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Perception of Farmers and Kisan Call Centre Professionals towards Kisan Call Centre services in Agriculture: A Case of Guntur District, Andhra Pradesh, India

G. S. Mahra[1], V. P. Sharma[2], S. M. Raut[3]

ABSTRACT

Kisan Call Centre (KCC) is one of the most successful and innovative efforts in utilising Mobile based ICT's in rural areas. After its nationwide launch by Department of Agriculture and Cooperation, Ministry of Agriculture, G.O.I in the year 2004, it has effectively reduced the gap between farmer and farm information by narrowing the mobility constraints of technical staff of various agricultural organisations. The present study has been done to assess the impact and effectiveness of KCC services and to identify the problems of farmers regarding services of KCC. This study has also analyzed the existing perceptions of farmers and agricultural graduates working at level I in KCC about KCC services. Level of knowledge gained by farmers on package of practices has been analyzed to show the effectiveness of KCC services.

Keywords: KCC, ICT's and knowledge gain

INTRODUCTION

Indian agriculture is dominated by small and marginal farmers whose educational background is weak. Majority of Indian farmers are often unable to access information that could increase yields and lead to better prices for their crops. The government of India has set up a huge research and development infrastructure in the form of institutions such as the Indian Council of Agricultural Research (ICAR), State Agricultural Universities (SAUs) and *Krishi Vigyan Kendras* (KVKs). The biggest challenge these institutions are facing is of mobility of technical staff for transfer of technological information at village level. Adhiguru *et al.* (2009) concluded that the information requirement of farmers now is demand driven which is different from supply led approach of green revolution. These problems of mobility and demand driven can be narrowed down by efficient use of Information and Communication Technologies (ICT) for providing accurate, timely, relevant information and services to farmers. Farmers in rural areas have to deal with failed crops and animal illness frequently and due to limited communication facilities, solutions to their problems remain out of reach. Keniston (2002); Dossani *et al.* (2005) and Saravanan (2010) found that in agriculture, despite the rapid spread and potential of ICTs to facilitate farmers' access to information, many of the initiatives face common challenges, such as issues of sustainability, affordability, ease of use, accessibility, scalability, and availability of relevant and localized content in an appropriate language. Hudson (1995) concluded that telecommunication, as a means of sharing information, is not simply a connection between people, but a link in the chain of the development process itself. Meera *et al.* (2004) found that the ICTs in extension can lead to the emergence of knowledge workers that will result in the realisation of a bottom-up, demand driven paradigm for technology generation, assessment, refinement and transfer. According to department of Telecommunication, New Delhi, at the beginning of 2011, there were 282.29 million rural connections (most of which are wireless) as compared to mere 4.84 million (only landline) phones in the year 2000.

One of the most successful and innovative efforts in utilising Mobile based ICT's in rural areas is Kisan Call Centre. Department of Agriculture and Cooperation launched Kisan Call Centre scheme nationwide in the year 2004 with an objective to deliver knowledge and information exactly as per the requirements of the farming community at free of cost. This system also keeps a record of what is being delivered to the farmers in terms of knowledge and information. The Call Centres can be accessed by farmers all over the country on common Toll Free Number 18001801551 from 6 A.M. to 10 P.M. except on Sundays and gazetted holidays, and beyond these hours the calls are attended in the IVRS mode. This scheme has an in-built system of monitoring and continuous evaluation for modifications and improvements. Figure 1 shows the working of a Kisan Call Centres at its three levels.

[1.] Scientist, Division of Agricultural Extension, Indian Agricultural Research Institute, New Delhi, 110012, [2.] Director (IT, Documentation & Publication), National Institute of Agricultural Extension Management, MANAGE, Hyderabad, 500030, [3.] Rural Developmental Officer, Union Bank of India Karlapalem Branch, District-Guntur, Andhra Pradesh,522002

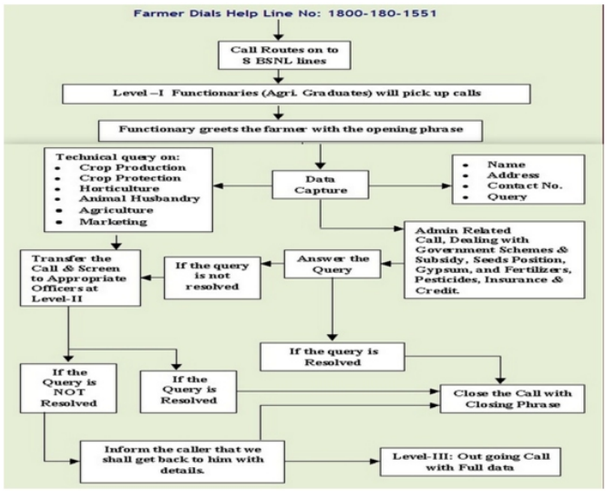

Fig.1 Working of Kisan Call Centre at its three levels (Source: http://www.manage.gov.in/kcc/schematic.htm)

Area of Study: On the basis of high frequency of calls at Kisan Call Centre from farmers of Guntur district, the present study was done at Guntur District of Andhra Pradesh. hundred farmers were selected who had made calls in KCC at least once (25 each from 4 villages of Guntur district). Table 1 summarises details of villages from which farmers were selected.

Table 1: Details of villages from which farmers were selected

District	Name of Village	Name of the Mandal	Numberof framers selected	Crops Grown
Guntur	Nallpadu	Guntur	25	Paddy, tobacco,
	Karlapudi	Amaravathi	25	cotton and
	Dondapadu	Tullar	25	chillies
	Gudivada	Tenali	25	

Objectives of the study: The present study was done to fulfil the following objectives:

1. To compare and contrast the level of attitudes of farmers and Graduates (working at first level in Kisan Call Centres) on Kisan Call Centre services in Agriculture.

2. To study the opinion of farmers on the impact of Kisan Call Centre services in Agriculture.

3. To study the level of knowledge gain of farmers after adopting the Kisan Call Centre services and to find out relationship between level of knowledge gain due to KCC services and selected independent variables

4. To study opinion of farmers on problems associated with Kisan Call Centre services

METHODOLOGY

Using an interview schedule, the primary data was collected. To compare and contrast the level of attitudes of farmers and Graduates (working at first level in Kisan Call Centres) on Kisan Call Centre services in Agriculture, Likert's five-point scale was used.

To study the opinion of farmers on the impact of Kisan Call Centre services in Agriculture and to study the level of knowledge gain of farmers after adopting the Kisan Call Centre services, before and after experiment research design was adopted for the study of parameters, which are improvement in productivity, improvement in production, improvement in farm wealth, improvement in pesticide and fertilizer application, improvement in Agriculture produce marketing and knowledge gain of farmers in package of practices. Knowledge index was calculated for farmers using following formula

$$\text{Knowledge index} = \frac{\text{Score obtained by individual respondents}}{\text{Maximum obtainable score}} \times 100$$

To study the opinion of farmers on problems associated with Kisan call centre services, ranking system was adopted by researchers. In order to collect the primary data, the survey was conducted from May 2014 to August 2014 with the help of pre-designed interview schedule.

RESULTS AND DISCUSSION

Level of attitudes of farmers and Graduates (working at first level in Kisan Call Centres) on Kisan Call Centre services in Agriculture

In order to analyze the perceptions of the selected farmers and KCC graduates (level I), they were asked to respond to 10 different statement on Kisan Call Centre services using Likert's Five-Point Scale : Highly satisfied (5) Satisfied (4) Neither Satisfied Nor Dissatisfied (3) Dissatisfied (2) and Highly Dissatisfied (1).

On the basis of the perception score, mean and rank have been calculated for each statement for the purpose of analysis. Table 2 shows the perception of graduates working at level I in KCC about the services of KCC and Table 3 shows perception of selected farmers about the services of KCC.

Table 2: Perception of Agricultural Graduates (level I) on services of KCC

n= 20

Statement	No. of graduates(level I)					Total Score	Mean Score	Rank
	HA	A	NAD	DA	HDA			
KCC is a cheap source of information to the farmers	75	20	0	0	0	95	4.75	3
KCC number is easily accessible	65	16	0	6	0	81	4.05	6
KCC has made farmers knowledgeable	60	20	0	6	0	86	4.30	4
KCC fulfils the various informational needs of the farmers	90	8	0	0	0	98	4.90	1
KCC is efficient system of solving farmer's problem	85	12	0	0	0	97	4.85	2
KCC has changed the concept of traditional method of agriculture	50	16	0	12	0	78	3.90	7
KCC has improved wealth of farmers	40	28	0	10	0	78	3.90	7
KCC has improved the innovativeness of the farmers	35	32	0	10	0	77	3.85	8
KCC has created employment opportunities	50	24	0	8	0	82	4.10	5
Farmers implements the recommendations of KCC	60	20	0	6	0	86	4.30	4

Table 3: Perception of selected farmers on services of KCC

n=100

Statement	No. of farmers					Total Score	Mean Score	Rank
	HA	A	NAD	DA	HDA			
KCC is a cheap source of information to the farmers	300	120	0	16	2	438	4.38	2
KCC number is easily accessible	150	128	24	34	17	353	3.53	6
KCC has made farmers knowledgeable	205	84	24	36	12	361	3.61	5
KCC fulfils the various informational needs of the farmers	275	116	18	20	0	429	4.29	3
KCC is efficient system of solving farmer's problem	245	84	57	10	6	402	4.02	4
KCC has changed the concept of traditional method of agriculture	75	140	36	16	30	297	2.97	8
KCC has improved wealth of farmers	125	96	60	22	11	314	3.14	7
KCC has improved the innovativeness of the farmers	130	96	120	10	5	361	3.61	5
KCC has created employment opportunities	75	40	60	80	10	265	2.65	9
Farmers implements the recommendations of KCC	325	100	0	16	2	443	4.43	1

It is evident from Table 2 that all Agricultural graduates (level I) have shown 100 per cent positive attitude (highly agreed and agreed) on the statements 'KCC is a cheap source of information to the farmers', 'KCC fulfils the various informational needs of the farmers' and 'KCC is efficient system of solving farmer's problem'. Among all Agricultural graduates (level I) 85 per cent (highly agreed and agreed) has shown positive attitude and 15 per cent negative attitude (disagreed) for the statements 'KCC number is easily accessible by farmers' and 'KCC has made farmers knowledgeable'. For the statement 'KCC has changed the concept of traditional method of agriculture', agricultural graduates (level I) has shown 70 per cent positive attitude and 30 per cent negative attitude, while for statement 'KCC has created employment opportunities' agricultural graduates has shown 80 per cent positive and 20 per cent negative attitude. Overall agricultural graduates (level I) has shown a high positive attitude towards the services of KCC with ranking the statement 'KCC fulfils the various informational needs of the farmers' as first. It is evident from table 3 that the positive and negative attitude level of selected farmers for the statements 'KCC is a cheap source of information to the farmers', 'KCC number is easily accessible by farmers', 'KCC has made farmers knowledgeable', 'KCC fulfils the various informational needs of the farmers', 'KCC is efficient system of solving farmer's problem', 'KCC has changed the concept of traditional method of agriculture', 'KCC has improved wealth of farmers', 'KCC has improved the innovativeness of the farmers', 'KCC has created employment opportunities', 'Farmers implements the recommendations of KCC' is 90 per cent, 62 per cent, 62 per cent, 84 per cent, 70 per cent, 50 per cent, 49 per cent, 50 per cent, 25 per cent, 90 per cent and 10 per cent, 38 per cent, 38 per cent, 16 per cent, 30 per cent, 50 per cent, 51per cent, 50 per cent, 75 per cent, 10 per cent respectively. Overall selected farmers have shown positive attitude (>50%) towards all statements except 'KCC has changed the concept of traditional method of agriculture', 'KCC has improved wealth of farmers', 'KCC has improved the innovativeness of the farmers' and 'KCC has created employment opportunities'. From table 2 and table 3 it can be concluded that famers and agricultural graduates (level I) perception for the services of KCC is matching for the statements 'KCC is a cheap source of information to the farmers', 'KCC number is easily accessible by farmers', 'KCC has made farmers knowledgeable', 'KCC has changed the concept of traditional method of agriculture', and 'KCC has improved wealth of farmers'. There is a contrast between the perception of famers and agricultural graduates (level I) for the services of KCC on the statements 'KCC fulfils the various informational needs of the farmers', 'KCC is efficient system of solving farmer's problem', 'KCC has improved the innovativeness of the farmers', 'KCC has created employment opportunities', 'Farmers implements the recommendations of KCC'.

Opinion of farmers on improvement in productivity before and after adopting KCC services

Table 4: Distribution of the selected farmers based on their opinion about improvement in productivity before and after adopting KCC services

Before adopting KCC Services	After adopting KCC Services (Number of farmers)		Total
	Improvement in Productivity	No Improvement in Productivity	
Improvement in Productivity	0	12	12 (12.00%)
No Improvement in Productivity	67	21	88 (88.00%)
Total	67 (67.00%)	33 (33.00%)	100

Table 4 shows that 67.00 per cent of selected farmers are of the perception that after adopting KCC services, there is improvement in their agricultural productivity. 21.00 per cent of farmers stated that, there was no improvement in agricultural productivity after adopting KCC services, rather 12.00 per cent of selected farmers are of the opinion that their productivity has declined after adopting KCC services.

Opinion of farmers on improvement in production before and after adopting KCC services

Table 5: Distribution of the selected farmers based on their opinion about improvement in production before and after adopting KCC services

Before adopting KCC Services	After adopting KCC Services (Number of farmers)		Total
	Improvement in Production	No Improvement in Production	
Improvement in Production	0	6	06 (06.00%)
No Improvement in Production	74	20	94 (88.00%)
Total	74 (74.00%)	26 (26.00%)	100

Table 5 shows that 74.00 per cent of selected farmers are of the perception that after adopting KCC services, there is improvement in their agricultural production. Twenty per cent of farmers stated that, there was no improvement in agricultural production after adopting KCC services, rather 06.00 per cent of selected farmers are of the opinion that their production has been declined after adopting KCC services.

Opinion of farmers on improvement in farm income before and after adopting KCC services

Table 6: Distribution of the selected farmers based on their opinion about improvement in Farm income before and after adopting KCC services

Before adopting KCC Services	After adopting KCC Services (Number of farmers)		Total
	Improvement in Farmincome	No Improvement in Farmincome	
Improvement in Farm income	0	12	12 (12.00%)
No Improvement in Farm income	47	41	88 (88.00%)
Total	47 (47.00%)	53 (53.00%)	100

Table 6 shows that 47.00 per cent of selected farmers are of the perception that after adopting KCC services, there is improvement in their farm income, which is quite less than the numbers of farmers who stated that KCC services has improved production and productivity (table 4 and table 5). 41.00 per cent of farmers stated that, there is no improvement in farm income after adopting KCC services, rather 12.00 per cent of selected farmers are of the opinion that their farm income has been declined after adopting KCC services.

Opinion of farmers on improvement in pesticide and fertilizer application outcome before and after adopting KCC services

Table 7: Distribution of the selected farmers based on their opinion about improvement in pesticide & fertilizer application outcome before and after adopting KCC services

Before adopting KCC Services	After adopting KCC Services (Number of farmers)		Total
	Improvement in pesticide & fertilizer application outcome	No Improvement in pesticide & fertilizer application outcome	
Improvement in pesticide & fertilizer application outcome	0	4	4 (04.00%)
No Improvement in pesticide & fertilizer application outcome	89	7	96 (96.00%)
Total	89 (89.00%)	11 (11.00%)	100

Table 7 shows that 89.00 per cent of selected farmers are of the perception that after adopting KCC services, there is improvement in their pesticide and fertilizer application outcome, which is quite high than the numbers of farmers who stated that KCC services has improved production, productivity and farm income (table 4, table 5 and table 6). Only 07.00 per cent of farmers stated that, there is no improvement in pesticide and fertilizer application outcome after adopting KCC services, while 04.00 per cent of selected farmers are of the opinion that their pesticide and fertilizer application outcome has been declined after adopting KCC services.

Opinion of farmers on improvement in agricultural produce marketing outcome before and after adopting KCC services

Table 8: Distribution of the selected farmers based on their opinion about improvement in agricultural produce marketing before and after adopting KCC services

Before adopting KCC Services	After adopting KCC Services (Number of farmers)		Total
	Improvement in agricultural produce marketing	No Improvement in agricultural produce marketing	
Improvement in agricultural produce marketing	0	3	3 (03.00%)
No Improvement in agricultural produce marketing	56	41	97 (87.00%)
Total	56 (56.00%)	44 (44.00%)	100

Table 8 shows that 56.00 per cent of selected farmers are of the perception that after adopting KCC services, there is improvement in agricultural produce marketing, 41.00 per cent of farmers stated that, there is no improvement in pesticide and fertilizer application outcome after adopting KCC services which is quite high than the numbers of farmers who stated that KCC services has not improved production, productivity and pesticide & fertilizer application outcome (table 4, table 5 and table 7), while 03.00 per cent of selected farmers are of the

opinion that agricultural produce marketing has declined after adopting KCC services.

Knowledge gain of farmers in package of practices

Knowledge of the farmers regarding timely best crop practices was measured by using structured schedule containing 30 questions divided in 6 categories.

The farmers were asked to fill the questionnaire for his knowledge before and after adopting kisan call centre services. An individual knowledge index was calculated by the following formula for both before and after situations.

Table 9: Distribution of farmers on the basis of knowledge regarding the whole cultivation practices before and after the adoption of kisan call centre

n=100

Category	High		Medium		Low	
	Before	After	Before	After	Before	After
Land Preparation	26	38	42	45	32	17
Seed & Sowing	29	42	37	46	34	12
Fertilizer Mgt	27	57	31	36	42	7
Irrigation Mgt	32	47	39	41	29	12
Plant Protection	19	43	27	35	54	22
Harvesting, threshing & Marketing	23	31	47	45	30	24

Table 9 reveals that among selected farmers there is increase of 12 per cent, 13 per cent, 30 per cent, 15 per cent, 24 per cent and 8 per cent under high category in land preparation, seed and sowing, fertilizer management, irrigation management, plant protection measures and harvesting, threshing marketing, respectively.

It is evident from table 9 that KCC services are most effective in delivering information regarding fertilizer management and plant protection, where there is 30 per cent and 24 per cent increase in high category respectively and decrease of 35 per cent and 32 per cent in low category, respectively.

Medium and low category has shown a decrease because farmers have moved to high category which shows the significance of KCC services.

Overall services of KCC have pushed the knowledge level of farmers upward regarding proper package of practices. Table 10 shows the relationship between the level of knowledge gain due to KCC services and selected independent variables.

Table 10: Relationship between level of knowledge gain due to KCC sevices and selected independent variables

Independent variables	Package of practices					
	LP	SS	FM	IM	PPM	HM
Age	0.122^{NS}	0.120^{NS}	0.121^{NS}	0.129^{NS}	0.117^{NS}	0.142^{NS}
Education	0.224^{**}	0.267^{**}	0.210^{**}	0.212^{**}	0.266^{**}	0.221^{**}
Extension agency contact	0.227^{**}	0.246^{**}	0.222^{**}	0.288^{**}	0.229^{**}	0.231^{**}
Mass media exposure	0.122^{NS}	0.171^{NS}	0.152^{NS}	0.114^{NS}	0.122^{NS}	0.128^{NS}
Innovativeness	0.233^{**}	0.232^{**}	0.213^{**}	0.217^{**}	0.230^{**}	0.239^{**}

*Significant at 5% level, **Significant at 1% level, NS-Non-significant

The selected socio-personal characteristics of farmers namely, age and mass media exposure were found non-significant with level of knowledge gain of farmers in land preparation, seed and sowing, fertilizer management, irrigation management, plant protection measures and harvesting and marketing due KCC services. While selected socio-personal characteristics namely education, extension agency contact and innovativeness of farmers was found significant at the one percent level based on t-test with level knowledge gain of farmers in land preparation, seed and sowing, fertilizer management, irrigation management, plant protection measures and harvesting and marketing due KCC services.

Opinion of farmers on problems associated with Kisan Call Centre services

Table 11: Opinion of selected farmers on problems associated with Kisan Call Centre services

n=100

Problems	Ranks given by farmers (n=100)						Total Score	Mean Score	Final Rank
	1	2	3	4	5	6			
KCC number needs repeated dialling	16	11	5	21	17	30	298	2.98	6
Recommendations given by KCC are not new and farmers know them already	27	8	13	17	4	31	344	3.44	4
Recommended chemical/variety/ instrument is not available to farmers practically	45	21	5	15	6	8	460	4.60	1
There is lack of awareness regarding KCC among farmers	29	27	9	8	7	20	407	4.07	2
Farmers are not receiving solutions from level II and III, if level I is unable to solve the query	11	13	17	31	9	19	329	3.29	5
Mobile services on agro advisory offered by other organisations (KVK, NGO, private) are more effective than KCC	14	12	33	21	9	11	368	3.68	3

Table 11 shows that majority of farmers have opined that 'Recommended chemical/variety/ instrument is not available to farmers practically' is the major problem related with KCC services and thus farmers put this problem in first place (rank 1) followed by the problem

'There is lack of awareness regarding KCC among farmers'(rank 2). The third ranked problem is 'Mobile services on agro advisory offered by other organisations (KVK, NGO, private) are more effective than KCC', however the problems 'Recommendations given by KCC are not new and farmers know them already', 'Farmers are not receiving solutions from level II and III, if level I is unable to solve the query' and 'KCC number needs repeated dialling' were ranked fourth, fifth and sixth respectively. It is evident from the table 11 that, the problem 'Recommended chemical/variety/ instrument is not available to farmers practically', was ranked first by 45 farmers which indicate that it is the major problem faced by farmers using KCC services and recommended chemicals/ variety/instrument is not available to farmers practically in agricultural shops or agricultural universities. Table 11 shows that the problem 'There is lack of awareness regarding KCC among farmers' was ranked first by 29 farmers which shows that it is one of the basic problems regarding KCC. Also the problem 'Recommendations given by KCC are not new and farmers know them already' was ranked first by 27 farmers which shows the prevalence of this problem regarding KCC. The problem 'KCC number needs repeated dialling' was ranked sixth by highest number of farmers (30) and also rated sixth overall, which indicates that this problem is not perceived as a major problem by farmers in comparison to other problems.

CONCLUSION

The present study has been done to assess the impact and effectiveness of KCC services and to identify the problems of farmers regarding services of KCC. This study has also analyzed the existing perceptions of farmers and agricultural graduates working at level I in KCC. The study has shown that overall agricultural graduates (level I) have shown a high positive attitude towards the services of KCC with ranking the statement 'KCC fulfils the various informational needs of the farmers' as first, while farmers have shown high positive attitude towards the implementation of recommendations of KCC with ranking the statement 'Farmers implements the recommendations of KCC' as first. The study reveals that 67 per cent, 74 per cent, 89 per cent, 47 per cent and 56 per cent of farmers has opined that there is improvement in productivity, production, fertilizer and pesticide application outcome, farm income and agricultural produce marketing after adopting KCC services respectively. KCC services have been found most effective in 'fertilizer and pesticide application outcome'. The study has reflected that there is knowledge gain by farmers after adopting KCC services as there is increase of 12 per cent, 13 per cent, 30 per cent, 15 per cent, 24 per cent and 8 per cent under high category in land preparation, seed and sowing, fertilizer management, irrigation management, plant protection measures and harvesting, threshing marketing respectively. Also selected socio-personal characteristics namely education, extension agency contact and innovativeness of farmers were found significant with level knowledge gain of farmers in land preparation, seed and sowing, fertilizer management, irrigation management, plant protection measures and harvesting and marketing due to KCC services. The study has also evaluated that 'Recommended chemical/variety/ instrument is not available to farmers practically' is the major problem related with KCC services and thus farmers put this problem in first place (rank 1) followed by the problem 'There is lack of awareness regarding KCC among farmers'(rank 2). The third ranked problem is 'Mobile services on agro advisory offered by other organisations (KVK, NGO, private) are more effective than KCC'. Overall it can be concluded that KCC is playing a vital role in agricultural knowledge transfer to farmers and its efficiency can be increased further by matching the recommendations of KCC with their availability to farmers.

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REFERENCES

Adhiguru, P., P. S. Birthal, and B. Ganesh Kumar. 2009, Strengthening Pluralistic Agricultural Information Delivery Systems in India. *Agricultural Economics Research Review* 22: pp.71-79, 2009.

Dossani, R., D. C. Misra, and R. Jhaveri. 2005, *Enabling ICT for Rural India*. Stanford, CA: Asia Pacific Research Center, National Informatics Center, 2005

Hudson, H. E. 1995, "Economic and social benefits of rural telecommunications": A report to the World Bank. Washington DC, USA, 1995

Keniston, K. 2002, "Grassroots ICT Projects in India: Some Preliminary Hypotheses". *ASCI Journal of Management,* 31 (1&2).

Meera, Shaik N., A. Jhamtani, and D.U.M. Rao, 2004, Information and communication technology in agricultural development: a comparative analysis of three projects from India. AgREN Network Paper No.135, pp20, 2004

Saravanan, R. 2010, *ICTs for Agricultural Extension. Global Experiments, Innovations and Experiences*, edited by R. Saravanan. New Delhi: New India Publishing Agency, 2010