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# Use of Cell Phone by the Farmers for Receiving Agricultural Information from Sub Assistant Agriculture Officer (Saao) in Bangladesh

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**Abstract—***The study assessed the scenario of cell phone use by the farmers in receiving agricultural information from the Sub Assistant Agriculture Officer (SAAO). The objective was to determine and describe the socioeconomic characteristics of the farmers, their faced problems in receiving information through cell phone and to explore the relationships between the selected characteristics of the farmers and their cell phone use. Data were collected from 75farmers of sadar upazila of Sylhet district during 10 September to 10 November, 2015. The study revealed that more than half ( 54 percent) of the respondents had medium use of cell phone while the rest 15 percent and 31 percent of them had low and high use of cell phone, respectively. Among the faced problems in receiving information, the majority of the farmers thought "High call rate" as a great problem, consequently it was ranked first while electricity problem appeared as a minor obstacle in this regard. Literacy level, annual income, cosmopoliteness, agricultural knowledge, aspiration self- confidence and attitude towards technology showed significant and positive relationships with their use of cell phone among ten characteristics of the farmers while the age of the farmers showed significant relationship with negative trend and the rest of the characteristics viz. farm size and organizational participation did not show any significant relationship with their use of cell phone.*

**Keywords***: Cell phone, SAAO, Information, Farmer, Analysis.*

## 1. INTRODUCTION

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 farms (Todaro, 2000). 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. For bargaining desired socio-economic development, farm people need to be connected with the greater communication network for increasing their access to "just" and "timely" information. But there is a dearth of adequate information about the using behavior of different commutation channel by the famers in our country. Agricultural extension is an important means of enabling farmers to benefit from agricultural research and development taking the inventions and innovations to them. Its role becomes and development taking the inventions and innovations to them. Its role becomes still more significant in a developing economy like ours that has low levels of literacy and high incidence of poverty, particularly in rural areas. The low levels of socio-economic development indicators also limit the farmer's ability to derive full advantage from other sources of information, like newspaper and television, while underscoring the importance of interactive extension services to meet the informational needs of the farmers. However cell phone can serve as a source of information. It is playing a very useful role in fulfilling the informational needs of farmers, particularly among marginal and small ones. The cell phone based agricultural information services are now rapidly becoming popular. According to Marchi et al.(2006) the service text messages for assistance in agriculture was low cost and opens interesting possibilities to cell phone users. These services through SMS or voice messages provide a variety of agriculture related information on crop cultivation, fertilizer use, plant diseases, pesticides, market prices, weather and important government policy decisions. In Indonesia, cell phones are being programmed with java applications developed by the Ministry of Agriculture so that officials can store and send data, and farmers can request market prices. In Bangladesh, private sectors are providing many rural services such as private extension using mobile technologies, although clear roles and policies are needed.

Cell phone is the success story of bridging the rural digital divide. Cell phones have facilitated greater communication

and economic benefits and acted as agents of social mobilization. Hence, there seems to be a lot of potential in the use of cell phones for communication for the development of Bangladesh. To increase the extent of use cell phone in receiving agricultural information, it is necessary to have a clear understanding about present status of cell phone by the farmers. It is also necessary to have an understanding of the constrains, which may create obstacles in the use of cell phone. And to satisfy that relevant scenario, the study was designed with the following objectives:

i. To assess the extent use of cell phone by the farmers in receiving agricultural information from the Sub Assistant Agricultural Officer (SAAO).
ii. To identify the extent of problems faced by the farmers in communicating through cell phone with the Sub Assistant Agricultural Officer (SAAO).
iii. To explore the relationship of the selected characteristics of the farmers with their use of cell phone in receiving agricultural information.

## 2. MATERIALS AND METHODS

### 2.1 Study area

The study was conducted in sadar upazila of Sylhet district. The researcher selected cell phone user farmers of two unions in this upazila. Four villages of Silam and four villages of Mogla Bazar union constituted the locale of the study. The physical, social and cultural heritages of the people of this area were similar in many cases with other eastern areas of the country.

### 2.2 Population and Sampling Design

All the cell phone user farmers under eight villages of two unions of Sylhet sadar upazila constituted the population for this study. For this purpose and up to date list of the cell phone user farmers were prepared with the help of the village elites and Sub Assistant Agriculture Officers (SAAOs) of those unions. The total number of the cell phone users farmers having eight villages in two unions were 305. About twenty five percent of the farmers were selected as samples following simple random sampling method. In all 76 farmers were selected as sample for the present study. A reserve list of 11 farmers was also prepared.

### 2.3 Data Collection

Primary and secondary data were used to elicit information necessary for the study. The primary data were collected using pre-tested interview schedule where the statements and questions were set with wide revision and they were made simple and easily understandable to the farmers and Secondary data were obtained from literatures, examples include textbooks, journal, annual reviews, internet, electronic libraries and past students' thesis. Excellent co-operation was obtained from the field extension workers and the local leaders.

### 2.4 Variables of the Study

In this study ten selected characteristics of the farmers constituted the independent variables these are: age, Literacy level, farm size, annual income, organizational participation, cosmopoliteness, agricultural knowledge, Aspiration, Self-confidence and Attitude towards technology and, use of cell phone by the farmers for receiving agricultural information from Sub Assistant Agriculture Officer (SAAO)was the dependent variable.

### 2.5 Analytical Tools

The analysis was performed using SPSS (Statistical package for social science) computer package. Descriptive analysis such as range, frequency count, number and percentage, mean and Coefficient of Variance were used, In order to explore the relationships of the selected characteristics of the farmers with their use of cell phone in receiving agricultural information, the Pearson's product moment correlation coefficient was computed. Throughout the study, five percent (0.05) level of probability was used as a basis of rejecting a null hypothesis. Theuse of cell phone for each issue was calculated by using Cell phone Use index (CPUI) and it was computed by using the following formula:

$$CPUI = N_r \times 2 + N_0 \times 1 + N_n \times 0.$$

Where, $N_r$ = Number of farmers use cell phone regularly, $N_0$ = Number of farmers use cell phone occasionally, $N_n$ = Number of farmers never use cell phone

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

## 3. RESULTS AND DISCUSSIONS

### 3.1 Socio-economic characteristics of the respondents

Table 1 indicates that the highest proportion (38 percent) of the respondents had felt in the old aged category while 32 percent and 30 percent respondents had felt in the young and middle age category respectively. Generally old aged farmers are engaged in agricultural activities and they communicate with the sub assistant agricultural officer more than the young and middle aged farmers. It is evident from the table that most (47 percent) of the cell phone user farmers had secondary education, 11 percent illiteracy, 13 percent had primary, and 29 percent had above secondary literacy level. There is significant improvement in literacy rate in recent decade with increased enrolment in schools and colleges and o literate farmers can easily communicate with SSAO through cell phone then illiterate farmers. In the study area, no respondent had large farm size where 30 percent had medium farm size and majority (70 percent) of the respondents had small farm size this is might be due to the nuclear family type and dividation of land among the descendants by inheritance. The data in the table showed that almost half (51 percent) of the

farmers had low annual income, 38 percent of the respondents had medium income and 11 percent had high income. These features highly affect the interest and arena of information receiving behavior in the study area. It is also revealed from the study that the overall organizational participation of the cell phone user farmers in the study area is not satisfactory where 83 percent of the respondents had low participation in any organization, 12 percent had medium participation, 4 percent had no participation and only 1 percent high participation. Cosmopoliteness might have favourable effect on the use of cell phone in receiving agricultural information from the sub assistant agriculture officer and the farmers of the study area were being aware of cosmopoliteness where 79 percent are in medium category, 20 percent low category and 1(one) percent in high category of cosmopoliteness. Like cosmopoliteness, farmers in the study area were developing their agricultural knowledge and the table indicates that not less than 76 percent of the farmers had medium to high knowledge while only 24 percent of them had low knowledge. The study reveals that overwhelming majority (84 percent) respondents had sufficient aspiration (medium to high) while 16 percent fell in low group. Although aspiration is one of the most important factors for success in life, the farmers may fail to achieve success due tack of other facilities Self-confidence is one of the most important factors for progress in any kind of activity and 75 percent farmers were found to have this attribute in the study area. From the table below it is evident that higher preparation of the respondents (51 percent) having moderately favorable attitude towards technology and 20 percent and 29 percent had low and highly favorable attitude respectively. It implies that most of the farmers were aware of modern technology in the study area.

**Table 1: Socioeconomic Characteristics of the farmers**

| Characteristics | Measurement (unit) | Possible Range | Observed Range | Categories | Respondents Number | Respondents Percentage | Mean | %CV |
|---|---|---|---|---|---|---|---|---|
| Age | Actual Years | - | 25-66 | Young(up to 35)<br>Middle-aged(36-45)<br>Old(>45) | 24<br>23<br>29 | 32.0<br>30.0<br>38.0 | 42.66 | 26.25 |
| Literacy level | Year of Schooling | - | 0-12 | Illiteracy (0)<br>Primary education(1-5)<br>Secondary education(6-10)<br>Above secondary education(>10) | 8<br>10<br>36<br>22 | 11.0<br>13.0<br>47.0<br>29.0 | 8.20 | 42.20 |
| Farm size | Actual ( in ha) | - | 0.19-2.56 | Small farm(≤ 1ha)<br>Medium farm (1.01-3ha)<br>Large farm (>3) | 53<br>23<br>0 | 70.0<br>30.0<br>0 | 0.85 | 60.73 |
| Annual income | Actual (1=Tk.000) | - | 0.98-475 | Low income (≤ 100)<br>Medium income(101-200)<br>High income (>200) | 39<br>29<br>8 | 51.0<br>38.0<br>11.0 | 121.87 | 62.32 |
| Organizational Participation | Rated score | - | 0-11 | No Participation (0)<br>Low Participation (1-5)<br>Medium Participation (6-10)<br>High Participation (above 10) | 3<br>63<br>9<br>1 | 4.0<br>83.0<br>12.0<br>1.0 | 3.8 | 55.50 |
| Compositeness | Rated score | - | 3-11 | Low (>5)<br>Medium (6-10)<br>High (>10) | 15<br>60<br>1 | 20.0<br>79.0<br>1.0 | 7.13 | 26.44 |
| Agricultural Knowledge | Computed score | 0-28 | 10-27 | Low (up to 15)<br>Medium (16-20)<br>High (>13) | 18<br>35<br>23 | 24.0<br>46.0<br>30.0 | 18.61 | 19.43 |
| Aspiration | Computed score | 5-15 | 10-15 | Low (Up to 11)<br>Medium(12-13)<br>High(>13) | 12<br>51<br>13 | 16.0<br>67.0<br>17.0 | 12.54 | 8.87 |
| Self-confidence | Computed score | 5-15 | 10-15 | Low (up to 11)<br>Medium (12-13)<br>High (>13) | 19<br>46<br>11 | 25<br>60.0<br>15.0 | 12.36 | 9.22 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Attitude towards technology | Rated score | 10-50 | 20-42 | Unfavorable (up to31) | 15 | 20.0 | 34.25 | 12.29 |
| | | | | Moderately favorable (32-36) | 39 | 51.0 | | |
| | | | | Favorable(>36) | 22 | 29.0 | | |

**Extent Use of Cell phone by the Farmers in Receiving Agricultural information from the sub assistant agriculture officer**

Date presented in table 2show that more than half (54 percent) of the respondents had medium use of cell phone in receiving agricultural information from the sub assistant agricultural officer while 15 percent and 31 percent of them had low and high use of cell phone, respectively. The finding clearly indicates the ignorance of the respondent about the use of cell phone in receiving agricultural information from the sub assistant agricultural officer. Besides, most of the farmers had small farm size and they did not have adequate mobile credit for calling the sub assistant agricultural officer in receiving agricultural information. As a result, high use of cell phone was not found in respect of receiving agricultural information. Most of the farmers preferred cell phone for communication with their family members, neighbors and relatives. Therefore, it is necessary to encourage the farmers in receiving agricultural information regarding availability, quality, market price and seeds of different inputs like seeds, fertilizers, pesticides and herbicides through cell phone.

**Table 2: Use of cell phone by the farmers in receiving agricultural information**

| Cell phone using farmers | | | Mean | %CV |
|---|---|---|---|---|
| Categories (score) | NO | Percent | | |
| Low (Up to 10) | 11 | 15 | 14.66 | 27.53 |
| Medium (11-16) | 41 | 54 | | |
| High (>16) | 24 | 31 | | |
| Total | 76 | 100 | | |

**Ranking of different issues farmers communicate with the sub assistant agricultural officer through cell phone.**

It has been arranged in rank order according to their extent of use of cell phone which appears in table 3. Cell phone Use Index (CPUI) was found to vary from 20 to 142 for the issues, where the possible score was 0 to 152 for each issue. Fertilizers help in proper growth, development and yield of the crops by maintaining physical, chemicals properties of soil. Therefore, Farmers have great need for fertilizer timely for successful crop production. The table shows that "availability of fertilizers" got the first rank among the issues. It found that most of the farmers communicate with the sub assistant agricultural officer for availability of fertilizers through cell phone. Seed is the reproduction unit of the plant. Life of the plant is hidden in seed therefore, "availability of seeds'' got the second highest score and this stood second in the rank order. On the other hand, herbicide use is not popular enough in our country. Farmers may remove weeds from the crop field through cultural practices. Therefore, information about "herbicide doses" obtained the least score and so got the last position in the rank order.

**Table 3: Ranking of different issues farmers communicate with the sub assistant agricultural officer through cell phone**

| Statement | CPUI (Score) | Rand order | Statement | CPUI (Score) | Rand order |
|---|---|---|---|---|---|
| **Availability of Inputs** | | | **Market price of the Inputs** | | |
| Availability of fertilizers | 131 | 2 | Market price of fertilizers | 58 | 12 |
| Availability of seeds | 117 | 3 | Price of the different seeds | 76 | 10 |
| Availability of pesticides | 57 | 13 | Price of pesticides | 32 | 14 |
| Availability of herbicides | 142 | 1 | Price of herbicides | 112 | 4 |
| Quality of the Inputs | | | Appropriate dose/Quantity of Inputs | | |
| Better seeds | 112 | 4 | Different fertilizer doses | 65 | 11 |
| Balanced fertilizers | 58 | 12 | Seed rate of different crops | 79 | 9 |
| Appropriate pesticides | 76 | 10 | Pesticide doses | 97 | 8 |
| Appropriate herbicides | 32 | 14 | Herbicide doses | 20 | 16 |

**Problems Faced by the Farmers in Communicating with the sub assistant agricultural officer while Using Cell Phone**

It is evident from table 4 that the majority of the farmers thought "high call rate" as a great problem, consequently it ranked first. Most of the farmers have small farm size. As a result they did not earn enough money. So, the farmers thought that "lack of money" was another great problem for them and it was ranked 2nd position. As most of the farmers used Grameen Phone, they thought that "high call rate" for calling for other operators from Grameen Phone. Therefore they treated it as their 3rd problem. On the other hand, the farmers of the study area treated network problem as minor problem which was ranked tenth.

**Table 4: Problems faced by the farmers while using cell phone with rank order**

| SI. No. | Problems | Obtain score for eachproblem | Rank order | SI. No. | Problems | Obtain score for eachproblem | Rank order |
|---|---|---|---|---|---|---|---|
| 1. | High call rate | 203 | 1 | 6. | Repairing | 131 | 6 |
| 2. | Lack of money | 201 | 2 | 7. | High cost for repairing | 113 | 7 |
| 3. | High call rate for calling other operators | 181 | 3 | 8. | Cell phone operating problem | 75 | 8 |
| 4. | Lack of adequate Cell phone credit | 172 | 4 | 9. | Lack of electricity for charging Cell phone | 69 | 9 |
| 5. | Damage of Cell phone | 139 | 5 | 10. | Network problem | 32 | 10 |

**Relationship between the Selected Characteristics of the Cell Phone User Farmers and their Use of Cell phone in receiving Agricultural Information**

The study revealed that there was significant and positive relation of literacy, Aspiration, agricultural knowledge, self-confidence and cosmopoliteness with the use of cell phone in the study area at 1 percent level of probability. Literate farmers know better about the importance of using cell phone than the illiterate farmers and with the increase of Cosmo politeness of the farmers, the use of cell phone by them was also increased. The farmers with higher agricultural knowledge might be so aware of gathering much information using cell phone. Islam (1995) in his study also observed that agricultural knowledge of the farmers had positive and highly significant relationship with their use of communication media. The farmers having high aspiration, they could be gathered agricultural information from the sub assistant agricultural officer through using cell phone and the in the study area. However it was also revealed that self-confidence greatly affected the cell phone use in the study area. On the other hand, the correlation coefficient between annual income and attitude towards technology with the use of cell phone was greater than the tabulated value at 5 percent level of probability. So, the concerned null hypothesis was rejected. Based on the computed "r" value the relationship between annual income and attitude towards technology with the use of cell phone was significant and followed a positive trend. However, Farm size had no significant relationship with the use of cell phone. Thus, farm size and the use of cell phone remain unrelated. The relationship between organizational participation and use of cell phone was negatively significant and it was concluded that organizational participation of the farmers did not play significant role on their extent use of cell phone. Moreover, the relationship between the age was significant and showed a negative trend with the use of cell phone. It means that the increase of age of the farmers, their use of cell phone was decreased which resembled the findings of Sarker (1995) who concluded that age of the farmers had negative and insignificant effect on the use of communication media.

**Table 5: Relationship between the selected characteristics of the cell phone user farmers and their use of cell phone in receiving agricultural information (N=75)**

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

** Correlation is significant at 1% level of probability (table value=0.300 with 74 df)

* Correlation is significant at 5% level of probability (table value=0.230 with 74 df)

## 4. CONCLUSIONS AND RECOMMENDATIONS:

Among the farmers, more than half ( 54 percent) of them had medium use of cell phone while the rest 15 percent and 31 percent of them had low and high use of cell phone respectively. Thus it revealed that use of cell phone by the farmers is still confined to communicate with their family members and relatives other than receiving agricultural information from the Sub Assistant Agricultural Officer (SAAO).Farmers of the study area faced 10 selected problems while they were using cell phone. Among these problems, the majority of the farmers thought "High call rate" as a great problem, consequently it was ranked first. It revealed the grave scenario of mobile operators' high charge of cell phone use. The selected ten characteristics of the farmers constituted the independent variables of the study. There was one dependent variable namely the use of cell phone by the farmers in receiving agricultural information from the sub assistant agricultural officer. Among ten characteristics of the farmer's literacy level, annual income, cosmopoliteness, agricultural knowledge, aspiration self- confidence and attitude towards technology showed significant and positive

relationships with their use of cell phone. But age of the farmers showed significant relationship with negative trend and the rest of the characteristics viz. farm size and organizational participation did not show any significant relationship with their use of cell phone. However to enhance the access with information through cell phone from the recommended as well as some other informants in the study area, the following Recommendations were made:

- More than half of the farmers (54 percent) had medium use of cell phone in receiving agricultural information. This was not a fully satisfactory feature. As a result, policy should be taken for increasing extent of use of cell phone through creating awareness and interest among the farmers.
- From the study, it was found that majority of the farmers thought "high call rate" as a great problem among ten selected problems while they were using cell phone. Therefore, mobile operators should take initiatives to keep a reasonable call rate especially in case of Grameen Phone operator.
- It should be recommended that cosmopoliteness of the farmers should be increased through proper motivational programmer.
- Cell phone can serve as a good source of information. It can play a vital role in fulfilling it information needs of the farmers. Therefore, the cell phone operators should provide a variety of agriculture related information on crop- cultivation; fertilizer use, plant diseases: fertilizer pesticide herbicides, seed variety availability; market prices; weather and important government policy decisions through SMS or voice message services at low call rate.
- As sub assistant agricultural officer and the key informants of agricultural information, should be trained for developing their capability to disseminate information to the farmers through use of cell phone along with other ways.

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