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Role of ICT's in Agricultural Development: A Case Study from Jazz Ba-Khaber Kissan Service

Muhammad Fakhar Imam

Working as Subject Matter Specialist Agronomy /Agriculture,
Zarai Taraqati Bank limited, Pakistan

Muhammad Awais Ali Khan

Ph.D. Scholar, Institute of Agriculture Extension and Rural Development,
University of Agriculture Faisalabad, Pakistan

Dr. Badar Naseem

Chairmen, Department of Agricultural Extension and Communication,
Arid Agriculture University, Rawalpindi, Pakistan

Dr. Khalid Masood Ch

Working as Visiting Faculty Member, Arid Agriculture University, Rawalpindi, Pakistan

Mubashir Iqbal

Ph.D. Scholar, Institute of Agriculture Extension and Rural Development,
University of Agriculture, Faisalabad, Pakistan

Abstract:

Agricultural sector has been considered as the backbone of Pakistan's economy. More than 69% of Pakistani population depends on agriculture for subsistence. In Pakistan, more than 100 agricultural research stations are working and the department of agricultural extension is responsible to transfer research knowledge towards the farmers but due to lack of resources and geographical spread of farmers, it is very difficult to reach each and every farmer for dissemination information. ICT's has converted the world into the global village and made information access very easy. In 2010 Pakistan Telecommunication Authority reported about 120 million cell phone users in the county. In Pakistan most of the rural population also own cell phones. Keeping in view the main weak point in the agricultural sector, Jazz one of the well-known cellular company in Pakistan launched a project Ba Khaber Kissan using Information Communication Technologies. Ba Khaber kissan Project is responsible to provide the Agricultural Extension services to the farmers through SMS, VMS, Mobile application, Web portal, IVR and farmers complaint call center. This research study was conducted to identify the role of Ba Khaber kissan project in dissemination of improved agricultural technology among the farmers from the farmer's complaint center.

Keywords: *Information communication technologies, farming community, agricultural research, agricultural technology transfer*

1. Introduction

Agricultural extension is a process in which dissemination of new agricultural information or innovation among farming community carried out. Therefore, effective communication is extremely important in agricultural extension work (Hussain *et al.*, 1997 and Memon *et al.*, 2014). Different channels are being used frequently by extension agencies/organizations such as individual, group and mass media.

The individual and group contact methods in extension have very limited scope in the current era of advancement, because they cannot meet requirement. In third world countries where most of the people are adopting information and Communication Technology (ICT) which is now rapidly growing as most important tool for rural development (Grimes, 1992 and Chhachhar *et al.*, 2013). ICT's could become a transformational factor if nurtured effectively, as it has potential in the revival of social organizations. In the current era of a rapidly changing world, agricultural extension has already been recognized as an indispensable system for dissemination of new agricultural innovations (Meera, 2002).

However it has to escape from the narrow mindset of transferring technology packages to transferring knowledge or information packages. If this can be achieved, with the help of ICT, extension will become more diversified, more knowledge-intensive, and more demand driven, and thus more effective in meeting farmer's needs. In agricultural extension, ICT's have

numerous prospective applications (Zijp, 1994). It can bring new information services to rural areas where farmers, as users, will have much greater control than before over current information channels. Access to such new information sources is a crucial requirement for the sustainable development of the farming systems (Meera, 2002).

In the diffusion process of enhanced agricultural practices ICT help extension agents and researchers. ICTs could also help to enhance rural livelihoods and the quality of life by informing rural people. Farmers can acquire suitable, up-to-dated, applicable and scrupulous technical information and advices with the help of ICT. Farmer's questions can be answered effectively with the help of ICT tools. Farmers will also be able to share significant information, experiences and knowledge with each other. Additionally, updated weather information could help farmers to prevent crop losses, major crop failures can be coped because weather projections are more dependable nowadays because of technical erudition. With the help of information communication technologies cost-effective agricultural markets can be assessed easily, also contact with potential buyers is easily possible (Azeem & Ali, 2015).

1.1. Need for the Research

In Pakistan, Agricultural Extension services have traditionally been organized as part of the Provincial Ministry of Agriculture. Numerous extension models and approaches have been practicing since independence, including the Village Agricultural and Industrial Development Programme (Village -AID Programme), Basic Democracies System (BDS), Integrated Rural Development Programme (IRDP) and Inputs at Farmers' Doorsteps Approach. Based on the linear approach, these programs met with limited success and were abandoned one after another. The present Training and Visit (T & V) program, while specifically focused on agriculture, also suffers from inherent inflexibilities, namely the over-reliance on contact farmers to diffuse technical information to surrounding farmers (Davidson, 2000). Afterwards Farmers Field School approach (FFS) for Fruit & Vegetable development project. Unfortunately none of the research has achieved its desired objectives. Department of Agriculture Extension is doing an excellent job but because of lack of resources and geological spread of farmers it is not possible to reach each and every farmer. Keeping in view the revolution in the telecom sector some of the VAS and telecom companies launch the projects for the dissemination of improved research based agricultural technology among the farmers. Up till now no one has conducted research on the role of ICT's in Agriculture. Therefore the research study was conducted to explore Role of ICT's in Agricultural Development; A case study from Jazz Ba-Khabar Kissan Service

2. Objectives

2.1. General Objective

Role of ICT's in Agricultural Development; A case study from Jazz Ba-Khabar Kissan Service

2.2. Specific Objectives

- To check the satisfaction level of the farmers about Jazz Bakhaber Kissan Service
- To check the farmers participation and interest in the Service
- To notice the strengths and weaknesses of Jazz Bakhaber kissan Service

2.3. Assumptions of the Study

- The research will be shared with the agricultural policy makers to use the ICT's as a complement and supplement to the department of Agricultural Extension
- Use the Mobile phone technology as a new Agricultural Extension Approach
- Help in developing the linkages of Jazz Bakhaber kissan project with agricultural stakeholder.
- It was predicted that results would help for putting more efforts in a batter way for achieving desired objectives.

3. Methodology

The data was collected via simple random sampling technique. The samples of 120 farmers were selected who were in contact with Bakhaber kissan project to get required information. For the purpose of data collection interview schedule was designed. The detailed telephonic interviews were conducted with the farmers who are subscribes to Bakhaber Kissan Service (03030300000). The data was analyzed by using Statistical Package for Social Sciences (SPSS) on the basis of analysis conclusions were drawn and recommendations were made.

4. Results and Discussion

Gender	Frequency	%
Male	108	90.00
Female	12	10.00
Total	120	100

Table 1: Distribution of Respondents

Regarding Their Gender

Table shows that the data was collected from both male and female respondents; the majority (90%) of the respondents were male, whereas only 10% were female.

Province	Frequency	%
Punjab	47	39.17
Sindh	23	19.17
KPK	40	33.33
Baluchistan	10	08.33
Total	120	100

Table 2: Distribution of Respondents Regarding Their Province

Table shows that (39.17%) of the respondents were from Punjab province, (33.33%) from KPK. 19.17% of the respondents were from Sindh province whereas only 08.33% of the respondents belongs to Baluchistan Province.

Age (years)	Frequency	%
Young (19-30)	73	60.83
Middle age (>30-50)	40	33.33
Old (>50)	07	05.84
Total	120	100%

Table 3: Distribution of the Respondents According to Their Age

This table represents that about three quarter (60.83%) of the respondents were young farmers (19-30 years), one fifth of the total sample were middle age (30-50 years) and only 05.84% of the respondents fall under old age (>50 years) category.

Land holdings (acre)	Frequency	%
Small (Up to 12.5)	93	77.50
Medium (> 12.5-25)	19	15.83
Large (> 25)	08	06.67
Total	120	100%

Table 4: Distribution of Respondents According to Their Landholding

Table shows that the majority (77.50%) of the respondents i.e. acquire small land holding (up to 12.5 acres), while 15.83% of the respondents had medium land holding (>12.6 to 25 acres) and only 6.67% of the respondents had large land holding (i.e. more than 25 acres).

Reasons	Frequency	%
Found interesting	40	33.33
Helpful in solving field problems	60	50.00
Increase Production	20	16.67
Total	120	100%

Table 5: Distribution of Respondents According to the Reasons for Subscribing Ba Khaber Kissan

Table reveals that most (50%) of the respondents subscribed BKK service because it helps them in solving their field problems, (33.33%) of the respondents subscribed BKK service because they found it interesting and slightly more than ten (11%) of the respondents subscribed BKK service because they want to increase their farm productions.

Attendance	Frequency	%
Daily	45	37.50
Weekly	26	21.67
Fortnightly	23	19.17
Sometimes	17	14.17
Never Called	09	07.50
Total	120	100%

Table 6: Distribution of Respondents According to Their Frequency of Calling to Complaint Center Ba Khaber Kissan Service?

37.50% of the respondents used to call BKK services on daily basis, 21.67% use to call weekly, 19.17% call BKK service fortnightly, 14.17% said sometimes they call BKK service, whereas only 07.50% respondents who never called BKK services.

Attitude	Frequency	%
Positive	99	82.50
Negative	21	17.50
Total	120	100

Table 7: Distribution of Respondents about Ba Khaber Kissan Call Center Staff Attitude towards Their Problems

An over whelming majority (82.50%) of the respondents noted positive response of the Ba Khaber Kissan staff towards their problems and 17.50% of the respondents said that the Ba Khaber kissan shows negative response to their problems.

Information	Frequency	%
Seed Verities	30	25
Land Preparation	19	15.83
Sowing Methods	17	14.16
Diseases Control	15	12.5
Weeds Control	30	25
Pests Control	11	09.16
Harvesting Methods	01	0.83
Weather Updates	27	22.5
Mandi Rates	37	30.83
Marketing Techniques	11	09.16

Table 8: Distribution of Respondents According to Information They Get from Ba Khaber Kissan Service

Respondents were asked about the information they get from Ba Khaber Kissan Service, in response it is concluded that one person use to ask about more than one aspect, most of the people use to ask about mandi rates, one fourth of the total respondents use to ask about seed varieties, same results were found for weeds control, slightly more than one fifth of the total respondents have queries about weather updates, about 16% use to ask about land preparation almost same result were found for sowing method, 12.5% use to ask about disease control, pests control and marketing techniques have same percentage which is almost 10%, least results were found for harvesting methods only 1 person asked about harvesting method.

Recommendations	Strongly Satisfied		Partially Satisfied		Satisfied		Not Satisfied	
	F	%	F	%	F	%	F	%
Seed Selection	55	45.83	26	21.67	39	32.50	-	-
Sowing	7	5.83	80	66.67	31	25.83	2	1.67
Plant Protection	19	15.83	41	34.20	60	50.00	-	-
Pest Management	19	15.83	52	43.33	46	38.33	3	2.50
Weed Control	14	11.67	48	40.00	54	45.00	4	3.33
Fertilizer Application	16	13.33	45	37.50	51	42.50	8	6.67
Marketing	8	6.67	57	47.50	23	19.20	32	26.67

Table 9: Distribution of Respondents Regards Their Satisfaction Level from Ba Khaber Kissan Service

Table shows that most of the respondents (45.83%) were strongly satisfied with the seed selection information they get from Ba khaber Kissan service, 15.83% of the respondents were strongly satisfied with plant protection and plant management, 13.33% of the respondents were strongly satisfied with fertilizer application information, 11.67% of the respondents are strongly satisfied with weeds control information, 6.67% of the respondents answered that they are strongly satisfied with the information provided on marketing their product, 5.83% of the respondents are strongly satisfied with guidelines provided regards sowing. Furthermore, a fair majority (66.67%) of the respondents were partially satisfied with the sowing information, 47.50% of the respondents were partially satisfied with marketing, 43.33% of respondents are partially satisfied with plant management information, 40.00% of the respondents were partially satisfied with weed control

recommendations, 37.50% of the respondents were partially satisfied with fertilizer application information, 34.20% of the respondents answered that they are partially satisfied with plant protection information and 21.67% of the respondents are partially satisfied with recommendations regarding seed selection. Moreover, 50.00% of the respondents were satisfied with plant protection, 45.00% of the respondents were satisfied with weed control, 42.17% of the respondents were satisfied with fertilizer application, 38.33% of the respondents were satisfied with pest management advices, 32.50% of the respondents were satisfied with seed selection. However, 26.67% of the respondents were not satisfied with information provided regarding marketing their product effectively, 6.67% of the respondents were not satisfied with suggestions regarding fertilizer application, 3.33% of the respondents were not satisfied with information regarding weed control, 2.50% of respondents were not satisfied with information provided regarding plant management and only a small number of respondents were not satisfied with information provided on sowing practices.

Agro Advisory Services	Weighted Score	Ranked Order	Mean	Sd
Fertilizer Application	272	1 st	2.27	0.98
Weed Control	244	2 nd	2.03	0.80
Pest Management	235	3 rd	1.97	0.73
Plant Protection	206	4 th	1.72	0.90
Sowing	199	5 th	1.66	0.87
Seed Selection	186	6 th	1.55	0.72
Marketing	164	7 th	1.37	0.64

Table 10: Ranking of satisfaction level about the following Agro Advisory Services from Ba khaber Kissan Service

Table shows their satisfaction level regarding various aspects related agro advisory services provided from Ba khaber Kissan service. The advisory services were regarding Fertilizer Application ranked 1st with mean 2.27 and having weighted score (272). Weeds Control ranked 2nd with mean 2.03 having weighted score (244), Pest Management ranked 3rd with mean 1.97 having weighted score (235), Plant protection ranked 4th with mean 1.72 having weighted score (206), Sowing ranked 5th with mean 1.66 having weighted score (199), Seed Selection ranked 6th with mean 1.55 having weighted score (196) and Marketing ranked 7th with mean 1.37 having weighted score (164) respectively.

5. Conclusions

Following conclusions have been drawn on the basis of investigation and discussion of collected data.

- The data was collected from both male and female respondents; the majorities (90%) of the respondents were male, whereas only 10% were female.
- (39.17%) of the respondents were from Punjab province, (33.33%) from KPK. 19.17% of the respondents were from Sindh province whereas only 08.33% of the respondents belongs to Baluchistan Province.
- Three quarter (60.83%) of the respondents were young farmers (19-30 years), one fifth of the total sample were middle age (30-50 years) and only 05.84% of the respondents fall under old age (>50 years) category.
- Table 4 revealed that majority (77.50%) of the respondents i.e. had small land holding (up to 12.5 acres), while 15.83% of the respondents had medium land holding (>12.6 to 25 acres) and only 6.67% of the respondents had large land holding (i.e. more than 25 acres).
- Most (50%) of the respondents subscribed BKK service because it helps them in solving their field problems, (33.33%) of the respondents subscribed BKK service because they found it interesting and slightly more than ten (11%) of the respondents subscribed BKK service because they want to increase their farm productions.
- (37.50%) of the respondents used to call BKK services on daily basis, 21.67% use to call weekly, 19.17% call BKK service fortnightly, 14.17% said sometimes they call BKK service, whereas only 07.50% respondents who never called BKK services.
- An over whelming majority (82.50%) of the respondents noted positive response of the Ba Khaber Kissan staff towards their problems and 17.50% of the respondents said that the Ba Khaber kissan shows negative response to their problems.
- "Respondents were asked about the information they get from Ba Khaber Kissan Service, in response it is concluded that one person use to ask about more than one aspect, most of the people use to ask about mandi rates, one fourth of the total respondents use to ask about seed varieties, same results were found for weeds control, slightly more than one fifth of the total respondents have queries about weather updates, about 16% use to ask about land preparation almost same result were found for sowing method, 12.5% use to ask about disease control, pests control and marketing techniques have same percentage which is almost 10%, least results were found for harvesting methods only 1 person asked about harvesting method.
- In table 9 data shows that most of the respondents (45.83%) were strongly satisfied with the seed selection information they get from Bakhaber Kissan service, 15.83% of the respondents were strongly satisfied with plant

protection and plant management, 13.33% of the respondents were strongly satisfied with fertilizer application information, 11.67% of the respondents are strongly satisfied with weeds control information, 6.67% of the respondents answered that they are strongly satisfied with the information provided on marketing their product, 5.83% of the respondents are strongly satisfied with guidelines provided regards sowing. Furthermore, a fair majority (66.67%) of the respondents were partially satisfied with the sowing information, 47.50% of the respondents were partially satisfied with marketing, 43.33% of respondents are partially satisfied with plant management information, 40.00% of the respondents were partially satisfied with weed control recommendations, 37.50% of the respondents were partially satisfied with fertilizer application information, 34.20% of the respondents answered that they are partially satisfied with plant protection information and 21.67% of the respondents are partially satisfied with recommendations regards seed selection. Moreover, 50.00% of the respondents were satisfied with plant protection, 45.00% of the respondents were satisfied with weed control, 42.17% of the respondents were satisfied with fertilizer application, 38.33% of the respondents were satisfied with pest management advices, 32.50% of the respondents were satisfied with seed selection. However, 26.67% of the respondents were not satisfied with information provided regards marketing their product effectively, 6.67% of the respondents were not satisfied with suggestions regarding fertilizer application, 3.33% of the respondents were not satisfied with information regards weed control, 2.50% of respondents were not satisfied with information provided regards plant management and only a small number of respondents were not satisfied with information provided on sowing practices.

- Satisfaction level regarding various aspects related agro advisory services provided from Bakhaber Kissan service. The advisory services were regarding Fertilizer Application ranked 1st with mean 2.27 and having weighted score (272). Weeds Control ranked 2nd with mean 2.03 having weighted score (244), Pest Management ranked 3rd with mean 1.97 having weighted score (235), Plant protection ranked 4th with mean 1.72 having weighted score (206), Sowing ranked 5th with mean 1.66 having weighted score (199), Seed Selection ranked 6th with mean 1.55 having weighted score (196) and Marketing ranked 7th with mean 1.37 having weighted score (164) respectively.

6. Recommendations

- The Agricultural extension process fasten because of ICT's (Mobile phones) in agriculture, it safe time, it saves money, accurate information at farmers door step government must create the linkages between the research institutions, Agricultural stake holders and telecom sectors working for agricultural development to insure that the accurate research based information will be transferred to the farming community.
- Government and agricultural policy makers must strengthen the ICT's in agriculture and involve the agricultural extension department and academic agriculture extension students as a compliment and supplement to ICT's, So that the information generated to pass on through SMS, Mobile Application and farmer's complaint center must be created keeping in view the farmers level of understanding.
- There must be some road shows, farmer's days, Agricultural workshops and trainings to aware the farming community about the features of these Agricultural Based ICT's services so the farmers will know the usage of the services. These activities will also be important to penetrate the use of ICT's at ground level.
- To improve ICT infrastructures sufficient funding must be provided to both the research and extension organizations.

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