2005).

Table 4: Use fullness of the training programme to the members of computerised and non-computerised DCSs

n= 120

Indicators	Non- computerised DCSs (N = 60)				Computerised DCSs (N = 60)				Mean difference score	Per cent difference score	Z Value
	Agree	Un-decided	Dis-agree	M.S.	Agree	Un-decided	Dis-agree	M.S.			
Training on computer handling is given	0	2	58	1.03	35	19	6	2.48	1.45	58.46	16.19**
Animal health and sanitation training had benefited	5	22	33	1.53	37	18	5	2.53	1.00	39.52	8.43**
Clean milk training had provided much knowledge	6	26	28	1.63	36	18	6	2.50	0.87	34.80	7.17**
Feeding, breeding and management training was most beneficial	4	23	33	1.52	37	18	5	2.53	1.01	39.92	8.71**
Proper storage of milk training was much advantages	4	31	25	1.65	33	19	6	2.48	0.83	33.46	7.09**
Milk testing training was highly useful to DCSs members	6	27	27	1.65	37	17	6	2.52	0.87	34.52	7.17**
Overall	4	22	34	1.50	36	18	6	2.50	1.05	40.11	9.12**

**1 per cent level of significance

Comparison of performance of computerised and non-computerised DCSs in improving the empowerment of DCSs

The data in Table 5.indicated that the highest per cent difference (41.59 %) between the computerised and non-computerised DCSs was found in Formal credit system. whereas the lowest per cent difference (34.27 %) was found in access to information. The data also indicated that the calculated overall Z-value (8.92**) between the computerised and non-computerised DCSs is positively significant at 1 per cent level of significance, which indicted that there was a significant difference between the non-computerised and computerised DCSs in empowerment and the computerised DCSs were significantly superior as compared to non-computerised DCSs.

Table 5: Comparison of performance of computerised and non-computerised DCSs in improving the empowerment of DCSs

Indicators	Non-computerised DCSs mean score	Computerised DCSs mean score	Mean difference score	Per cent difference	Z value
Access to information	1.62	2.50	0.85	34.27	7.97**
Facilitating improved decision making	1.53	2.58	1.02	40.06	9.08**
Formal credit system	1.46	2.53	1.04	41.59	9.52**
Use fullness of the training programme	1.50	2.50	1.05	40.11	9.12**
Overall	1.53	2.53	0.99	39.01	8.92**

**1 per cent level of significance

CONCLUSION

Above finding can be concluded that among the different indicators of access to information, facilitating improved decision making, formal credit system and usefulness of the training programme in computerised and non-computerised DCSs, the highest difference (42.68%) was found in Provision of immediate information about number of cattle whereas the lowest difference (22.66%) was found in provision of data to farmers on the seasonal variation in milk production. Among the different indicators of facilitating improved decision making in computerised and non-computerised DCSs, the highest difference (54.36%) between the computerised and non-computerised DCSs was found in computer based new information serve to change people and bridge the gap between information rich and poor, whereas the lowest difference (36.03%) was found in participatory decision about disbursing cattle insurance and loan,while the different indicators of formal credit system in computerised and non-computerised DCSs, the highest difference (57.08%) between the computerised and non-computerised DCSs was found in Knowledge of computer operation led to empowerment, whereas the lowest difference (35.71%) was found in smart card gives various information and detailed record about individual milk producer as well as transparency and security about milk collection. Likewise among the different indicators of use fullness of the training programme in computerised and non-computerised DCSs, the highest difference (58.46%) between the computerised and non-computerised DCSs was found in Training on computer handling, whereas the lowest difference (33.46%) was found in proper storage of milk.It might fact that the positive Z value between the computerised and non-computerised DCSs in all the indicators shows that the computerised DCSs are significantly superior as compared to non-computerised DCSs.

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