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CONSTRAINTS PERCEIVED BY THE STAKE HOLDERS FOR EFFECTIVE 'ICT' ENABLED EXTENSION SERVICES

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ABSTRACT
Information and Communication technologies (ICTs) plays significant role in making information available to the farming community. ICT is one such intervention which can be used widely in farm extension activities in India and abroad. Harnessing of ICTs in agriculture received high priority which can be used vary widely in the promotion of agricultural technologies. With this technology revolution several ICT initiatives have been in operation in India. All these ICT Initiatives / projects try to provide a couple of services i.e., 5-10 information services to the farming community. During this study such ICT initiatives operating in Andhra Pradesh were taken up for research and analyzed with an objective to elicit constraints and suggestions of the stakeholders for effective, ICT enabled extension services delivery using exploratory research design. Sample size consists of 150 farmers randomly selected from project areas. Apart from farmers Extension service providers (ESPs) and field level functionaries were selected from three ICT initiatives. Majority of farmers (72.66%) expressed lack of guidance on improved technologies from experts is major problem followed by lack of required information from the ICT centre. Majority (74.6%) of farmers suggested continuous crop guidance by the experts followed by capacity building of farmers (73.3%) through training and education about ICT tools are suggestions given by farmers availing ICT enabled extension services. Majority (80%) of Extension Service Providers (ESPs) perceived less investment in ICT infrastructure is major problem and major suggestion given by 80 per cent of ESPs is establishment of information kiosks at each village.

KEYWORDS: ICTs, ESPs, technology, agriculture, training and education.

INTRODUCTION

Information is crucial in agriculture, in addition to land and capital. Faster transmission of improved technologies can revolutionize agriculture. Quick dissemination of technological information from the agriculture research system to the farmers in the field and reporting farmers feed back to the research system is one of the critical input in transfer of technology. Matching the speed of technology transfer with that of farmers' acceptance can bring prosperity among farm families. Information and communication technologies (ICTs) can play significant role in making information available to the farming community at a reasonable cost. In India several ICT initiatives from public as well as private sector were taken for disseminating technology information through ICT. The information and communication networks are expanding very fast. The internet connectivity has touched almost all the districts in the country and is moving down to the block levels. With this technology revolution several ICT initiatives have been in operation in India. These are operated by the government, co- operative agencies, Non-Governmental agencies and private players. All these ICT Initiatives / projects try to provide a couple of services i.e., 5-10 information services to the farming community. During this study such ICT initiatives operating in Andhra Pradesh were taken up for research and analyzed with an objective to elicit constraints and suggestions of the stakeholders for effective, ICT based extension services delivery.

MATERIALS & METHODS

Exploratory research design was adopted for conducting the study. The study was conducted in Warangal, Adilabad and Mahaboobnagar districts of Andhra Pradesh, where ICT initiatives e-sagu, e-choupal and VASAT were implemented respectively. These districts were selected purposively because the above said ICT initiatives are functioning at these districts for the past three years. Apart from these districts three districts from three regions of Andhra Pradesh were selected randomly for those who are not availing services of ICT initiatives are Anantapur from Rayalaseema region, Nalgonada from Telangana region and Krishna from Coastal region. From each ICT project area two villages were selected randomly. Twenty five farmers from each village, who are availing ICT services were selected randomly. Thus making a total of 150 farmers constituted the sample for the study. Apart from farmers, Extension Service Providers (ESPs) from three ICT projects, Kisan Call centres of Government of India, Farmers Call Centre (1100) from ANGR Agricultural University and farm telecast programme of Government of Andhra Pradesh (Rythunestham) were considered important stake holders for this study. From each of this initiative ten members were selected to get constraints and suggestions in delivering ICT enabled extension services. Apart from farmers and Extension service providers (ESPs), five field level functionaries were selected from three ICT initiatives. Thus a total of 15 were selected for this study.

Perceived constraints and suggestions of stake holders was measured by asking all the stake holders in the ICT adoption and delivery of ICT based extension services and their suggestions to overcome them. Constraints and suggestions were ranked on frequency and percentage.

RESULTS AND DISCUSSION

Constraints of the farmers in getting ICT based extension services

It was evident from Table1. that majority of farmers (72.66 %) expressed lack of guidance on improved technologies from experts is a major problem followed by lack of required information from the centre (70%), appropriateness information (62%), access to information centre (62%), capacity building of farmers in ICT extension mechanism (60%), inadequate ICT infrastructure (60.8%) are major constraints faced by the farmers in getting ICT enabled extension services. These findings are in line with the findings of Meera *et al.*(2004), Sunil (2006) and Prasad (2015).

TABLE 1. Constraints as perceived by farmers in getting ICT based extension services

S.No.	constraints	e-sagu (N=50)		e-choupal (N=50)		VASAT (N=50)		Total (N=150)	
		F	P	F	P	F	P	F	P
1	Connectivity (wire and wireless communication)	40	80	10	20	32	64	82	54.66
2	Assured supply of elasticity	30	60	35	70	10	20	75	50.00
3	Timeliness of services	35	70	20	40	33	66	88	58.66
4	Access to information center	30	60	28	56	35	70	93	62.0
5	Appropriateness of information	22	44	30	60	32	64	82	54.66
6	Location specific content	32	64	28	56	30	60	90	60.00
7	Low efficiency of field functionaries (coordinators)	40	80	23	46	19	38	82	54.66
8	Capacity building of farmers in ICT extension mechanism	22	44	33	66	35	70	90	60.0
9	Less favourable attitude of extension functionaries (personnel)	-	-	10	20	28	56	38	25.33
10	IT illiteracy of farmers	18	36	29	58	35	70	82	54.66
11	Lack of required information from the center	40	80	30	60	35	70	105	70.00
12	Lack of follow up action by agency	-	-	22	44	32	64	54	36.0
13	Inadequate ICT infrastructure	28	56	15	30	30	60	73	60.8
14	More service charges	36	72	-	-	-	-	36	24.0
15	Crop guidance from experts	30	60	39	78	40	80	109	72.66

Farmers' suggestions for getting effective ICT based extension services

Overall results indicated that continuous crop guidance by the experts/scientists (74.6%), capacity building of farmers through training and education about ICT tools and approach (73.3%), deployment of efficient field functionaries (72%), availability of timely and appropriate information (72%), diagnostic visits by scientists (71.3%), regular follow-up actions by the agencies (70.6%), marketing linkages/procurement through agencies (65.3%), provision of adequate ICT infrastructure (65.3 %), provision of information needs of farmers (64 %), campaign by the project officials about ICT utility and to improve awareness among farming community (63.3%) and user friendly access to ICT centers (60%) were the suggestion given by the farmers who are availing ICT enabled extension services.

TABLE 2. Farmers' suggestions for getting effective ICT based extension services

S.No.	Suggestions	e-sagu (N=50)		e-choupal (N=50)		VASAT (N=50)		Total (N=150)	
		F	P	F	P	F	P	F	P
1	User friendly access of ICT centers	30	60	25	50	35	70	90	60.0
2	Campaign by the project officials about ICT utility and to improve awareness among farming community	30	60	28	56	37	76	95	63.3
3	Availability of timely and appropriate information	33	66	35	70	40	80	108	72.0
4	Continuous crop guidance by the expert/scientist	40	80	32	64	40	80	112	74.6
5	Capacity building of farmers through training and education about ICT tools and approach	38	76	30	60	42	84	110	73.3
6	Provision of all the felt needs by the farmers	35	70	29	58	32	64	96	64.0
7	Diagnostic visits of scientists	33	66	36	72	38	76	107	71.3
8	Adequate ICT infrastructure	35	70	30	60	33	66	98	65.3
9	Development of efficient field functionaries	38	76	31	62	39	78	108	72.0
10	Market linkages/procurement through implementing agencies	40	80	20	40	38	76	98	65.3
11	Regular follow up actions by the agencies	35	70	35	70	36	72	106	70.6

All these suggestions given by farmers are practical in nature. They might have facing all these constraints as a result of institutional, governmental, input agencies and other organisations attitude, who are serving for farming community through conventional and modern ICT tools.

TABLE 3. Constraints perceived by extension service providers in ICT based extension services delivery N=60

S. No.	Constraints / Constraints	F	P
1.	Location specific content development	40	66.66
2.	Lack of awareness about ICT utility among farming community	42	70.0
3.	Problem diagnosis by grass root level workers / farmers	42	70.0
4.	Unfavorable attitude of farmers / resistance to change	25	41.66
5.	Connectivity	36	60.0
6.	Erratic power supply in rural areas	45	75.0
7.	IT illiteracy of farmers (know-how of ICTs)	40	66.66
8.	Less oriented grassroot/coordinators/field functionaries	42	70.0
9.	Less investment in infrastructure	48	80.0
10.	Attitude of service providers	36	60.0
11.	Credibility of information sources by farmers	36	60.0
12.	Lack of ICT training to extension service providers	42	70.0

It was evident from the Table 3. majority of the extension service providers perceived less investment in ICT infrastructure (80%), erratic power supply in rural areas (75%), lack of ICT training to extension service providers (70%), problem diagnosis by grass root level extension workers (70%), less orientation of extension workers towards ICT extension (70%), lack of awareness about ICT utility among farming community (70%), IT illiteracy of farmers (66.66%), lack of location specific content development (66.66%), connectivity (60%), lack of credibility of information sources by farmers (60%) and unfavourable attitude / resistance to change by farmers were constraints expressed by extension service providers in delivering ICT based extension services to the farming community. Thus the implementing agency must keep these constraints in view and try to overcome these hurdles for delivering effective ICT extension services to the farming community

TABLE 4. Suggestions given by the extension service providers for effective ICT based extension services N=60

S.N o.	Suggestions	F	P
1.	Location specific content should be consolidated, validated and made available to extension personnel	40	66.6
2.	Development of IT skills to farmers through training	42	70.0
3.	Conducting many diagnostic visits in the project area to improve knowledge of farmers and grassroot extension workers	40	66.6
4.	Availability of information on success stories, to enlight the farmers to equip them with know-how	30	50.0
5.	Broad band connections in the rural areas to overcome the connectivity problem	42	70.0
6.	Assured power supply by government authorities	39	65.0
7.	Development of IT skills and efficiency of work forces in the government and non-government agencies related to agriculture	45	75
8.	Establishment information kiosk at each village	48	80
9.	Providing multiple services at kiosks rather than one or two	45	75
10.	Orientation of extension service providers towards ICT extension	33	55
11.	Development of feed back mechanism for continuous upgradation of services	35	58.3

Suggestions expressed by the extension service providers in the rank order are established of information kiosk at each village (80%), providing multiple services at kiosks rather than one or two 975%), development of IT skills and efficiency of work force in the government and non-government agencies related agriculture (75%), broad band connection in rural areas to overcome connectivity barriers (70%), development of IT skills to farmers through training (70%), location specific content should be consolidated, validated and made available to extension personnel (66.6%), conducting many diagnostic visits in the project area to improve knowledge of farmers and grass root extension workers (66.6%), assured power supply by government authorities (65%), orientation of extension service providers towards ICT extension (65%) and availability of information on success stories, to enlighten the farmers to equip them with technical know-how (50%). These results are in concordance with the findings of Akbar (2006). The important suggestions given by the extension service providers (50 to 80%) are establishment of information kiosk at each village, providing multiple services at kiosks rather than one or two, development of IT skills and efficiency of work force in the government and non-government agencies related agriculture, development of IT skills to farmers through training and at government level such as provision of broadband connectivity and assured power supply might help the extension services providers would reach farming community effectively. Hence, the planners, administrators and implementing agencies must keep the suggestions in mind while formulating the plans and see they are implemented. It would definitely improve the extension services through ICT approach.

TABLE 5. Constraints as perceived by ICT project functionaries in delivering ICT based extension services N = 15

S. No.	Constraints	F	P
1.	Lack of awareness of farmers	9	60.0
2.	Lack of adequate trainings on ICT tools, technical knowledge about agricultural practices and plant protection measures	12	86.6
3.	Connectivity	12	80.0
4.	Less invest in infrastructure	8	53.3
5.	Reluctance of farmers to adopt ICT technology	10	66.7

It is clear from the table 5 that majority (86.6%) of the ICT project functionaries perceived lack of adequate training on ICT tools, agricultural practices and plant protection measures as major constraint in effective delivery of ICT extension services followed by connectivity to broad band (80 %), reluctance of farmers to adopt ICT technology (66.7%), lack of awareness of farmers of about ICT services and utility (60%) and less investment in ICT infrastructure (53.3%).

This might be due to the fact all the functionaries in 3 ICT projects were not trained adequately in ICT tools for extension services. Their period of training might be insufficient to equip with latest technologies and to acquaint with agricultural aspects. Hence adequate training programmes to project functionaries and farmers to be formulated for effective delivery ICT extension services.

TABLE 6. Suggestion given by the ICT project functionaries in delivering ICT based extension services N = 15

S. No.	Suggestions	F	P
1.	Campaigns by project officials about ICT utility among farming community	10	66.7
2.	Continuous upgradation of knowledge and skills of functionaries through trainings and capacity building measures	13	88.6
3.	Broad band connections in rural areas to over come connectivity constraints	12	80.0
4.	Provision of adequate infrastructure	8	53.3
5.	Motivate farmers to adopt ICT tools for getting information	10	66.7

Table 6 indicates suggestions in the rank order are continuous upgradation of knowledge of skills of functionaries through training and capacity building measures (88.6 %), broad band connection in rural areas (80 %), campaigns by project officials about ICT utility among farming community (66.7 %), motivation of farmers to adopt ICT tools for getting information (66.7 %) and provision of adequate infrastructure (53.3 %). As the above said suggestions may improve services delivery to the farming community by efficient utilization of ICT tools.

CONCLUSIONS

It may be concluded that broad band connectivity, access to information center, availability of required information from the center, Capacity building of farmers through training and education about ICT tools and approach, guidance from experts definitely improve the extension services delivery to the farming community. And improving skills of extension service functionaries at field level will improve extension services delivery. Educational qualification of volunteers of low level and they are not professionally qualified. ICT mediated extension alone can't bring change in the existing agricultural extension system. Human factors play a critical role in technology adoption. There is a need for trained extension workers, who are able to adopt the new technological innovations for bringing considerable changes in the current agricultural extension system.

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