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Effectiveness of Mobile based Agro-Advisory Services in Addressing Information Need of the Stakeholders: A Case of m KRISHI®

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ABSTRACT

Many information and communication technology (ICT) projects in Indian agriculture have emerged, either substituting or supporting extension services by providing access to agricultural information to the farmers, but its access to the farmers in remote villages is restricted due to the lack of infrastructure. It creates information asymmetry among farmers. Telecommunication, especially mobile phones have the potential to provide solution to the existing information asymmetry in various lagging sectors like agriculture. mKRISHI® is one such project which made significant contribution in information dissemination in some parts of India. The present study was undertaken for assessing its effectiveness in information dissemination to the farmers in two districts of Maharashtra and Tamil Nadu where mKRISHI® was working for the last six years. Data were collected from 60 respondents from the mKRISHI® member farmers. The effectiveness was measured by effectiveness index developed for the purpose. The study revealed that the extension services rendered by mKRISHI® were found to be highly effective by majority of the farmers (46.66 %).

Key words: Effectiveness, Information need, mKRISHI® poverty, employment generation

INTRODUCTION

The contribution of information and knowledge in bringing about social and economic development has been well recognized globally. However, communicating this relevant knowledge and information to rural communities continues to remain as a major challenge even today, though the world has been better connected than ever before. The advent of new age Information and Communication Technologies (ICTs), especially, personal computers, the internet and mobile telephone during the last two decades has provided a much wider choice in collection, storage, processing, transmission and presentation of information in multiple formats to meet the diverse requirement and skills of users. Society is currently witnessing a revolution in both the media as well as the ICTs. There is a vast literature on the potential and benefits of using these technologies for wider rural development. However, the contradiction between the potential for ICTs to address the challenges faced by rural development and the current failure to harness them for this purpose is striking (Chapman and Slaymaker, 2002). There is an increasing realization of digital divide, which is the gap between those who have access to technology and those who do not access technology, digital gap between women and men in society and a social divide among the information rich and poor in societies(Huyer and Mitter, 2003). ICT is one of these solutions, and has recently unleashed incredible potential to improve agriculture in developing countries specifically.

Among modern ICT modes, mobile phone has been most recent and widely accepted mode of delivering information (Mittal, 2012). Increasing mobile phone based services enhances the availability to knowledge and information in agriculture and meets the increasing information demand of the farmers. It further helps in improving awareness, education, better adoption of technology, better health and efficiency, reduced transaction costs, better market efficiencies, *etc.*

Hence, the policy framework for agricultural extension (Ministry of Agriculture, Govt. of India, 2000) highlights the opportunity for information and communication technology (ICT) to improve the quality and accelerate the transfer and exchange of information to farmers, and ICT is consequently given a high priority, particularly as a tool for improving the marketing aspects of farm enterprises. At present, in India, there are a number of ICT initiatives in agriculture. The modes for providing information vary in different ICT projects. The approach adopted by mKRISHI® is different from all other projects. mKRISHI® is a research project that seeks to disseminate targeted agricultural information to small and marginal farmers in India through mobile phone. The mKRISHI® (m = mobile; krishi = agriculture) platform, developed by Tata Consultancy Services in 2006, enables farmers to access best-practice information and

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agricultural experts through low-cost mobile phones using SMS. The mKRISHI® disseminates a wide range of personalized information; the critical difference from others is that experts can respond to farmers' queries. Farmer looks for specific, actionable information. Farmers are not just interested in remotely sent SMS, market information or agro advisory. Farmer wants an end-to-end service and expects personal attention and occasional visit by expert once in a while. It was visualized to increase income, improve the efficiency of markets, reduce transaction costs, and offer a great opportunity for innovative interventions, especially in service delivery. Keeping these points in view, the present study was conducted to assess the effectiveness of mKRISHI® in information and technology dissemination to the farmers.

METHODOLOGY

Two districts, one from each of the states of Maharashtra and Tamil Nadu were selected purposively since these were states where mKRISHI® was started in 2006. The districts were Nasik in Maharashtra and Kanchipuuram in Tamil Nadu. An *ex-post facto* research design was used for the study. The data were collected from 60 respondents from the mKRISHI® subscriber farmers. The information was obtained with the help of structured interview schedule.

The effectiveness was measured by effectiveness index developed for this purpose. To measure the effectiveness of mKRISHI®, an index was developed, which contains five dimensions, *i.e.*, timeliness of information, quality of information, utility of information, satisfaction of farmers and ease of understanding. The formula used for this index was as follows:

$$\text{Effectiveness Index} = \frac{T1 \times W1 + Q1 \times W2 + U1 \times W3 + SF \times W4 + EU \times W5}{W1 + W2 + W3 + W4 + W5} \times 100$$

Where, TI=Timeliness of information, QI=Quality of information, UI=Utility of information, SF=Satisfaction of farmers, EU= Ease of understanding, W_1= Weightage for the timeliness of information as given by the judges, W_2= Weightage for quality of information as given by the judges, W_3= Weightage for utility of information as given by the judges, W_4= Weightage for satisfaction of farmers as given by the judges, W_5= Weightage for ease of understanding as given by the judges

RESULTS AND DISCUSSION

Effectiveness of mKRISHI®

The perceptions of the farmers were taken on all the dimensions of the effectiveness index. The parameters of the effectiveness index are timeliness of information (TI), quality of information (QI), utility of information (UI), satisfaction of farmers (SF), and ease of understanding (EU).

Timeliness of the information

It referred to the availability of the technology and the services provided by mKRISHI® at the appropriate time to the farmers in terms of seasonality of the crops grown in that particular area. The perceptions of the farmers were collected through the interview schedule. The data obtained were presented in Table 1.

Table1:Distribution of respondents on effectiveness: Timeliness of the information

n=60

Type of services	VT		T		NAT	
	f	%	*f*	%	*f*	%
Agronomic information	7	11.7	51	85.0	2	3.3
Varietal information	12	20.0	43	71.7	5	8.3
Pest and disease management information	7	11.7	49	81.7	4	6.7
Weather related information	6	10.0	48	80.0	6	10.0
Post-Harvest Technology related information.	8	13.3	42	70.0	10	16.7
Information related to soil and water conservation	6	10.0	50	83.3	4	6.7
Information about credit	12	20.0	46	76.7	2	3.3
Marketing information	13	21.7	39	65.0	8	13.3
Information about Govt. schemes and policies	7	11.7	29	48.3	24	40.0

VT=Very Timely, T=Timely, NAT=Not at all timely

Table 1 represented the response of the farmers to the timeliness of the services of the mKRISHI®. It showed that eighty five per cent farmers perceived that information regarding the agronomic information was provided timely while, 11.7 per cent farmers perceived that it was provided very timely and3.3 per cent farmers perceived that it was not at timely. Almost 72 per cent farmers assumed that varietal information of crop was provided timely while 20 per cent farmers felt that it was provided very timely. In case of pest and disease management information 81.7 per cent farmers perceived that it was provided timely while, 11.7 per cent farmers said that it was very timely. Eighty per cent farmers assumed that information regarding the weather was provided in time while 10 per cent farmers felt that it was provided very timely. In case of post-harvest technology related information 70 per cent farmers said that it was timely provided while 13.3 per cent farmer felt that it was very timely. Regarding the soil and water conservation information 83.3 per cent farmers felt that the information was provided timely and 10 per cent farmers felt that it was provided very timely. Regarding credit 76.7 per cent farmers assumed that information was provided in time

while twenty per cent farmers felt that it was very timely. In case of marketing information 65 per cent farmers perceived that it was timely while 21.7 per cent farmers said that it was very timely.

Table 2: Descriptive statistics of timeliness of the information provided by mKRISHI®

Statistics	AI	VI	MPI	WR	PHT	SW	CRE	MI	IGS
Mean	2.08	2.11	2.05	2.0	1.96	2.03	2.16	2.08	1.7
Standard deviation	0.38	0.52	0.42	0.45	0.55	0.41	0.45	0.59	0.66
C. V (%)	18.31	24.74	20.91	22.5	28.03	20.18	21.10	28.35	38.8

AI= Agronomic information, VI = Varietal information, MPI = Management practices Information, WR = Weather related information, PHT = Post-Harvest Technology related information, SW = Information related to soil and water conservation, CRE = Information about credit, MI = Marketing Information about price, quantity demand, IGS = Information about Govt. schemes and policies.

Table 2 depicted the mean, standard deviation and coefficient of variation with regard to the timeliness of the information provided by the mKRISHI®. The mean score for the varietal information was 2.11, which denoted that farmers were getting the advisory information regarding the cultivation at the time of cropping season followed by agronomic information (2.083), which signified that the information was available on time. The coefficient of variation for information about Government schemes and policies was high (38.80%) which signified that it was highly inconsistent among the farmers. But the other parameters were consistent because of low coefficient of variation.

Categorization of farmers based on timeliness of the information provided by mKRISHI®

Table 3 showed that the 55 per cent of the total farmers believed that they got timely information about the crop followed by 43.33 per cent of the farmers who believed that they received information very timely in case of the crops.

Table 3: Distribution of farmers based on timeliness of the information

n=60

Timeliness Category	Class Score	*f*	%
Not at timely	9-15	1	1.66
Timely	15-21	33	55
Very Timely	21-27	26	43.33
Mean		18.21	
Standard Deviation		3.41	

Quality of information

It was operationally defined as the degree or level of excellence of the information provided by mKRISHI® expert as perceived by the farmers according to their farming conditions and climate in particular region. The perceptions of the farmers were collected through the schedule. The data obtained were presented in the following table.

Table 4: Distribution of respondents on effectiveness: Quality of information

n=60

Type of services	Excellent		Very good		Good		Moderate		Not at all good	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Advisories issued for mKRISHI® on the following aspects										
Crop protection	0	0.0	25	41.7	29	48.3	6	10.0	0	0.0
Weather related information	8	13.3	21	35.0	27	45.0	4	6.7	0	0.0
Soil and water conservation	5	8.3	25	41.7	25	41.7	5	8.3	0	0.0
Marketing information	4	6.7	21	35.0	28	46.7	7	11.7	0	0.0
Post-harvest technology	2	3.3	20	33.3	29	48.3	9	15.0	0	0.0
Varietal information	0	0.0	21	35.0	31	51.7	8	13.3	0	0.0
Information about Govt. schemes and polices	0	0.0	22	36.7	27	45.0	11	18.3	0	0.0

Table 4 represented the response of the farmers to the quality of information provided by mKRISHI®. It showed that 48.3 per cent farmers perceived that quality of information regarding crop protection was good while 41.7 per cent farmers perceived that it was very good followed by weather related information, 45 per cent farmer said that quality of information was good, 35 per cent farmers said it was very good while 13.3 per cent farmers felt that it was excellent.

Table 5: Descriptive statistics of quality of information provided by mKRISHI®

Statistics	CP	WR	SWC	MI	PHT	VI	IGP
Mean	3.33	3.51	3.50	3.36	3.23	3.21	3.11
Standard deviation	0.68	0.77	0.77	0.78	0.69	0.66	0.69
C.V (%)	20.43	21.93	22.05	21.66	21.60	20.70	22.22

CP = Crop protection, WR = Weather related information, SWC = Information related to soil and water conservation, MI = Marketing Information, PHT = Post-Harvest Technology related information, VI = Varietal information, IGS = Information about Govt. Schemes and policies

Table 5 depicted the mean, standard deviation and coefficient of variation in the quality of the information provided by mKRISHI®. The mean score for weather related information was 3.51 which signified that the quality of information was excellent followed by soil and water conservation related information for which mean score was the 3.50 which signified that the quality information was very good. The mean score about Govt. schemes and policies was 3.11 which indicated that quality of information is not at all good. The coefficient of variation for Govt. schemes and policies was high (22.22 %) which signified that it was highly inconsistent among the farmers. But the other parameters were consistent because of low coefficient of variation.

Categorization of respondents based on quality of the information provided by mKRISHI®

Table 6 showed that the 70 per cent of the total farmers believed that quality of information was very good followed by 23.33 per cent of the total farmers who believed that quality of information was excellent.

Table 6: Distribution of respondents based on quality of the information

n=60

Quality Category	Class Score	Frequency	(%)
Good	17-23	4	6.66
Very good	23-29	42	70
Excellent	29-35	14	23.33
Mean		23.28	
Standard Deviation		4.14	

Utility of the information

It was operationally defined as the degree to which the information provided by mKRISHI® expert is useful in resolving farmer problem according to their farming needs. The perceptions of the farmers were collected through the schedule. The data obtained were presented in the following table.

Table 7: Distribution of respondents on effectiveness: Utility of information

n=60

Type of services	SA		A		U		D		SD	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Technological information provided by mKRISHI® is highly relevant to your farming system.	11	18.3	42	70.0	7	11.7	0	0.0	0	0.0
Technological information provided by mKRISHI® is suited for both big and small farmer.	8	13.3	41	68.3	5	8.3	6	10.0	0	0.0
Technological information provided by mKRISHI® has increased yield.	9	15	37	61.7	12	20.0	2	3.3	0	0.0
Soil testing facilities provided by mKRISHI® increased soil fertility	10	16.7	31	51.7	16	26.7	3	5.0	0	0.0
Marketing information provided by mKRISHI® has increased price of your produce	7	11.7	39	65.0	10	16.7	4	6.7	0	0.0
Technological information provided by mKRISHI® reduced pest incidence	16	26.7	37	61.7	4	6.7	3	5.0	0	0.0
Technological information provided by mKRISHI® reduced disease incidence	20	33.3	36	60.0	2	3.3	2	3.3	0	0.0

SA-Strongly Agree, A-Agree, U- Undecided, D- Disagree, SD-Strongly Disagree

Table 7 presented the response of the farmers to the utility of information provided by the mKRISHI®. It showed that 70 per cent farmers agreed with the statement that technological information provided by mKRISHI® is highly relevant to farming system, 18.3 per cent farmers strongly agreed with it and 11.7 per cent were undecided about it. Regarding information being suitable for both big and small farmer that 68.3 per cent farmers agreed with it, 13.3 per cent farmers strongly agreed with it and 8.3 per cent farmers were undecided while 10 per cent farmers disagreed with it.

Table 8: Descriptive statistics of utility of information provided by mKRISHI®

Statistics	TFS	TBS	TY	STF	MI	TIP	TID
Mean	4.06	3.85	3.88	3.80	3.81	4.10	4.31
Standard deviation	0.54	0.77	0.69	0.77	0.72	0.72	0.53
C. V (%)	13.48	20.19	17.81	20.43	18.98	17.80	12.45

TFS= technological information provided by mKRISHI® is highly relevant to your farming system, TBS= technological information provided by mKRISHI® is suited for both big and small farmer, TY= technological information provided by mKRISHI® has increased your yield, STF= soil testing facilities provided by mKRISHI® is increased soil fertility, MI= marketing information provided by mKRISHI® has increased price of your produce, TIP= technological information provided by mKRISHI® reduced pest incidence, TID= technological information provided by mKRISHI® reduced disease incidence

Table 8 depicted the mean, standard deviation and coefficient of variation for the responses of the farmers regarding the utility of the technology provided by mKRISHI®. The mean score for disease management information was 4.31, followed by pest management information was 4.10 which signified that this information was highly useful to the farmer. The coefficient of variation for soil testing facilities was high (20.43%) which signified that it was highly inconsistent among the farmers. But the other parameters were consistent because of low coefficient of variation.

Categorization of farmers based on utility of the information provided by mKRISHI®

Table 9 showed that 75 per cent farmers perceived that information provided by mKRISHI® was useful to their field situation followed by 20 per cent farmers who perceived that information provided by mKRISHI® was highly useful to their field situation.

Table 9: Distribution of farmers based on utility of the information

n=60

Category of Utility	Class Score	*f*	%
Moderately useful	17-23	3	5
Useful	23-29	45	75
Highly useful	29-35	12	20
Mean		27.75	
Standard Deviation		4.98	

Satisfaction of farmers

The farmer's satisfaction was operationally defined as the degree to which information is able to meet the information need of the users. The data obtained is presented in the following table.

Table 10: Distribution of respondents on effectiveness: Satisfaction level

n=60

Statements	SA		A		U		D		SD	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Technology provided by mKRISHI® is cost effective.	12	20.0	48	80.0	0	0.0	0	0.0	0	0.0
mKRISHI® platform provides all the needed inputs through its partners.	3	5.0	38	63.3	12	20.0	7	11.7	0	0.0
Advisory services are specific to your field.	5	8.3	34	56.7	15	25.0	6	10.0	0	0.0
mKRISHI® provides proper marketing linkage.	6	10.0	36	60.0	14	23.3	4	6.7	0	0.0
mKRISHI® personnel have enough knowledge to solve farmers field problems	5	8.3	28	46.7	12	20.0	15	25.0	0	0.0
Services provided by mKRISHI® are helpful in increase in yield, reduction in cost.	7	11.7	42	70.0	11	18.3	0	0.0	0	0.0
Field personnel are fair and do not show any favours to specific farmers during their field visit while solving farmer problem.	3	5.0	29	48.3	18	30.0	10	16.7	0	0.0

SA-Strongly Agree, A-Agree, U- Undecided, D- Disagree, SD-Strongly Disagree

Table 10 presented the satisfaction of the farmers toward information provided by the mKRISHI®. It revealed that 80 per cent farmers agreed with the technological information provided by mKRISHI® is cost effective while 20 per cent farmers strongly agreed with it. Regarding mKRISHI® platform provides all the needed inputs through its partnersshowed that 63.3 per cent farmers agreed with it, 5 per cent farmers strongly agreed with it, 20 per cent farmers undecided about it and11.7 per cent farmers disagreed with it.

Table 11: Descriptive statistics of satisfaction level of farmers provided by mKRISHI®

Statistics	Cost	Inp	Advi	ML	Know	Help	FP
Mean	4.20	3.61	3.63	3.73	3.38	3.93	3.41
Standard deviation	0.40	0.76	0.78	0.73	0.95	0.548	0.82
C. V (%)	9.60	21.04	21.49	19.65	28.35	13.94	24.31

Cost= Technology provided by mKRISHI® is cost effective, Inp= mKRISHI® platform provides all the needed inputs through its partners, Advi= The advisory services are specific to your field, ML= mKRISHI® provides proper marketing linkage, Know= mKRISHI® personnel have enough knowledge to solve farmers field problems, Help=Services provided by mKRISHI® are helpful in increase in yield, reduction in cost, FP= Field personnel are fair and do not show any favours to specific farmers during their field visit while solving farmer problem.

Table 11 depicted the mean, standard deviation and coefficient of variation for the responses of the farmers regarding satisfaction toward technology provided by mKRISHI®. The mean score for the 'technology provided by mKRISHI® was cost effective' was 4.2, followed by the services provided by mKRISHI® were helpful in increasing in yield 3.93 and marketing linkage 3.73 which signified that most of farmers strongly agreed with it. The coefficient of variation for mKRISHI® personnel have enough knowledge to solve farmers field problems was high (28.35%) which signified that it were high inconsistent among the farmers. But the other parameters were consistent because of low coefficient of variation.

Categorization of farmers based on satisfaction of the information provided by mKRISHI®

Table 12 showed that 66.66 per cent of the total farmers had high level of satisfaction whereas 33.66 per cent of farmers had very high level of satisfaction towards mKRISHI® extension services.

Table 12: Distribution of farmers based on satisfaction of the information

n=60

Category of Satisfaction	Class Score	*f*	%
Medium	17-23	0	0.0
High	23-29	40	66.66
Very high	29-35	20	33.66
Mean		29.3	
Standard Deviation		3.03	

Ease of understanding of information

The ease of understandingwas operationally defined as the degree to which the message conveyed by mKRISHI® system is clear and understandable by farmers. The data obtained was presented in the following table.

Table 13: Distribution of respondents on effectiveness: Ease of understanding of information

n=60

Statements	SA		A		U		D		SD	
	f	%	*f*	%	*f*	%	*F*	%	*f*	%
Language of text message is very clear and understandable.	9	15.0	49	81.7	2	3.3	0	0.0	0	0.0
Technical term used in text message easy to understand.	6	10.0	30	50.0	11	18.3	13	21.7	0	0.0
Content of text message provided by mKRISHI® is clear and understandable	8	13.3	41	68.3	5	8.3	6	10.0	0	0.0
Information about weather and market is easy to understand, adopt and helps in taking decision.	7	11.7	34	56.7	9	15.0	10	16.7	0	0.0
Voice message delivered by mKRISHI® is clear	5	8.3	49	81.7	6	10.0	0	0.0	0	0.0

SA-Strongly Agree, A-Agree, U- Undecided, D- Disagree, SD-Strongly Disagree

Table 13 represented the response of the farmers to the ease of understanding of information provided by the mKRISHI® that 'language of text message is very clear and understandable' about 81.7 per cent farmers agreed while15 per cent farmers strongly agreed with it and 3.3

per cent farmers undecided about it. Regarding 'technical term used in text message was easy to understand' showed about 50 per cent farmers agreed while10 per cent farmers strongly agreed with it and18.3 per cent farmers were undecided about it and 21.7 per cent farmers disagreed with it.

Table14:Descriptive statistics of ease of understanding of information provided by mKRISHI®

Statistics	Lan	Tech	Cont	Inf	Voice
Mean	4.12	3.48	3.85	3.630	3.98
Standard deviation	0.41	0.94	0.77	0.90	0.43
C. V (%)	10.09	27.20	20.18	24.81	10.83

Lan= language of text message is clear and understandable, Tech= Technical term used in text message easy to understand, Cont= Content of text message provided by mKRISHI® is clear and understandable, Inf= Information about weather, market, is easy to understand, adopt and helps in taking decision, Voice=Voice message delivered by mKRISHI® clear

Table 14 depicted the mean, standard deviation and coefficient of variation for the responses of the farmers regarding the ease of understanding of information provided by mKRISHI®. The mean score for the 'language of text message is very clear and understandable' was 4.12 which signified that most of farmers strongly agreed with it followed by followed by 'voice message delivered by mKRISHI® is clear' 3.98. The coefficient of variation for 'technical term used in text message is easy to understand' was high (27.20%) which signified that it was highly inconsistent among the farmers. But the other parameters were consistent because of low coefficient of variation.

Categorization of farmers based on ease of understanding of the information provided by mKRISHI®

Table 15 showed that 83.33 per cent farmers had easily understood the information provided by mKRISHI® whereas 15 per cent farmers had moderately understood the information provided by mKRISHI®.

Table 15: Distribution of farmers based on ease of understanding of the information

n=60

Category of Satisfaction	Class Score	*f*	%
Moderately understood	13-17	9	15
Easily understood	17-21	50	83.33
Very easily understood	21-25	1	1.66
Mean		19.78	
Standard Deviation		2.23	

Overall effectiveness of mKRISHI® Services:

Effectiveness of the services of mKRISHI® referred to its ability to meet the farmer needs in providing the new technology which suits to their conditions and results in better production. It were operationalized in term of five components, i.e. a) timeliness of information, b) quality of information, c) utility of information, d) satisfaction of farmers and e) ease of understanding.

The overall effectiveness of mKRISHI® was obtained by developing the effectiveness index based on the above all five components. The obtained scores were divided into five equal groups ranging from very low effectiveness to very highly effectiveness of the mKRISHI® services. Table 16 revealed that 46.66 per cent of the total farmers perceived that the mKRISHI® was highly effective as a means of getting information followed by 21.66 per cent farmers who perceived it very highly effective in obtaining the information regarding their farming needs.

The services of mKRISHI® can be considered as highly effective for information dissemination for improving the farming situation. It is in accordance with the findings of Afroz and Singh (2013), who reported that effectiveness of information dissemination of Digital Green. Similar findings were also reported by Hanumankar (2005) who concluded that *Kisan Call Centre* is highly effective in addressing information need of farmers. It is in contrast with the findings of Meera (2002) who reported effectiveness of the services of *Gyandoot* is medium in effectiveness by majority of the farmers.

Table 16: Distribution of farmers based on effectiveness index scores

n=60

Category of Effectiveness	Class Score	*f*	%
Very Low	63.06-66.62	2	3.33
Low	66.62-70.16	5	8.33
Medium	70.16-73.72	12	20
High	73.72-77.27	28	46.66
Very High	77.27-80.82	13	21.66
Mean		73.97	
Standard Deviation		3.47	

Comparison of mKRISHI® services in Maharashtra and Tamil Nadu

To assess the effectiveness of mKRISHI® services in Maharashtra and Tamil Nadu independent two-sample test was done. The calculated *t*-value (3.89) was greater than the tabulated *t*-value (1.645) at 0.05 per cent level of significance. So it can be inferred that mKRISHI® services are more effective in Maharashtra compared to Tamil Nadu.

Table 17: Group Statistics of independent two sample *t* test

Group	N	Mean	Std. Deviation
Maharashtra	30	75.5814	2.79314
Tamil Nadu	30	72.3734	3.53606
Total	60		

Table 18: Computed value of independent two-sample *t* test

Category	Value
Calculated *t* value	3.89
Degree of freedom	58
Sig. (2-tailed)	.001

* *t*-value 1.645(58,.005)

CONCLUSION

The mKRISHI® has been playing a vital role in availing different information and services need of the farmers. They provide timely information which help in solving many problem of farmers. The KRISHI® is quite efficient in delivering advisory service, weather service, market support and diagnostic services. Due to intervention of mKRISHI® in both the districts of Maharashtra and Tamil Nadu has changed the scenario of farming by providing appropriate technology, market, input and information support which resulted in increase in yields and income of the farmers to a great extent. This led to high, level of farmer's satisfaction. The effectiveness of mKRISHI® can be further increased by making partnership with govt. and other local agencies.

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REFERENCES

Afroz and Singh, 2013. Effectiveness of participatory video in dissemination of farm technology: A case of Digital Green. M.Sc. Thesis, Division of Agricultural Extension, IARI, New Delhi-12.

Chapman, R., and Slaymaker,T. 2002 ICTs and Rural Development: Review of the Literature, Current Interventions, and Opportunities for Action.ODI Working Paper 192. London: Overseas Development Institute.

Hanumankar 2005 Effectiveness of Kisan Call Centre for Agricultural Information Delivery Edited Book By Sarvanan C and Indira Devi T, New India Publishing Agency, New Delhi.P143-150.

Huyer and Mitter 2003 "ICTs, Globalisation and Poverty Reduction: Gender Dimensions of the Knowledge Society",2003Available at http://www.idrc.ca/uploads/userS/10859366311partI_ICT_MitterHuyer.

Meera, S.N., Jhamtani, A. and Rao, D.U.M. 2004 Information and Communication Technology in Agricultural Development: A comparative analysis of three projects from India. AgREN Network Paper No.135, ODI, January 2004.20p. Available at: www.odi.org.uk/agren/papers/agrenpaper_135.pdf

Ministry of Agriculture, India 2000 *Policy framework for agricultural extension*. New Delhi: Ministry of Agriculture, Department of Agriculture and Cooperation, Extension Division. http://agricoop.nic.in/policy_framework.html

Mittal,S. 2012.Modern ICT for Agricultural Development and Risk Management in Smallholder Agriculture in India. CIMMYT. SocioEconomics Working Paper 3Mexico, D.F.: CIMMYT. http://ageconsearch.umn.edu/handle