

Empowerment of Dairy Farmers Through ICT Enabled *I-Kisan* Project in Andhra Pradesh

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Abstract

The present study was conducted in three districts namely, Anantapur, Ranga Reddy and Nalgonda of Andhra Pradesh State with a sample size of 240 dairy farmers (120 each of ICT users and non users) to measure their empowerment through ICT enabled *i-kisan* project in Andhra Pradesh. Four components of empowerment of dairy farmers namely, knowledge regarding dairy farming, decision making ability, attitude towards dairying, and self confidence were selected based on relevancy, literature and experts opinion. The scale developed by Chaudhari *et al.*, (2007), was used to measure decision making and self confidence, and test developed by Vijay babu (2009) was used to measure knowledge and Scale developed by Sah (2005) was used to measure attitude. It was observed that the mean values of components of empowerment of dairy farmers i.e., knowledge, decision making ability, attitude, and self confidence of ICT users were 40.70, 11.6, 9.80 and 4.60, and that of non users of ICT were 28.25, 9.24, 9.33 and 3.35 respectively. The mean values of overall empowerment of ICT users and non users of dairy farmers were found to be 16.59 and 12.54. Through Z-test it was also found that the components of empowerment namely knowledge, decision making, self confidence and overall empowerment of dairy farmers between ICT users and non users of ICT were found to have significant at 0.01 level of Probability, where as no significant difference was found between them as per as attitude is concerned.

Highlights

This study was found significant difference between ICT users and non users vis-à-vis knowledge, decision making, self confidence and overall empowerment in ICT adopted and non adopted villages respectively and hence use of modern ICT tools in agriculture and animal husbandry sectors certainly empowers the farming community which in turn helps in increasing the production and productivity of the livestock sector to meet the future ever growing demands of the county.

Keywords: Dairy farmers, ICT users & non users, empowerment, knowledge, decision making, attitude, self confidence

Livestock sector plays a multi-faceted role in socio-economic development of rural households and contributes about 4.2 percent to the Gross Domestic Product and 25.6 percent to the Agricultural Gross Domestic Product in the country. Over the last three decades, livestock sector has grown at an annual rate of 7 percent, which is more than

double the growth of the agricultural sector. Empirical evidences indicate that livestock is an important component of the agriculture system, providing an additional source of income and nutritional cover to a large section of the rural population, particularly the disadvantaged and poor households (Singh *et al.*, 2007). With the changing

environment of food and agriculture sector including livestock based high value agriculture segment, information and knowledge has increasingly become an important factor of production for effective decision-making (Adhiguru *et al.*, 2009). It is increasingly recognised that ICT is necessary for accessing required information and knowledge (Anandajayasekeram *et al.*, 2008, Mcnamara 2009, Aker 2010). Hence the extensive use of modern information technology needs to be promoted for communication between researchers, extension workers and farmers to transfer technologies and information in a cost effective manner. ICT has many potential applications in agricultural extension. Quick dissemination of technological information from the research system to farmers in the field and reporting of farmers feed back to the research system is one of the critical inputs in transfer of technology for improving the production, productivity of animals and empowerment of dairy farmers. ICT is one of the means whose potential can be exploited to strengthen the bridge between research system and farming system. With the revolution in the IT sector, ICT is being integrated with agriculture and rural development for the empowerment of the dairy farmers. In this regard Collaborative efforts of the CRIDA (Central Research Institute on Dry Land Agriculture), NFCL (Nagarjuna Fertilizer Corporation Limited) with the financial assistance from NAIP (National Agricultural Innovation Project) has been running an ICT project in the state called “*i-kisan*” in selected eight districts of the state which is disseminating the information regarding dairying and agriculture through Knowledge Resource Centers (KRC’s) at state level, Knowledge Share Centers (KSC’s) at district level and Information Knowledge Utilization Groups (IKU’s) at village levels. In this backdrop this study was undertaken to know the extent of empowerment made among the ICT users compared to non users of dairy farmers under ICT adopted and non adopted areas.

Materials and Methods

The present study was conducted in Andhra Pradesh State. Three districts namely, Anantapur, Raga Reddy and Nalgonda were selected purposively for the investigation. From each selected district two taluks were selected based on the criteria that at least one ICT project (*i-kisan*) was being carried out in one taluk and in the other taluk where no ICT project is being implemented and from each taluk two villages were selected thus constituting six adopted and non adopted villages each from ICT adopted and non

adopted blocks respectively. A sample size of 20 dairy farmers from each village were selected through random sampling by making 120 each of ICT users and non users in adopted and non adopted villages respectively for the investigation. Knowledge, decision making, self confidence and attitude have been chosen as components of empowerment based on relevancy, available literature and experts’ opinion. The scale developed by Chaudhari *et al.*, (2007) was used to measure decision making and self confidence, and test developed by Vijay babu (2009) was used to measure knowledge and Scale developed by Sah (2005) was used to measure attitude. The reliability and validity of these scales and test have been tested before proceeding for investigation. Personal interview method had been adopted to collect the information from respondents in the second and third quarters of 2012. Mean, Standard Deviation were used to find out the mean values of knowledge, decision making and self confidence and cumulative cube root method was used to find out the mean values of attitude. Z- Test was administered to compare the mean scores of empowerment variables for testing the significance among these two categories of respondents and results were presented here under.

Results and Discussion

A clear perusal of Table-1 showing that among the respondents who used ICT for dairy purposes, large number of farmers (48.33%) had medium level of knowledge regarding their dairy activities followed by high (44.17%) and low (07.50%). Among those who did not use ICT for dairy purposes majority had medium level of knowledge (51.66%) followed by low (38.34%) and high (10.0%). Though majority of the respondents’ knowledge fell in medium level category in both ICT users and non users, second and third positions were occupied by high and low knowledge categories in ICT users where as in case of non ICT users it was low and high respectively. Significant difference has been noticed between ICT users and non users with respect to knowledge level. It might be due to effective reduction in communication gap, message distortion, time lag between invention and dissemination of new scientific dairy farming practices same reasons were also found by Dhaka B. L. and Chayal K. (2010) in their study conducted in Rajasthan. It could also be attributed to other factors like dissemination of information through digital illustrated interactive multimedia, live telecasts, Information kiosks, interactive voice response systems (IVRS), SMS (Short Message Services), internet



and A.V.Aids which attracted the attention of the dairy farmers to comprehend the new technologies, information and scientific production practices on breeding, feeding, healthcare and management aspects of dairying in a better way in ICT adopted villages on the other hand these facilities were lacking in non ICT adopted villages. Significant difference between ICT users and non users in terms of knowledge had also been reported by Kumar and Sankarakumar (2012), Fu and Akter (2012), Vijay babu (2009) in their studies conducted in Tamil Nadu, India and Puducherry respectively.

A careful analysis of Table-2 viewing that among the respondents who used ICT for dairy purposes, majority of dairy farmers (59.17%) had medium level of decision making abilities regarding their dairy activities followed by high (36.67%) and low (4.16%). Among those who did not use ICT for dairy purposes maximum had medium level of decision making abilities (54.17%) followed by low (31.67%) and high (14.16%). In case ICT users the medium and high knowledge categories together constitutes 95.84 percent and in non ICT users it was 68.33 percent. The high percentage of decision making capabilities of farmers in ICT adopted villages can be credited to exposure to ICT which results in increasing knowledge which directly adds in decision making. Significant difference had been found between ICT users and non users' vis-à-vis decision making. This might be due to the fact that information and knowledge gained through various ICT services under *i-kisan* project in the ICT adopted villages are being experienced, processed, discussed, and generalized among the ICT users which would help them directly in making the decisions more effectively regarding their day to day structured as well as unstructured decisions, which were on the other hand lacking in non ICT adopted villages. Improved quality of decision making due to use of ICT had also been reported by Ali (2011) Dhaka B. L. and K. Chayal (2010), Adiguru *et al.*, (2009), Gulati *et al.*, (2007) and Galloway Mochrie (2005) in their respective studies.

Lucid examination of Table-3 revealing that among the respondents who used ICT for dairy activities, large number of farmers (58.33%) had favourable attitude towards dairy farming followed by most favourable (25.84%) and unfavourable attitude (15.83%). Among those who did not use ICT for dairy purposes majority had medium level of favourable attitude (49.17%) followed by most favourable (24.17%) and unfavourable attitude (26.66%). In this variable both categories irrespective of ICT users and non

users' first place occupied by favourable attitude category followed by most favourable and unfavourable. Irrespective of ICT users and non users, respondents in all the regions (ICT adopted and non adopted villages) have favorable attitude towards dairying over agriculture because it is giving them regular, consistent and remunerative income with minimum risk unlike crop farming where lot of uncertainties involved vis-à-vis production problems, labour shortages, high cost of cultivation, unpredictable climatic conditions, inadequate irrigation facilities, heavy dependence on rain fed farming, volatile market price fluctuations, inadequate remunerative prices which were almost minimum in dairy farming as it was expressed by dairy farmers and hence no significant difference has been found between ICT users and non ICT users as far as attitude is concerned. However these results were in contrary with the findings of the Fu and Akter (2012) and Kumar and Sankarakumar (2012) who reported that there was a change in attitude due to exposure to ICT.

Form Table-4 it can be deduced that among the respondents who used ICT for dairy purposes, large number of farmers (68.33%) had medium level of self confidence regarding their dairy farming followed by high (20.84%) and low (10.83%). Among those who did not use ICT for dairy activities majority had medium level of self confidence (60.84%) followed by low (26.66%) and high (12.50%). In case of ICT users 89.17 percentage of farmers fell in medium and high level category where as it was 73.34 percent in non ICT users. It could be attributed to Reliable and timely information and more subject matter coverage in the *i-kisan* project had direct bearing on the improvement in self confidence level of an individual which were lacking in non ICT users in non ICT adopted villages among dairy farmers. This finding was in consonance with the findings of the Dhaka B. L. and Chayal K. (2010) in their study conducted in Rajasthan.

As per as overall empowerment of dairy farmers is concerned Table-5 clearly revealed that about 91.66 percent of the farmers fell in medium and high level of empowerment in ICT users and it was 62.50 percent in case of non ICT users. The high levels of empowerment of dairy farmers in adopted villages can be ascribed to exposure of ICT enabled services in which information regarding dairying is being disseminated constituting breeding, feeding, healthcare, management and fodder production to the needy farmers. The veterinarians and farmers who were provided with ICT enabled mobile

**Table 1:** Distribution of respondents based on Knowledge of dairy farming

n=240

Particulars	Category	Frequency	Percentage	Range	Mean score
ICT users in ICT adopted villages	Low - (<23.80)	09	07.50	Min-21	34.31
	Medium (23.80-44.81)	58	48.33	Max-54	
	High- (>44.81)	53	44.17		
Non ICT users in non ICT adopted villages	Low - (<23.80)	46	38.34	Min-15	34.31
	Medium (23.80-44.81)	62	51.66	Max-52	
	High- (>44.81)	12	10.00		

Table 2: Distribution of respondents based on Decision making abilities on dairy activities

n=240

Particulars	Category	Frequency	Percentage	Range	Mean score
ICT users in ICT adopted villages	Low - (<7.90)	05	04.16	Min-6	10.42
	Medium-(7.90-12.93)	71	59.17	Max-15	
	High- (>12.93)	44	36.67		
Non ICT users in non ICT adopted villages	Low - (<7.90)	38	31.67	Min-5	10.42
	Medium-(7.90-12.93)	65	54.17	Max-14	
	High- (>12.93)	17	14.16		

Table 3: Distribution of respondents based on Attitude towards dairy farming

n=240

Particulars	Category	Frequency	Percentage	Range	Mean score
ICT users in ICT adopted villages	Unfavourable (<7.19)	19	15.83	Min-6	9.56
	Favourable (7.19-11.93)	70	58.33	Max-13	
	Most favourable (>11.93)	31	25.84		
Non ICT users in non ICT adopted villages	Unfavourable (<7.19)	32	26.66	Min-3	9.56
	Favourable (7.19-11.93)	59	49.17	Max-12	
	Most favourable (>11.93)	29	24.17		

Table 4: Distribution of respondents based on Self confidence

n=240

Particulars	Category	Frequency	Percentage	Range	Mean score
ICT adopted villages	Low-(<3.81)	13	10.83	Min-2	3.97
	Medium(3.81-5.83)	82	68.33	Max-6	
	High-(>5.83)	25	20.84		
Non ICT users in non ICT adopted villages	Low-(<3.81)	32	26.66	Min-1	3.97
	Medium(3.81-5.83)	73	60.84	Max-6	
	High-(>5.83)	15	12.50		

Table 5: Overall empowerment of dairy farmers between ICT users & non users

n=240

Particulars	Category	Frequency	Percentage	Range	Mean score
ICT users in ICT adopted villages	Low-(<2.13)	10	08.34	Min-1	14.56
	Medium(2.13-27.49)	77	64.16	Max-54	
	High-(>27.49)	33	27.50		
Non ICT users in non ICT adopted villages	Low-(<2.13)	45	37.50	Min-1	14.56
	Medium(2.13-27.49)	56	46.67	Max-52	
	High-(>27.49)	19	15.83		

**Table 6:** Empowerment differences among dairy farmers based on ICT usage and non-usage in adopted and non adopted villages respectively

Si.No	Components of empowerment	Empowerment variable score			
		ICT users(n= 120)	Non ICT users(n=120)	Mean difference	Z-Cal. value
1.	Knowledge	40.70	28.25	12.45	11.57**
3.	Decision making	11.6	9.24	02.36	8.20**
4.	Attitude	9.8	9.33	0.47	1.53 ^{NS}
2.	Self confidence	4.6	3.35	01.25	9.89**
5.	Overall empowerment	16.59	12.54	04.05	4.92**

** Significant at 0.01 level of probability, ** 0.01 critical value = 2.58

NS-Non Significant

facility; they were acted as powerful tool to empower the livestock owners was also reported by Gensis (2010).

Comparison between ICT users in ICT adopted villages and non ICT users in non ICT adopted villages' vis-à-vis their empowerment

In order to know that the scores obtained among ICT users and non users in different variables of empowerment is either significant; Z-test was administered and results were presented in Table-6.

The perusal of Table-6 clearly revealed that there had been significant difference between knowledge, decision making, self confidence and overall empowerment between ICT users and non ICT users of dairy farmers in adopted and non adopted villages respectively. However significant difference was not found as per as attitude is concerned between these two groups. the high level of empowerment of farmers in adopted villages may be due to ready and real time access to the information regarding reduction in infertility management, scientific calf rearing practices, prompt time of A.I (Artificial Insemination), Clean milk production, balanced feeding, reduction in time between two calving intervals, timely vaccination and maintenance of hygienic practices, marketing, demand and supply of dairy products, through various ICT enabled services.

Conclusion

This study clearly revealed that there has been a significant and substantial contribution of ICT on empowerment of dairy farmers who use ICT for their dairy needs in terms of decision making, knowledge and self confidence when compared to non ICT users in the study area. However significant difference has not been found with respect to attitude between them because both the categories of farmers irrespective of ICT usage and non usage had positive attitude towards dairy farming. It is clearly indicated

that exposure to new technologies like IVRS (Interactive Voice Response System), internet, SMS (Short Message Services), A.V.Aids etc. can reduce communication gap, message distortion besides providing necessary required information on advanced scientific dairy production practices to dairy farmers without time lag compare to traditional manual extension system. The application of ICT in agriculture has an important pillar of agriculture extension focusing on the enhancement of agricultural and rural development through improved information and communication processes. Effective utilization of ICT has potential to make the rural communities prosperous as it enables the dissemination of requisite information in user-friendly form, easy to access, cost-effective ways at the right time.

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