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PROBLEMS FACED BY FARMERS IN USING INFORMATION AND COMMUNICATION TECHNOLOGIES IN SADAR UPAZILA OF GAZIPUR DISTRICT

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ABSTRACT

Information and Communication Technologies have already been established as a potential tool for agricultural development. The study was intended to find out the problems faced by the farmers in using ICT media in agriculture. The study was carried out in three selected villages Shukhundi, Digdha and Khundia of Baria union of the Sadar upazila under Gazipur district in Bangladesh. Data were collected from 96 ICT user farmers selected proportionately from Khundia, Digdha and Shukhundi villages through purposive sampling method. Almost equal proportions of respondents faced minimum, high and medium levels of problems in using ICT media in agriculture respectively. The highest percentage of the respondents faced minimum level of problems in using ICT media in agriculture. The 'low speed internet facilities' was the highest ranked problem among ten problems. The farmers faced less problems in using ICT media in agriculture who had more education, annual family income, training exposure, use of ICT media in agriculture and service taken from agricultural service centers. The concerned authority may take necessary actions to ameliorate the problems in using ICT by the farmers.

Keywords: Agriculture, Bangladesh, farmers, ICT

Introduction

Bangladesh is an agriculture based middle income country. The challenge of feeding the increasing population from the shrinking land and water resources is a great task in this country. Many agencies are working to support the farmers to produce food, feed, fiber and fodder. A number of approaches are taken to provide farmers required information to support their farming operations. ICT is an acronym that stands for Information and Communication Technologies, which can broadly be interpreted as technologies that facilitate communication, processing and transition of information by electronic means (CTA 2003). It is increasingly recognized that ICT is necessary for accessing required information and knowledge (Aker 2011). ICT can be viewed as a catalyst that can bring sustainable development in the society. ICT covers the vast area of information technology, communication technology and the telecommunication technology. Computer systems, network machineries, software, wire and wireless connectivity systems, broadcast hardware and many other hardware and accessories are the physical backbone. The trained human behind the backbone are the intellect (Digital World 2016). This Information and Communication Technologies has been given great emphasis by the government of Bangladesh for adding value in all sectors including agriculture. Agricultural technologies generated by agricultural research institutes are being disseminated to the farmers by the agricultural extension agencies. For complying with the policy of government, agricultural technologies are also being disseminated through the use of various ICT interventions. The problems faced by the farmers in using the ICT media were not explored adequately. If the problems are known then proper measures can be taken to improve the situation for better dissemination of agricultural technologies. Thus, the problems of using ICT interventions needs to be examined. Hence, an attempt was made to identify the problems faced by the farmers in using ICT in agriculture.

Materials and Methods

The study was conducted in Baria Union of the Sadar Upazila under Gazipur district of Bangladesh. The number of farmers in the selected three villages Shukhundi, Digdha and Khundia of Baria union were 48, 71, and 144,

respectively which constituted the population. Yamane (1967) formula was used to determine the sample size. The formula was:

$$n = \frac{z^2 P(1-P)N}{z^2 P(1-P) + N(e)^2}$$

Where, n = sample size;

N = population size = 263;

e = the level of precision = 8%;

z = the value of the standard normal variable given the chosen confidence level = 1.96 with a Confidence Level = 95% and;

p = the proportion or degree of variability = 50%

So, sample size, n = 96.

From 263 people, total 96 (37%) ICT user farmers were selected proportionately in purposive sampling method. Thus, the sample size for Shukhundi, Digdha and Khundia were 17, 26 and 53 respectively making the total sample size 96. The data were collected by the researcher herself through face-to-face interview using a pretested interview schedule. Data were collected from October 17, 2015 to December 25, 2015. Problems faced in using ICT media in agriculture was measured by using a scale of 10 problems and asking the respondents to show their responses as 'not at all', 'low', 'medium', 'high' and 'very high' against each problem according to their extent of problem facing in using ICT media in agriculture. The weighted score of the five responses were assigned as 0, 1, 2, 3 and 4 respectively. The problems faced in using ICT media in agriculture score ranged from 0 to 40, where, 0 indicated no problem and 40 indicated the highest problems faced in using ICT media in agriculture.

Ten problems were selected by the researcher through consultation with the experts. The Problem Faced Index (PFI) of each of the 10 problems was measured using the following formula:

$$PFI = 4\times f_v + 3\times f_h + 2\times f_m + 1\times f_l + 0\times f_n$$

Where,

f_v = Number of respondents faced very high problem

f_h = Number of respondents faced high problem

f_m = Number of respondents faced medium problem

f_l = Number of respondents faced low problem

f_n = Number of respondents faced no problem at all

In order to make comparison among the problems, a rank order of problems was constructed in descending order of PFI. PFI ranged from 0 to 384, where, 0 indicated no problem at all and 384 indicated very high problem faced. The computer software IBM SPSS (Statistical Packages for Social Science) Statistics 20 software was used for the analysis of data.

Results and Discussion

The old aged respondent group was higher (49.0%) than young (15.6%) and middle aged group (35.4%) (Table 1). It might be due to that the most of the young and middle

Table 1. Distribution of the respondents according to their age, level of education and family size

Age	Respondents		Mean ± SD
	Number	Percent	
Young (up to 35)	15	15.6	51.9±12.9
Middle aged (36-50)	34	35.4	
Old (>50)	47	49.0	
Total	96	100	
Education			
Illiterate (0)	9	9.4	4.8 ± 3.9
Can sign only (5)	18	18.8	
Primary education (1-5)	34	35.4	
Secondary education (6-10)	30	31.3	
Above secondary education (>10)	5	5.1	
Total	96	100	
Family size			
Small (up to 4)	40	41.7	5.0 ±1.9
Medium (5-8)	50	52.1	
Large (>8)	6	6.3	
Total	96	100	

aged people moved towards city areas as the study area is very close to the capital and were away from performing agricultural activities. Reza (2007) found similar result in respect of ICT user farmers. However, different results were observed by Rashid (2014), Ozaki *et al*. (2013) and Meera *et al.* (2004) where middle aged respondent group was higher than the young and old aged respondent groups among the ICT user farmers. Ahmed (2012) also found different result for the similar issue, where young aged respondent group was higher than the middle and old aged respondent groups respectively.

The lowest number of respondents belonged to the above secondary education level followed by those who had no education and those who could sign only respectively (Table 1). The national education level which was 61.5% on an average (CIA 2016) was much below the education level of the respondents of the study area which is 90.6%. It may be due to the fact that the study area is very near to the Gazipur city which is also near Dhaka city and there are 1 high school, 2 primary schools, 1 kindergarten and 1 madrasha in the study area. Similar finding was observed by Rashid (2014) in respect of ICT user farmers. Different result was observed by Reza (2007) where the highest number of respondents were educated up to secondary level of education for the similar issue.

Table 1 shows that the majority of the respondents (52.1%) had medium sized family, 41.7% of the respondents had small family and only 6.3% of them had large family. The findings indicate that most of the respondents had medium or small families. The national average of the family size is 4.4 (BBS 2011) which is almost near to the finding of the present study which is 5.02. Both the statistics show that the families are becoming smaller gradually. It may be due to the fact that the large families are being converted into small nuclear families.

The respondents (66.7%) had small farm size followed by medium, marginal and large farm size respectively (Table 2). There were no landless farmers among the respondents. In the national level most of the farmers (84.3%) have small farm holdings also (BBS 2013) which is similar to the finding of the present study. It may be due to land fragmentation from generation to generation and conversion of agricultural land for other purposes. Similar finding was observed by Rashid (2014) where most of the farmers had small farm among the ICT user farmers. Considering small and medium farm size category. Similar result was also found by Meera *et al.* (2004) in case of Gyandoot project and Warana Wired Village project where most of the farmers were small and marginal farmers among the ICT users but in case of iKisan project different results were observed where majority of the respondents using ICT were medium land owners. Reza (2007) observed different result for the similar issue where the highest number of respondents had medium farm.

The respondents having low and medium annual income were higher than the respondents having high annual income (Table 2). The national average of the annual

Table 2. Distribution of the respondents according to their effective farm size, annual income ('000' Taka) and training exposure

Farm size	Respondents		Mean± SD
	Number	Percent	
Marginal (up to 49.4 Dec)	9	9.4	
Small (49.4-247.2 Dec)	64	66.7	
Medium (247.2-741.5 Dec)	21	21.9	205.3± 171.6
Large (>741.5 Dec)	2	2.0	
Total	96	100	
Annual income			
Low income (up to 235.7)	36	37.5	350.1 ± 228.8
Medium income (235.7-464.5)	36	37.5	
High income (>464.5)	24	25.0	
Total	96	100	
Training exposure			
Low level of training (up to 4 days)	50	52.1	10.6 ± 12.5
Medium level of training (5-17 days)	18	18.8	
High level of training (>17 days)	28	29.1	
Total	96	100	

income is 137.748 thousand taka (BBS 2010) which is much below the finding of the present study which is 350.0674 thousand taka. It may be due to the fact that the study area is an industrial area adjacent to Gazipur and Dhaka cities. Similar finding was observed by Ahmed (2012) in respect of ICT user farmers.

The respondents having low training exposure were higher than the respondents having high and medium training exposure respectively (Table 2). Here, the standard deviation (12.5) is higher than the mean (10.6) as majority of the respondents did not get any training while a small portion of the respondents received training for long duration.

The respondents having medium level of use of ICT media in agriculture were higher than the respondents having low and high level of use of ICT media in agriculture respectively (Table 3). It indicates that most of the respondents had quite frequent access to ICT media for agricultural activities. Similar result was observed by Kafura (2015) in respect of ICT user farmers. Rashid (2014) and Reza (2007) found different results for the similar issue where the highest proportion of the respondents had low use of ICT media.

The respondents having low level of service taking from agricultural service center were higher than the respondents having medium and high levels of service taking from agricultural service center respectively (Table 3). It might be due to the fact that different agricultural service center especially those providing digital agricultural services had not gained much popularity. Perhaps another reason was that the farmers were not eager to take the agricultural services from agricultural service center.

Table 3 shows that the respondents having medium farming experience were higher than the respondents having high and low farming experience respectively. As the study area was near to Dhaka city most of the people of the study area were businessmen or were engaged in different professions other than agriculture. Reza (2007) observed similar result in respect of ICT user farmers. The respondents having medium agricultural knowledge were higher than the respondents having low and high agricultural knowledge respectively (Table 10). Most of the respondents had medium agricultural knowledge because of using ICT media in agriculture. Considering medium agricultural knowledge Ahmed (2012) found similar finding in respect of ICT user farmers.

Table 3. Distribution of the respondents according to their use of ICT media, service taking from agricultural service center, farming experience, agricultural knowledge and problems faced in using ICT media

Use of ICT media	Respondents		Mean ± SD
	Number	Percent	
Low level of use (up to 8)	39	40.6	9.6 ± 3.9
Medium level of use (9-12)	43	44.8	
High level of use (>12)	14	14.6	
Total	96	100	
Agricultural service center			
Low service (up to 7)	35	36.5	9.2 ± 5.1
Medium service (8-12)	33	34.4	
High service (>12)	28	29.1	
Total	96	100	
Farming experience			
Low experience (1-16)	17	17.7	31.9 ± 15.2
Medium experience (17-44)	58	60.4	
High experience (>44)	21	21.9	
Total	96	100	
Agricultural knowledge			
Low knowledge (up to 14)	28	29.2	16.1 ± 3.4
Medium knowledge (15-18)	45	46.9	
High knowledge (>18)	23	24.0	
Total	96	100	
Problems faced in using ICT media			
Minimum level of problem (up to 16)	37	38.5	18.8 ± 5.9
Medium level of problem (17-22)	29	30.2	
High level of problem (>22)	30	31.3	
Total	96	100	

Table 4. Rank order of 10 selected problems faced by the respondents in using ICT media in agriculture

Problems	Extent of Problem faced					PFI	Rank Order
	Not at all (0)	Low (1)	Medium (2)	High (3)	Very High (4)		
Low speed internet facilities	0	0	3	5	88	373	1
High cost of computer, radio, television, mobile phone, internet and agricultural services of the non-government mobile phone companies.	6	5	16	14	55	299	2
Lack of formal training regarding use of ICT media	5	10	18	19	44	279	3
The ICT media are difficult to use	4	12	20	14	46	278	4
Lack of enough time to spend on ICT media	28	3	19	18	28	207	5
Lack of necessary electricity facilities for using ICT media	41	10	9	6	30	166	6
Illiteracy	71	0	0	1	24	99	7
Inadequate agricultural programs of the radio and television.	57	7	17	4	11	97	8
Lack of awareness about the benefit of using ICT in agriculture	93	0	2	1	0	7	9
Lack of adequate digital service centers for providing ICT facilities	95	1	0	0	0	1	10

PFI = Problem Faced Index

The respondents facing minimum level of problems in using ICT media in agriculture were higher than the respondents facing high and medium level of problems in using ICT media in agriculture respectively (Table 3). The finding indicates that there were almost equal proportions of respondents facing minimum, high and medium levels of problems in using ICT media in agriculture respectively. But the highest percentage (38.5%) of the respondents faced minimum level of problems in using ICT media in agriculture.

The observed problem faced index in using ICT media in agriculture ranged from 1-373 against the possible range of 0 to 384. The selected ten problems faced by the respondents which were arranged in rank order according to their descending order of problem faced index (PFI) are shown in Table 4. On the basis of PFI, it was observed that 'low speed internet facilities' was the highest ranked problem followed by 'high cost of computer, radio, television, mobile phone, internet and agricultural services of the non-government mobile phone companies', 'lack of formal training regarding use of ICT media, 'the ICT media are difficult to use', 'lack of enough time to spend on ICT media', 'lack of necessary electricity facilities for using ICT media', 'illiteracy', 'inadequate agricultural programs of the radio and television', 'lack of awareness about the benefit of using ICT media in agriculture' and 'lack of adequate digital service centers for providing ICT facilities' respectively. The highest percentage of the respondents faced minimum level of problems in using ICT media in agriculture. The concerned authority may take necessary actions to ameliorate the problems in using ICT by the farmers to expedite realization of Digital Bangladesh.

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