USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES BY THE FARMERS IN RECEIVING AGRICULTURAL INFORMATION

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ABSTRACT

The purposes of the study were to determine the extent of use of Information and Communication Technologies (ICTs) by the farmers in receiving agricultural information in Homnaupazilla under comilla district and to explore the contribution of selected characteristics of respondents with their ICTs use in receiving agricultural information. The study was conducted in two villages namely Rampur & Madhabpur of Ghagutia union in Homnaupazilla of comilla district. Data were collected from 110 farmers by using a pre-tested interview schedule during the period from 15 January to 15 March, 2015. Appropriate scales were developed to measure the variables of the study. Descriptive statistics, multiple regression (B) tests were used for analysis. The findings revealed that highest proportion (64.5%) of the respondents' had medium use of ICTs in receiving agricultural information compared to 13.6 % and 21.8 % having low and high use of ICTs in receiving agricultural information respectively. Education, farm size, annual family income, problem confronted in ICTs use and cosmopoliteness had significant contribution to use of ICTs and provided 51.5 percent contribution to use of ICTs in receiving agricultural information. Findings helps to conclude that educated farmer having large farm size, high annual family income and cosmopoliteness who confronts less problems use more ICTs in their farming practices. All farmers should be encouraged to use ICTs therefore, the Department of Agricultural Extension should focus on personal characteristics of the farmer when motivate them to use more ICTs for getting agricultural information's for better farming outcome.

INTRODUCTION

Bangladesh is an agricultural country. It is the main occupation of the people employing 51.7 percent of the labor force (World Bank, 2015). This sector directly contributes 16.01 percent of the Gross Domestic product (World Bank, 2015). Agriculture supplies raw materials for industrial production and food stuff for human and animal consumption. Improvement of agriculture has crucial importance for economic development of the country. Crop production of Bangladesh needs to be maximized in order to meet the increasing food demand and other basic requirements. Bangladesh cannot produce enough food to her population. At present food situation is alarming and the food reserve is very poor. Besides this, there is no scope to increase the cultivable land rather it is decreasing rapidly to provide new generation. On the other hand, the soils of Bangladesh are very fertile and climate is favorable for crop growth throughout the year. Thus there is tremendous scope for increasing agricultural production in Bangladesh.

Agricultural production can be increased if appropriate technologies are received by the farmers who are the primary unit of adoption of improved practices. Diffusion of proper knowledge on modem agriculture among the rural people demands effective communication system. In addition immediate and effectiveness are also valuable dimensions for communication of technological messages (Halim and Miah, 1996). This study investigates the use and appropriation of ICTs (Information and Communication Technologies) by rural Bangladeshi farmers. It examines farmers' information needs and how and to what extent those needs can be addressed through the use of different ICTs tools and applications and their appropriation in the settings of rural Bangladesh. It has been suggested that ICT applications and services can enable farmers to obtain information on input and output prices, the weather and so forth. The information provided needs to be situational relevant if it is to enable farmers to improve their farm income and/ or reduce their production cost. It is also important to investigate whether or not farmers find it easy to access the information, generated by ICTs. ICTs could use to facilitate, strengthen, and replace an existing information systems and networks. It could regard as both a driver and an enabler (Hossain, 2009). ICTs spread formation of knowledge societies in rural areas of the developing countries, which can realize when knowledge and information are effectively improved agricultural and rural development (Gregg and Irani 2004).

The use of internet email Microsoft PowerPoint and other WebPages for increase the development skills in the dissemination of agricultural information. ICTs such as Radio T.V, mobile phones, and Internet among others are required for effective extension information among farmers (Arokoyo, 2005).It was showed that main problem of the poverty illiteracy and sharing information among developing countries is poor communication technology lack of infrastructures and limited access in developing world. The shortages of information were also a factor in restricting economic advancement for developing countries. Especially agriculture sector is facing many problems in obtain new information about market price, weather updates and other related issues (Man and Sadiya, 2009).There is no doubt that ICTs is a challenge and an opportunity for developing countries. ICTs are powerful tools for handling and spreading information. It has impact on all aspects of life by reducing time, distance and the information gap. ICTs are increasing day by day for greater and faster interaction within different groups of people from different societies especially among farmers (Hafkin, 2002).

So it is clear that farmers are the key elements in the process of transfer of technology. It is quiet logical to say that message can exist in different channels, however the choice of channels often is an important factor for a client. Considering the above facts the researcher felt a thrust to conduct a study with the hope to identify the extent of use of Information and Communication technologies (ICTs) by the farmers in receiving agricultural information. The specific objectives were:

   I.   to assess the extent of use of Information and Communication technologies (ICTs) by the farmers in receiving agricultural information,
  II.   to determine and describe the selected characteristics of the farmer,
 III.   to assess the contribution of farmers' selected characteristics on their use of ICTs in receiving agricultural information's.

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METHODOLOGY

Locale, population and sample of the study:

Ghagutia union of Homnaupazilla under Comilla district was selected purposively because the location had well communication facility. Cultural and language similarity with the researcher was also another consideration for the locale selection. The study area consists of 20 villages. Two villages were selected by following simple random sampling technique. These villages constituted the locale of the study. The names of the villages are Rampur and Madhabpur. The physical, social and cultural and heritage of this area were similar in many cases with other eastern areas of the country.

The researcher himself with the cooperation of local leaders and concerned with Sub- Assistant Agriculture Officer (SAAO) collected an updated list of all the farmers of the selected villages of respective union. The total number of farm families in these villages was 1230; where 668 farm family heads from Rampur village and 562 from madhabpur village under the union of Ghagutia constituted the population of the study.An update list of 1230 farmers was prepared with the help of Upazila Agricultural Officersof these localities. At the rate of 9% out of 1230 total population 110 farmers were selected randomly considering the Yamane's (1967) formula. Thus, 110 farmers constituted the sample of the study for conducting interviews. Farmers were asked to furnish information about personal profile e.g. age, education, farm size, farming experience, annual income, organization participation, problem confronted by farmers in ICTs use, cosmopoliteness, innovativeness and use of ICTs.

Variables and their measurement

The nine selected characteristics of the respondent (namely age, education, farm size, farming experience, annual income, organization participation, problem confronted by farmers in ICTs use, cosmopoliteness, and innovativeness) constituted the independent variables of the study and usage of ICTs considered the dependent variables of the study. There were six question based upon different aspects and related to the issues of ICTs usage. Each respondents was asked to answer all the questions. Usages of ICTs referred to the frequency of ICTs material used by the farmers. In this study six ICT materials was used and the respondents were asked to answer how frequently they use those ICT materials. Responses could be frequently, occasionally, rarely and not at all. Score was assigned 3,2,1,0 for the response of frequently, occasionally, rarely and not at all respectively. Thus ICT score of a respondent could range from 0 to 24. Where 0 indicates no use of ICTs and 24 indicates highest use of ICTs.

Thus the primary data were collected between 15 January to 15 March, 2015 through face to face interviews. Some related literature and empirical findings were also collected and reviewed from various secondary sources to support and supplements the results of this study. Last of all, collected data were edited and compiled in order to make suitable for analysis. Statistical treatments such as percent, mean, standard deviation, range and frequency was done. For determining the contribution of the selected characteristics of the farmer in their ICT use, multiple regression analysis was used. The contribution between the selected dependent and independent variables was determined by using multiple regressions co-efficient. Five percent and one percent level of probability were used in the present study.

RESULT AND DISCUSSION

Personal profile of the respondent farmer

Large portion (56.4%) of the farmers were middle aged group while 24.5 percent and 19.1 percent farmers fell in the young and old aged category respectively with an average of 41.98 years and its standard deviation was 10.042. Majority of the farmers (38.2 %) had secondary level of education followed by can read or sign (31.8%). A few of (15.5%) the farmers can sign only, 10% of the farmers had primary level of education and 4.5 percent farmers had above secondary level of education. However, average literacy rate of the respondents was below primary level of education. The farm size score ranged from 0.2 to 1.49 hectares with the average being 0.691 hectare. Among the respondents 81.8 percent were small farmers while 17.3 percent were medium farmers, 0.90 percent of the farmers were marginal and there were no landless or large farmers. Farming experience of the farmers ranged from 4-45 with an average of 15.48 years. Of the total farmers 75.4 percent had medium farming experience while 18.2 percent had high and 6.4 percent farmers had low farming

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experience. Farmers' annual income ranged from 90 to 900 thousands with an average of 247.50 thousands. Of the farmers (69.1%) were in medium income followed by low (20.0%) income and high (10.9%) income containing group. Organization participation of the farmers ranged from 0 to 13 with an average of 4.45. Majority of the respondents (83.7%) had low to medium organizational participation while 14.5 percent had high and 1.8 percent had no organizational participation. Problem confrontation of the farmers ranged from 4-26 with an average of 11.41. Most of the respondents (82.7%) had medium level of problem confrontation while 12.7 percent had high and 4.5 percent had low level of problem confrontation. Cosmopoliteness of the respondents for this study was ranged from 0 to 15 with an average of 5.87. Majority of the respondents (55.7%) had medium cosmopoliteness while 21.6 percent had high and 22.7 percent had low level of cosmopoliteness. Innovativeness of the respondents for this study was ranged from 10 to 41 with an average of 26.45. Majority of the respondents (67.3%) had medium innovativeness followed by low innovativeness (17.3%) and high innovativeness (15.4%).

Table 1. Distribution of the respondents on the basis of selected characteristics

Characteristics	Scoring method	Categories	Percent	Range	Mean	SD
Age	Years	Young (up to 35)	24.5	23-60	41.98	10.042
		Middle (>36-50)	56.4			
		Old (above 50)	19.1			
Education	Years of schooling	Illiterate (cannot read and write)	31.8	0-12	4.523	4.43
		Can sign only (0.5)	15.5			
		Primary (1-5)	10			
		Secondary (6-10)	38.2			
		Abve secondary	4.5			
Farm size	Hectare	Landless (≤ .02)	0	0.2- 1.49	0.691	0.299
		Marginal farm (0.021- 0.2)	0.90			
		Small farm (0.21-1)	81.8			
		Medium farm (> 1-3)	17.3			
		Large farm (above 3)	0			
Farming experience	Scores	Low (≤ 6)	6.4	4- 45	15.48	9.329
		Medium (> 6-24)	75.4			
		High (>24)	18.2			
Annual income	(000) Taka	Low ((≤ 118)	20	90-900	247.50	128.848
		Medium (>118-375)	69.1			
		High (>375)	10.9			
Organizational participation	days	No participation (0)	1.8	0-13	4.45	2.195
		Low participation (1-3)	37.5			
		Medium participation(>3 to 7)	46.2			
		High participation(> 7)	14.5			
Problem confrontation	Scores	No (0)	0	4-26	11.41	3.140
		Low (1-7)	4.5			
		Medium (8-14)	82.7			
		High (>14)	12.7			
Cosmopoliteness	Scores	Low (≤ 4)	22.7	1-13	5.87	2.147
		Medium (> 4-8)	55.7			
		High (> 8)	21.6			
innovativeness	Scores	Low (≤ 19)	17.3	10-41	26.45	6.398
		Medium (20-32)	67.3			
		High (>32)	15.4			

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Use of ICTs by the farmers

Use of ICTs was the dependent variables for this study. Observed range of ICTs ranged from 3 to 20 with an average of 9.71 and standard deviation 3.698. On the basis of the usage of ICTs majority of the respondents (72.6%) had medium usage of ICTs while 10.8 percent had high and 16.6 percent had low level of ICTs usage.

Table 2. Distribution of the respondents on the basis of ICTs usage

Characteristics	Scoring method	Categories	Percent	Range	Mean	SD
Usage of ICTs	Years	Low (≤ 6) Middle (> 6-13) High (>13)	16.6 72.6 10.8	3- 20	9.71	3.698

Contribution of different individual characteristics of the respondents in their use of ICTs

In order to estimate the use of ICTs by the farmers from the independent variables, multiple regression analysis was used which is shown in the Table 3.

Table 3. Multiple regression coefficients of contributing factors related to use of ICTs

Dependent variable	Independent variables	B	p	R^2	Adj. R^2	F	P
Use of ICTs	Age	-.052	.244	0.555	0.515	13.83	0.000***
	Education	.218	.002**				
	Farm size	-2.202	.097*				
	Farming Experience	-.024	.613				
	Annual Family Income	.007	.018**				
	Organization Participation	.032	.829				
	Problems confronted by Farmers	-.282	.015**				
	Cosmopoliteness	.598	.000***				
	Innovativeness	-.017	.756				

*** Significant at p<0.01.   ** Significant at p<0.05.   * Significant at p<0.1

Table 3 shows that there is a significant contribution of respondents' education, farm size, annual family income, problem confronted by the farmers in ICTs use. Here, cosmopoliteness was the most important contributing factors (significant at the 1% level of significance) while education, annual family income and problems confronted by farmers were also contribute (significant at the 5% level of significance). Farm size is also the important contributing factors (significant at the 10% level of significance). More than fifty percent, 55.5% (R^2 = 0.555) of the variation in the respondents' changed use of ICTs can be attributed to their respondents' education, farm size, annual family income, problem confronted by the farmers in ICTs use, cosmopoliteness making this an excellent model. The F value indicates that the model is significant (p<0.000). However, each predictor may explain some of the variance in respondents' use of ICTs simply by chance. The adjusted R-square value penalizes the addition of extraneous predictors in the model, but values of 0.515 still show that the variance in respondents' use of ICTs can be attributed to the predictor variables rather than by chance, and that both are suitable models (Table 3). In summary, the models suggest that the respective authority should consider the respondents' education, farm size, annual family income, problem confronted by the farmers in ICTs use, and cosmopoliteness.

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CONCLUSION

Education, farm size and annual family income of the respondents had a significant contribution on their use of ICTs. Therefore, it may be concluded that, more the education, farm size and annual income more the use of ICTs by the farmers'. A problem confrontation by the farmers' in using ICTs is a vital issue and it is also a significant contributing factor on the use of ICTs by the farmers'. The percentage of no problem, low problem, medium problem and high problem were 0%, 4.5%, 82.7% and 12.7 respectively. Therefore, it may be concluded that less problem in ICTs use of the farmer's increase their ICTs use in receiving agricultural information.Majority (97.3 percent) of the respondents were medium to high cosmopolite and Cosmopoliteness was found to be a contributing character for the use of ICTs by the farmer. Therefore, it may also be concluded that more cosmopoliteness of the farmers' increase their ICTs use in receiving agricultural information. DAE should take initiative and effective steps to strengthen extension services for all types of farmers so that farmers' can get more facilities to use ICts in receiving agricultural information's.

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