

Perceived Effectiveness and Challenges Regarding the Use of Mobile Phone for Agriculture Technology Transfer

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Abstract

The improvement of economy of Pakistan relies on the growth of agriculture. The advancement of agriculture is a multiplex phenomenon, which relies on many components and most imperative of these components is diffusion of helpful farming instruction between the agriculture community. If the agriculture community will get new technology with respect to agriculture and use those technologies in field they can get greatest profitability and can offer elevate to the Pakistan's economy. A few techniques and instruments are utilized for this purpose e.g office calls, field survey, cyber extension, direct contact method, mass media group meetings, and cellular extension. Cellular extension is current mechanism utilized for spread of information among the farming group in the form of SMS, MMS and recorded calls. The main objective of the study is to perceived effectiveness and challenges regarding the use of mobile phone for agriculture technology transfer in district Muzafargarh. The current study was conducted in District Muzafargarh. Multistage sampling will be used. A sampling structure will be prepared by enlist all the farmers who are using mobile phone. A well-structured interview schedule will be developed and respondents will be contacted for data collection. Collected data was analyzed by utilizing Statistical Package for Social Sciences (SPSS). After analysis of collected data the results found that majority of farmers using mobile phone mobile phone having positive impact on agriculture technology transfer.

1. INTRODUCTION

Agriculture is one of the major occupations of the people residing in the South Asian region. The farmers are now gradually diversifying their system of agricultural production, in favor of high value commodities, viz., fruits, vegetables, livestock and fisheries. Price policy, markets and road development, urbanization and technological improvements is influencing this diversification (Joshi et al., 2004).

The role of mobile phone for reaching to small farmers in the currently complex farming system is therefore more prominent and can play an important role in the flow of public good type information such as weather forecasts, market prices, basic information on soils and cropping techniques, and food safety etc. (ODI 2002) Technological advances in mobile phone have reduced the cost and increased the quantity and speed of information transfer intensely (ODI, 2002). More specifically, farmers lack information about markets for their produce results into market failures and therefore significantly affect their decision making for choice of crops and practices, and ultimately its affect their profit (Siddiq, 2015). Lack of information about suitable technologies and practices in the relatively more complex situation cause low productivity and also makes farmers to seek alternative income-generating opportunities. The consequence of timely, accurate, reliable, exact information and communication has further increased in the perspective of climate change and increased climatic inconsistency (Hussain, 2010:2012: 2014).

Research Objectives:

General Objective:

To perceived effectiveness and challenges regarding the use of mobile phone for agriculture technology transfer in District Muzafargarh.

Specific Objectives:

To accomplish the general objective following specific objectives are prepared.

- To identify the socio-economic profile of the respondents.
- To check aptitude of the farmers regarding Current use of mobile phone.
- To check aptitude of the farmers regarding skill of using mobile phone.
- To identify Information source regarding agricultural information.
- To identify constraints and challenges regarding the use of mobile phone.
- To devise suggestions for successful use of this innovation in future.

2. Literature Review:

21st century is information revolution century. Nowadays it is considered that successful states and civilizations are those who having awareness and access to latest technologies and information. Leadership of potential learning will be understood by ICT (Norouzi, et al. 2010). Knowledge will have a significant part in 21st century (Alinston, 2002).

ICTs are also being used in distribution and supply chain management and traceability to increase efficiency and predictability and to reduce spoilage (including recording movements along the value chain, responding to quality standard requirements, and helping large buyers track, manage, pay, and reward small producers). Examples include: dairy sector and agribusiness in Kenya; cotton supply system in Zambia; fruit and vegetable supply system in Mali and Ghana (Payne *et al.*, 2010b).

It assist farmers to plan market so as to obtain better price for produce and it also save from exploitations from the middlemen, who uses the prevailing information-gap (Anoop *et al.*, 2015). Among modern ICTs, mobile phones serves as a means for effective transfer of knowledge and information about agricultural market and technology to farmers that enable them to apply the knowledge directly to improve their farming output and make easy access to market (Chhachhar *et al.*, 2014). In addition, motivating farmers in adoption of new agricultural technologies remained a focal point of the agricultural extension (Muddassir *et al.*, 2016). In addition, motivating farmers in adoption of new agricultural technologies remained a focal point of the agricultural extension (Muddassir *et al.*, 2016)

3. RESEARCH METHODOLOGY

Research Population

Population of the study was all the farmers of District Muzafargarh.

Sample Size

The study was conducted in the rural areas of District Muzafargarh. Two tehsils were selected randomly from 4 tehsils of District Muzafargarh. Two union councils were selected randomly from each Tehsils of District Muzafargarh, 2 villages from each union councils was selected at random and 20 farmers form each selected village were taken by purposively sampling technique. In this way the total sample size was 160 respondents. A well design interview schedule consisting of structured or unstructured questions was prepared to explore the research objectives.

Research/study area

There are four tehsils of district Muzafargarh, Alipur, Jatoi, Kot Addu, Muzaffargarh. Tehsil Muzafargarh and Jatoi were chosen for study..

4. RESULTS AND DISCUSSION

Demographic characteristics of respondents

The data given in this section gives the details of various personal factors which has direct effect on the adoptability of mobile phone these factors are demographic characteristics.

Demographic characteristics like age, education and income etc. of respondents has a significant relationship with the adaptation of communication technologies. These are they factor which measure the rate of adaptation of mobile phone for agricultural communications. It is generally observed that people of young ages are quite active in terms of using communication technologies like mobile phone as compared to the middle age and old age people. Similarly, another factor which directly affects the rate of adoption is “education” as people who are educated the ratio of mobile phone use will be greater than the people who are illiterate of have low education.

Age

It is generally argued that with the increase of age people become more matured and string and have greater ability to make good decisions.so in this regard age can be considered as an important factor which has directly affect the adaptation process and also represents the behavior of respondents. Siddique (2006) argued that age may has positive or negative impact on the behavior of respondents. Respondents were categorized in three categories i.e. up to 40 years, 41-60 years, Above 60. Table 4.1 depicts the age details of respondents.

The data existing in the table 4.1 reveal that most prominent category regarding age was up to 40 years which is (87.5%) followed by 41-60 years with (10%), Above 60 years with 2.5%.Results depict that respondents with young ages have maximum interests in farming, so the results in this regards are differ to the findings of Siddique (2006) and Muhammad (2006) who argued that most of the respondents in agriculture sector belong to old ages and youth have less interest in farming.

Results depict that respondents with young ages have minimum interests in farming, so the results in this regards are differ to the findings of Siddique (2006) and Muhammad (2006) who argued that most of the respondents in agriculture sector belong to old ages and youth have less interest in farming.

Table 4.1

Total= 160

Ages (Year)	Frequency	Percent
Up to 40	140	87.5
41-60	16	10
Above 60	4	2.5

Distribution of respondents according to their size of land holding

Land holding or size of land is defined as the portion of land or piece of land which farming family cultivate fo their livelihoods. Size of land or land holdong is also considered as important factor which measure the rate of adoption of new communication technologies because it has direct impact on the earnings of farm families. Chaudary (2006) stated that if a farm family has more land holding the rate of use of advanced information and comunication technologies will be higher because farmers with large land holding will be more stronger in fincial conditions. It is argued that farmer with stable economic conditions will be more willing to purchase new communication technologies.

In this section respondents were divided into three categories, smallholders with land holding Up to 12 Acres, medium with landholding from 13-25 Acres and large farmers with landholding Above 25 Acres. Table 4.2 represents the details of land holding of respondents

The data given in Table 4.2 indicate that majority of farmers are smallholders which are 95% having landholding Up to 12 acres. Minority of the respondents (3.125%) fall in the category of medium landholders having land between 13-25 acres. While minority of farmers (2.5%) have land holding above 10 acre. This distribution was according to their ownership so the majority of the farmers are small holders with poor financial conditions.

Table 4.2

Total= 160

Land	Frequency	Percent
Up to 12 Acres	153	95
13-25 Acres	5	3.125
Above 25 Acres	2	1.25

Distribution of respondents according to their sources of incomes

Sources of income are those particular ways of generating income through which farming communities earn their livelihoods. Generally farming is the source of income of all rural communities but in most cases labor work and some other businesses also source income for most of the farmers other than the farm activities. Off -farm activities also contribute in the financial conditions of farmers (IFAD, 2002).

Off-farm activities had a significant role in farmer's income which influence on the adoption of communication technologies (Adeniji and Ega, 2006). Other business in addition to farming reflects better earning status of farming communities which has a direct relationship of adopting information and communication technologies. It is also argued that farmer with multiple sources of income may have more interest in communication technologies like mobile phone for agricultural communications. Data presented in table 4.4 gives the details about sources of income of respondents

Statistics given in table 4.3 reveals that respondents were earning their income from multiple sources. As depicted in the table that 8.7% of the respondents have farming as their family income source and great majority of the respondents (90.0%) rely upon the farming and livestock. The respondents who were relying upon some other business in addition to farming were in minority (1.3%) of the respondents. Farmers told that for last 5,6 year production of their major crop like cotton and wheat was very disappointing. Results revealed that majority of farmers (90%) were relying upon farming and livestock for earning their livelihood, because of low land holding only farming was not meeting their family needs.

Table 4.3

Total= 160

Major Sources of income	Frequency	Percent
Crop only	14	8.7
Crop+livestock	144	90.0
Other(Business+Job)	2	1.3

Aptitude of the farmers regarding Current use of mobile phone.

An organized interview schedule was prepared to check the aptitude of the farmers regarding current use of ICTs by respondent. Questions were asked from farmers to fulfill the objective of study then after analysis of data from farmers the results are given below.

This study was based on use of mobile phone so it was necessary to ask the respondents regarding cell phone and the basic knowledge of operating mobile phone. Table 4.4 shows that 99.4 percent of farmers having mobile phone and most of farmers know how to use mobile phone.

Table 4.4

F= Frequency. P= Percentage

	YES		NO		Mean	S.D
	F	P	F	P		
Do you have availability of mobile phone ?	159	99.4	1	0.6	1.01	0.07
Do you know how to use mobile phone ?	159	99.4	1	0.6	1.01	0.07

Skill of using Mobile Phone.

An organized interview schedule was prepared to check the skill of using mobile phone . Questions were asked from farmers to fulfill the objective of study then after analysis of data from farmers the results are given below.

Skill of using Mobile phone categorized in 3 extent to check that how much skill having farmers for using mobile phone for SMS and Mean value 2.3 indicate that farmers having skill of using mobile phone for SMS is in between median and high. Table 4.5

In table 4.5 result shows that 2.6 of mean value for skill of use of mobile phone for call indicate that farmers having about to high skill of using mobile phone for call. Result shows that mean value 1.1 for skill of using of mobile phone for whatapps indicate that farmers having low skill of using mobile phone for whatsapp In table 4.5 Mean value 1.0 for using of mobile phone for mobile internet indicate that farmers having very low skill of using mobile phone for internet purpose. Mean value 1.0 for skill of use of mobile phone for mobile apps indicate that farmers having low skill of using mobile phone for mobile applications.

On the basis of above results it can be concluded that farmer having low skill of use of mobile phone for whatapps, internet and mobile applications because there was very problem of network signals and internet facility is not available there that why they can not use of mobile internet.

Use of Mobile phone for various purpose.

An organized interview schedule was prepared to check the use of mobile phone for various purpose by the respondents. Questions were asked from farmers to fulfill the objective of study then after analysis of data from farmers the results are given below

In Table 4.6 Use of Mobile phone for various purpose categorized in 5- point likert Scale to check that how much of respondents use mobile phone for social contacts. Mean value 4.43 shows that respondents having very high extent of using mobile phone for purpose of social contacts. 4.04 Mean value in table 4,6 for use mobile phone for information shows that farmers having high extent of using mobile phone for purpose of getting information. Mean value for utilization of Mobile phone for entertainment 2.45 indicate that farmers having extent in between low extent and medium extent of use of mobile phone for entertainment.

Table 4.5

Skill of using Mobile Phone.	1		2		3		Mean	S.D
	F	P	F	P	F	P		
SMS	44	27.5	22	13.8	94	58.8	2.31	0.88
CALL	4	2.5	53	33.1	103	64.4	2.62	0.54
WHATAPP	148	92.5	7	4.4	5	3.1	1.11	0.40
MOBILE INTERNET	156	97.5	3	1.9	1	.6	1.03	0.21
MOBILE APPS	157	98.1	2	1.3	1	.6	1.02	0.20

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Table 4.6

F= Frequency , P= Percentage

Use of Mobile phone	1		2		3		4		5		Mean	S.D
	F	P	F	P	F	P	F	P	F	P		
Social contacts	0	0	6	3.8	26	16.3	21	13.1	107	66.9	4.43	0.89
Information	4	2.5	29	18.1	21	13.1	8	5.0	98	61.3	4.04	1.30

Entertainment	33	20.6	46	28.8	66	41.3	6	3.7	9	5.6	2.45	1.038
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1=V. Low Extent, 2=Low Extent, 3=Medium Extent, 4=High Extent, 5=V. High Extent

Information source regarding agricultural information.

A well-structured interview schedule was prepared to check the information source regarding agricultural information. Questions were asked from respondents to fulfill the objective of study then after analysis of data from farmers the results are given below.

In table 4.7 the mean value 4.5 shows that respondents got agricultural information from fellow farmers is in between high extent to very high extent. Mean value 4.3 shows that respondents got agricultural information from public extension worker is in between high extent to very high extent.

In table 4.7 the mean value 4 shows that respondents got agricultural information from private dealer is of high extent. Mean value 3.6 shows that respondents got agricultural information from shopkeepers is in between medium extent to high extent.

In table 4.7 the mean value 1.8 shows that respondents got agricultural information through radio is in between very low extent to low extent. Mean value 1.6 shows that respondents got agricultural information through T.V is in between very low extent to low extent. Mean value 4.8 shows that respondents got agricultural information through mobile phone is of very high extent.

On the basis of above results it can be concluded that farmer strongly got agricultural information through mobile phone, fellow farmers and public extension workers. Government of Punjab should plan a policy for betterment of farming community so that every farmer can get recent agricultural information..

Table 4.7

	1		2		3		4		5		Mean	S.D
	F	P	F	P	F	P	F	P	F	P		
Extent of information												

Fellow farmers	1	.6	0	0	21	13.1	36	22.5	102	63.8	4.5	0.77
Public extension worker	2	1.3	6	3.8	23	14.4	31	19.4	98	61.3	4.4	0.95
Private dealers	4	2.5	21	13.1	32	20.0	13	8.1	90	56.3	4.0	1.23
Shopkeepers	9	5.6	38	23.8	28	17.5	16	10.0	69	43.1	3.6	1.39
Radio	50	31.2	96	60.0	10	6.3	2	1.3	2	1.3	1.8	0.72
T.V	67	41.9	83	51.9	8	5.0	2	1.3	0	0	1.6	0.65
Mobile	0	0	0	0	3	1.9	18	11.3	139	86.9	4.8	0.41

1=V. Low Extent, 2=Low Extent, 3=Medium Extent, 4=High Extent, 5=V. High Extent

Constraints and challenges regarding the use of mobile phone .

A well-structured interview schedule was prepared to find out Constraints and challenges regarding the use of mobile phone. Questions were asked from respondents to fulfill the objective of study then after analysis of data from farmers the results are given below.

Language is one of the constraint and challenge regarding use of mobile phone . The table 4.8 shows that the mean value for language is 1.6 it shows that language constraints lies in between very low extent to low extent. Majority of farmers do not feel that language is difficult while spreading agriculture information to them. Mean value for difficulty in use of mobile phone is 2. In table 4.8 mean value 3 shows that respondents having medium extent of out dated information. Mean value 3 shows that respondents having medium extent of out dated information is a constraint and challenge in use of mobile phone.

In table 4.8 mean value 3 shows that respondents having medium extent of non-relevancy of information. 2.9 mean value for incomplete information indicate that respondents having medium extent of incomplete information is a constraints in using of mobile phone . Mean value 4.7 shows that respondents having in between high and very high extent of costly of mobile phone is a constraints in using of mobile phone. In table 4.8 the mean value for poor signal is 4.9 it shows that significant farmers having very high extent of mobile phone signals are

constraints in using of mobile phone. During data collection Farmers having perception that there is signal problem in their area and it is major cause of getting recent information regarding agriculture and poor signal problems base of every problem face by farmer in connection with agriculture department and extension field staff.

The study results also support the observations of Mwakaje (2010), Maumbe and Juma (2013) and Shaik, Jhamtani and Rao (2004), who have found the irrelevance of information is constraint in mobile phone.

On the basis of above results it can be concluded that signal problems, cost of mobile phone is a highly constraints and challenge in using of mobile phone.

Table 4.8

Constraints and challenges	1		2		3		4		5		Mean	SD
	F	P	F	P	F	P	F	P	F	P		
Language is difficult	100	62.5	27	16.9	30	18.8	2	1.3	1	.6	1.6	0.88
Use of cell phone is difficult	42	26.3	77	48.1	38	23.8	2	1.3	1	.6	2.0	0.78
Information are out of date	42	26.3	83	51.9	21	13.1	13	8.1	1	.6	3.0	0.88
Information are not credible	83	51.9	33	20.6	26	16.3	17	10.6	1	.6	3.0	1.07
Information are not relevant	24	15.0	90	56.3	24	15.0	21	13.1	1	.6	3.0	0.40
Information are incomplete	80	50.0	33	20.6	24	15.0	20	12.5	3	1.9	2.9	1.15
Smart phone is costly	1	.6	7	4.4	6	3.8	6	3.8	140	87.5	4.7	0.78
Poor mobile signals in my	1	.6	1	.6	1	.6	0	0	157	98.1	4.9	0.42

area												
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1=V. Low Extent, 2=Low Extent, 3=Medium Extent, 4=High Extent, 5=V. High Extent,

CONCLUSIONS AND SUGGESTIONS

Conclusion:

1 Socio-economic profile of the respondents

Most of farmers were aged of upto 40 year. that maximum respondents (80.63.%) are illiterate which means that more than three forth of respondents have no education. Mast of farmers were smallholders which having 95% landholding Up to 12 acres. Most of farmers (90%) were relying upon farming and livestock for earning their livelihood. (56.25%) was earning income between 150,000-500,000 RS annually.

2 Current use of ICTs (particularly Mobile) by the respondents.

Main use of mobile phone was for social contacts. Farmers having most prominent skill of using mobile phone was call.

Farmers having low skill of use of mobile phone for WhatsApp, internet and mobile applications because there was very problem of .network signals Farmer strongly got agricultural information through mobile phone, fellow farmers and public extension workers. Government of Punjab should plan a policy for betterment of farming community so that every farmer can got recent agricultural information..

3 Constraints and challenges regarding the use of mobile phone

There was signal problems in their area, cost of mobile phone is highly constraints and challenge in using of mobile phone.

Suggestions:

On the basis of the conclusions of the study, the following suggestions are made for the planners and policy makers of extension wing of the Department of Agriculture.

- Network signal problem should be solved so that farmers can got communicate with each other and with agriculture department.

- In most of these areas just 1 network connection is working government have to sought out it by providing farmers choice of network so that they can easily communicate with each other and farming community and with agriculture department
- Advisory services or any innovation about agriculture through electronic media especially all public, and private channel of radio and television should be broadcasted which is compulsory made by Government of Pakistan

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