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Use of Mobile Phone by the Farmers in Receiving Agricultural Information from the Input Dealers

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Abstract

The purpose of this study was to determine the extent of use of mobile phone by the farmers in receiving agricultural information and to explore the relationships between the selected characteristics of the farmers and their use of mobile phone. Data were collected from 76 mobile phone user farmers in 8 selected villages of Boira and Bhabakhali unions under Sadar Upazila of Mymensingh district during 12 September to 15 October 2009. In order to ascertain the extent of use of mobile phones by the farmers in receiving agricultural information from the input dealers on major aspects, such as availability of inputs, quality of inputs, market price of inputs, appropriate doses of inputs. Each of the aspects covered four dimensions and as such sixteen dimensions were covered. Farmers were asked whether their contacts with the input dealers were regular, occasional or not at all (based on the number of times per season). A 3 point rating scale was used to determine their overall use of mobile phones in receiving agricultural information. Extent of mobile phone use scores for each of the sixteen agricultural input related dimensions were computed by using Mobile Phone Use Index (MPUI). The MPUI for each aspect could vary from 0 to 152, 0 indicating no use and 152 very high use of mobile phones. However, the MPUI of the farmers varied from 20 to 142 for the sixteen issues. More than half (54 percent) of the farmers had medium use of mobile phone in receiving agricultural information from the input dealers while 14 percent and 32 percent of them had low and high use of mobile phone, respectively. Literacy level, annual income, cosmopoliteness, agricultural knowledge, aspiration, self-confidence and attitude towards technology of the farmers had significant positive relationships with their use of mobile phone. However, age of the mobile phone users had significant negative relationship while farm size and organizational participation of the farmers had no relationships with their use of mobile phone.

Keywords: *Mobile phone, input dealer, farmer, agricultural information, use.*

Introduction

Agricultural production can only be increased if appropriate technologies are used by the farmers who are the primary unit of adoption of improved practices. Diffusion of proper knowledge on modern agriculture among the rural people demands on effective communication system. In addition, immediacy and effectiveness is also valuable dimension of information. The farmers should receive agricultural information as fast as possible so that they understand, interpret, accept and use the information to get the desired benefit.

In a country like Bangladesh, farms are extremely small, cultivation is dependent on the uncertainties of variable rainfall and average output is generally low. Value addition in agriculture requires technological, institutional and price incentive changes designed to raise the productivity of the small

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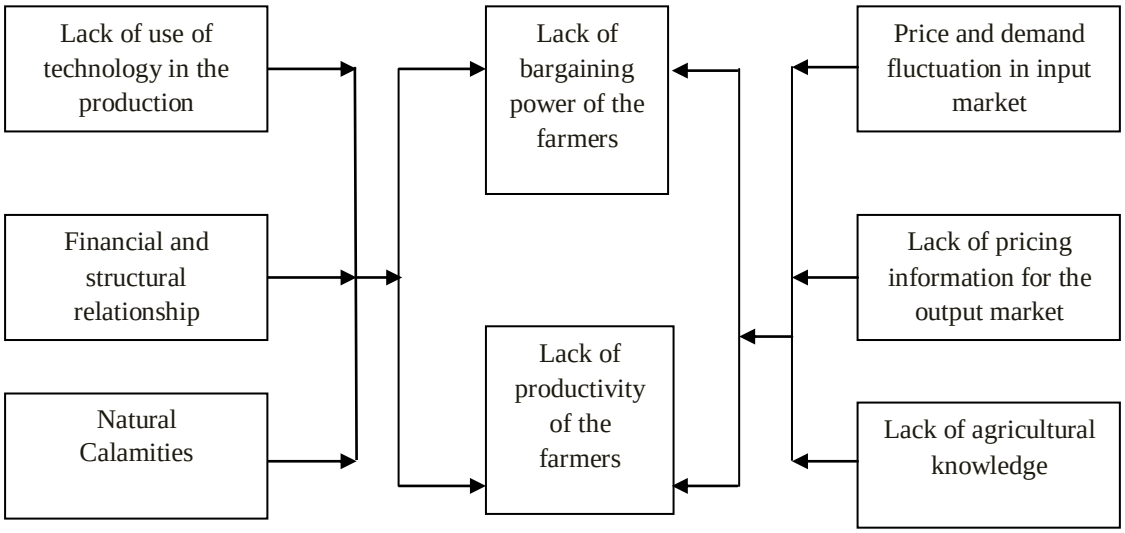
farms (Todaro, 2000). In rural Bangladesh opportunities outside agriculture sector are extremely limited. In 1991 the top ten percent of landowners owned sixty percent of the land, while the bottom sixty percent of landowners had only one percent of the land (Ullah and Routray, 2007). The structure of the agrarian system in Bangladesh is considered as a major impediment for balanced rural development (Rogaly, *et al.* 1999). Small farmers are entangled within a vicious cycle. The situation of the vulnerable farmers is exacerbated by the land erosion, drought, flood, deforestation and other natural calamities. This together with lack of financial muscle power reduces farmers' propensity to take risks. Their bargaining power in the input market is not very strong either. Lack of bargaining power reduces farmers' earnings against their produce. Reduced earning also makes a negative impact on farmers' productivity (cf. Figure 1).

Access to 'modern technology for farming' means access to scientific information on hybrid-seed varieties, fertilizer-application, plant protection, farm machinery, harvesting, marketing and animal-husbandry. The findings of a survey revealed that just 5.7 percent of farmers have access to information from the extension workers. This clearly shows that the current number of extension workers is inadequate to meet the needs of farmers. Further, they do not reach most of the backward and remote areas that either lack of proper connectivity or lodging facility or both. In addition, the government, due to budgetary constraints cannot increase its expenditure on extension services. The research also provides evidence on the key role that mobile phones are playing in improving the information transfer between farmers and research institutions, government and private input companies, input-dealers, and other farmer.



(Source: http://orp.aiub.edu/WorkingPaper/WorkingPaper.aspx?year=2009)

Figure 1. Reasons behind lack of bargaining power and lack of productivity of farmers in Bangladesh

It has been claimed that through social networks, farmers can obtain information (e.g. prices of agricultural commodities or the weather) that they can use to improve their farm income, and their lives, leading to rural livelihoods improvements. It has been suggested that farmers in rural villages can use voice and data services over mobile phone to benefit from such information. However, it is also necessary to comprehend how the farmers make the best use of mobile phone technology. The appropriation of the mobile phone by the rural farmers along with the potential benefits, resulting from such initiatives has been investigated in this research with the following specific objectives: to assess the extent of use of mobile phone by the farmers in receiving agricultural information from the input dealers, to identify the extent of problems faced by the farmers in communicating through mobile phone with the input dealers and to explore the relationship of the selected characteristics of the farmers with their use of mobile phones in receiving agricultural information.

Methodology

The study was conducted in Sadar Upazila (Sub-dstrict) of Mymensingh district. The mobile phone user farmers of six villages of boira and two villages of Bhabokhali union of the Sadar Upazila constituted the population of the study. The total number of the mobile phone user farmers in these eight villages was 305. About twenty five percent of the farmers were selected as samples following the simple random sampling method. Thus 76 farmers were selected as sample for the present study. Data were collected through pretested and predesigned personal interview schedule during 12 September to 15 October 2009.

Use of mobile phone by the farmers in receiving agricultural information was the dependent variable. The extent of use of mobile phone was measured with there-point rating scale. Score assigned to each of the responses as 2 for regularly, 1 for occasionally and 0 for not at all. Thus the total possible score could range form 0 to 32, where '0' indicated no use and '32' indicates high use mobile phone in receiving agricultural information from the input dealers.

On the other hand, use of mobile phone for each issue was calculated by using Mobile Phone Use Index (MPUI) and it was computed by using the following formula:

$$MPUI = N_r \times 2 + N_o \times 1 + N_n \times 0$$

Where,

N_r = Number of farmers use mobile phone regularly

N_o = Number of farmers use mobile phone occasionally

N_n = Number of farmers never use mobile phone

Thus, MPUI could vary form 0 to 152 where 0 indicates no use and 152 indicate regular use of mobile phone. Each issue was ranked according to obtained score.

In order to measure the problems faced by the farmers in communicating with the input dealers a 4-point scale such as not at all, low, medium and high with a score of 0, 1, 2, and 3 respectively was used. The possible score

of the respondents could range from 0 to 30 where 0 indicates that the respondent had no problem and 30 indicate his highest problem.

For clear understanding of problems faced by the farmers in using mobile phone, rank order for each problem was computed by developing Problem Facing Index (PFI).

Findings and Discussion

Selected Characteristics of the Mobile User Farmers

Human life is the aggregation of variety of attributes by his characteristics. For this reasons, it can rightly be assumed that the characteristics of different farmers might have differential influence on the use of mobile phone in receiving agricultural information. In the present study ten selected characteristics such as age, literacy level, agricultural knowledge, farm size, annual income, organizational participation, cosmopoliteness, aspiration, self-confidence and attitude towards technology and their use of mobile phone were studied. The salient findings of the characteristics of the farmers are presented in Table 1.

Table 1. Characteristics profile of the farmers

Characteristics	Measurement (unit)	Observed range	Categories	No. (N = 76)	Percent	Mean	% CV
Age	Actual years	25-66	Young (up to 35)	24	31.6	42.66	26.25
			Middle-aged (36-45)	23	30.3		
			Old (>45)	29	38.2		
Literacy level	Year of schooling	0-12	Illiteracy (0)	8	10.5	8.20	42.20
			Primary education (1-5)	10	13.2		
			Secondary education (6-10)	36	47.4		
			Above secondary education (>10)	22	28.9		
Farm size	Actual (in ha)	0.19-2.56	Small farm (≤ 1 ha)	53	69.7	0.85	60.73
			Medium farm (1.01-3 ha)	23	30.3		
			Large farm (> 3)	0	0		
Annual income	Actual (1=Tk.000)	0.98-475	Low income (≤ 100)	39	51.3	121.87	62.32
			Medium income (101-200)	29	38.2		
			High income (>200)	8	10.5		
Organizational participation	Rated score	0-11	No participation (0)	3	3.9	3.80	55.50
			Low participation (1-5)	63	82.9		
			Medium participation (6-10)	9	11.8		
			High participation (above 10)	1	1.3		
Cosmpoliteness	Rated score	3-11	Low (>5)	15	19.7	7.13	26.44
			Medium (6-10)	60	78.9		
			High (>10)	1	1.3		
Agricultural knowledge	Computed score	10-27	Low (up to15)	18	23.7	18.61	19.43
			Medium (16-20)	35	46.1		
			High (>20)	23	30.3		
Aspiration	Computed score	10-15	Low (up to11)	12	15.8	12.54	8.87
			Medium (12-13)	51	67.1		
			High (>13)	13	17.1		
Self-confidence	Computed score	10-15	Low (up to11)	19	25	12.36	9.22
			Medium (12-13)	46	60.5		
			High (>13)	11	14.5		
Attitude towards technology	Rated score	20-42	Unfavorable (up to 31)	15	19.7	34.25	12.29
			Moderately favorable (32-36)	39	51.3		
			Favorable (>36)	22	28.9		

Use of Mobile Phone by the Farmers in Receiving Agricultural Information from the Input Dealers

The computed mobile phone using scores ranged from 8-26 with an average of 14.66 and coefficient of variation 27.53 percent. Based on their mobile phone using scores the respondents were classified into three categories as shown in Table 2.

Table 2. Use of mobile phone by the farmers in receiving agricultural information

Mobile phone using farmers			Mean	% CV
Categories (score)	No.	Percent		
Low (up to 10)	11	14.50	14.66	27.53
Medium (11-16)	41	53.90		
High (>16)	24	31.60		
Total	76	100.00		

Data presented in Table 2 show that more than half (53.90 percent) of the respondents had medium use of mobile phone in receiving agricultural information from the input dealers while 14.50 percent and 31.60 percent of them had low and high use of mobile phone, respectively. About one-third of the respondents had high use of mobile phone while only a negligible portion of them (14.5 percent) were low use of mobile phone. The finding clearly indicates the importance of using mobile phones by the farmers in receiving agricultural information from the input dealers.

Most of the farmers preferred mobile phone for communicating with their family members, neighbors and relatives. Therefore, it is necessary to encourage the farmers to receive agricultural information regarding availability, quality, market price and doses of different inputs like seeds, fertilizers, pesticides and herbicides through mobile phone. The Mobile Phone Use Index (MPUI) of the farmers was computed in order to ascertain their preferences of using the mobile phone. The MPUI of a respondent on any aspect could vary from 0 to 152. The findings are presented in Table 3.

Table 3. Rank order of use of mobile phone on different aspects of agricultural information

Aspects of using mobile phones	MPUI	Rank order
Availability of Inputs		
• Availability of fertilizers	142	1
• Availability of seeds	131	2
• Availability of pesticides	117	3
• Availability of herbicides	57	13
Quality of the Inputs		
• Better seeds	112	4
• Balanced fertilizers	58	12
• Appropriate pesticides	76	10
• Appropriate herbicides	32	14
Market price of the Inputs		
• Market price of fertilizers	104	5
• Price of the different seeds	98	6
• Price of pesticides	94	7
• Price of herbicides	24	15
Appropriate dose/Quantity of Inputs		
• Different fertilizer doses	65	11
• Seed rate of different crops	79	9
• Pesticide doses	97	8
• Herbicide doses	20	16

The findings of Table 3 reveal that "availability of fertilizers" ranked 1st followed by availability seeds, and availability of pesticides respectively. It is quite likely farmers in Bangladesh in many cases remain anxious about the availability of agricultural inputs, especially fertilizers, seeds and pesticides. This has been rightly reflected in the findings since these issues topped the ranked by the farmers while contacting with the input dealers for agricultural information.

Relationship between the Selected Characteristics of the Mobile User Farmers and their Use of Mobile Phones in Receiving Agricultural Information

The relationship between the dependent and independent variables are presented in Table 4.

Table 4. Relationships between the selected characteristics of the mobile phone user farmers and their use of mobile phones in receiving agricultural information (N=76)

Dependent variable	Independent variables	Values of correlation coefficient ("r")
Use of mobile phone by the farmers	Age	-0.319**
	Literacy	0.320**
	Farm size	0.041
	Annual income	0.260*
	Organizational participation	-0.036
	Cosmopoliteness	0.465**
	Agricultural knowledge	0.364**
	Aspiration	0.487**
	Self-confidence	0.441**
	Attitude towards technology	0.287*

*** significant at 1% level of probability*
** significant at 5% level of probability*

The literacy, annual income, cosmopoliteness, agricultural knowledge, aspiration, self confidence and attitude towards technology of the mobile phone user farmers had significant positive relationships with their use of mobile phone in receiving agricultural information from the input dealers, while the age had significant negative relationship. From the findings it is clear that if the literacy level of the farmers and their knowledge can be increased through some means of non-formal education, it is expected that their use of mobile phone in receiving agricultural information would be increased. This is of course important for the administrators and concerned others for policy implications.

Problems Faced by the Farmers in Communicating with the Input Dealers while Using Mobile Phone

The problems that are faced by the mobile phone users in receiving agricultural information have been presented in Table 5.

Table 5. Rank order of the problems faced by the farmers in using mobile phone

Problems	Obtain score for each problem	Rank order
High call rate to contact with input dealers	203	1
Difficulty in loading money to mobile set	201	2
High call rate for calling other mobile phone users	181	3
Lack of adequate mobile credit	172	4
Damage of mobile	139	5
Repairing	131	6
High cost for repairing	113	7
Mobile operating problem	75	8
Lack of electricity for charging mobile	69	9
Network problem	32	10

It is evident from Table 5 that all of these problems are, in fact, associated with money on which the policy makers have little control. Any way attempt may be taken by the concerned authorities to think how these problems can be reduced for increasing the use of mobile phone by the farmers in receiving agricultural information.

Conclusion

On the basis of the findings the researcher drew the following conclusions:

1. More than half (54 percent) of the mobile phone user farmers had medium use of mobile phone while 31 percent had high and only 15 percent had low use of mobile phone in receiving agricultural information from the input dealers. Hence, it was concluded that still there is ample scope to increase the use of mobile phone by the farmers in receiving agricultural information not only from the various sources.
2. Cosmopoliteness helps an individual to collect new ideas and information through interactive communication media like mobile phone. In this study cosmopoliteness of the farmers had a positive significant relationship with their use of mobile phone. This implies that with the increase of cosmopoliteness, their use of mobile phones is also increased.
3. The farmers having more agricultural knowledge have received more agricultural information. A positive relationship between agricultural knowledge of the farmers and their use of mobile phone leads to the conclusion that use of mobile phone is helpful in increasing agricultural knowledge and vice-versa.
4. Aspiration and self-confidence of the farmers had significant positive relationships with their use of mobile phone in receiving agricultural information. Thus it may concluded that there is possibility of increasing farmers' use of mobile phone in contacting with information sources if the arrangement are made to increase their aspirations and self-confidence though non-formal education or any other means.
5. Very recently some of the mobile phone companies have started communication of agricultural information to the farmers. This is an humble effort from their part. So, it can be said that proper use of mobile phone can be an appropriate means of getting agricultural information.

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