

Cellphone Use by the Farmers in Securing Need-based Information

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Abstract

The purpose of the study was to determine the extent of cellphone used by the farmers and to explore the relationship of farmers' characteristics with their cellphone use. Data were obtained from a random sample of 113 farm family heads in 3 selected villages of Raipur Union under Pirganj Upazila of Rangpur District. Data were collected during 12th November 2009 to 16th January 2010. Pre-tested interview schedule was used for collection of data. Appropriate scales were developed and used in order to measure the concerned variables. Correlation test was used to ascertain the relationships between each of the concerned variables and extent of use of cellphone by the farmers. Majority (79 percent) of the farmers had very low cellphone use while 18 percent of them had low cellphone use and only 1 percent had medium use. Only two percent of the farmers did not use any cellphone at all. Findings of the study indicated that, as a communication tool, farmers used cellphone nearly three times more in non-agriculture sector than that of agriculture sector. Farmers' characteristics such as education, family size, effective farm-size, commercialization, annual family income, social participation, extension contact and aspiration had significant positive relationship with the extent of use of cellphone by the farmers, while conservatism had significant negative relationship with their extent of cellphone use. However, considering the main focus of the study, it can be concluded that nearly cent percent (98 percent) of the farmers were using cellphone but their extent of using cellphone was very low to low.

Keywords: Cellphone, farmers, agriculture and non-agriculture sectors.

Introduction

In Bangladesh, adoption and diffusion of modern technologies are of great importance. Bangladesh is one of the most densely populated countries of the world where it constantly faces different problems like poverty, under employment, illiteracy, malnutrition and vulnerability to frequent natural disasters. In spite of these problems, sectors like industry, information technology and telecommunication are growing in a robust pace. In the era of Information Technology (IT) revolution worldwide, the importance of IT as a powerful tool for revolutionizing the farm technology transfer has been aptly recognized by the Government. Bangladesh has witnessed explosive growth in mobile phone over the

last few years. The total number of mobile phone active subscribers has reached 66.621 millions till November 2010 in Bangladesh (Anonymous, 2010).

The deficit of food production in the country is a great problem as the pressure of population is massive. Food production can be increased if the farmers are properly informed about the appropriate technologies and the farmers use those technologies. But, farmers' participation in market and transport management is so poor in the country because most of the time they are being forced to sell their products to local middlemen at dumped prices. This deprivation on part of the growers may greatly be reduced if they would have been

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empowered with information. Timely and unbiased agricultural marketing information through cellphone may help farmers to bargain with the middlemen for a fair price and gain profitable decisions in the short term.

Barman (2009) conducted a study on use of mobile phone by the farmers in receiving agricultural information from the input dealers. The study revealed that more than 54 percent of the farmers had medium use of mobile phone in receiving agricultural information only from the input dealers. But farmers may use cellphone to secure information from diverse sources in various ways. The farmers may communicate with the government officials with agricultural knowledge working in the rural areas. The farmers may find the cellphone to be quite helpful to get information about the prices

and sources of different fertilizers. They may also capture photographs of plant diseases and pests for sending these photographs to the local telecentres for solutions. Some of the farmers may also call the day labourers during the harvesting season. However, agricultural market price information collection and dissemination through mobiles in a developing country like Bangladesh may also help in securing need-based information by the farmers. Under this circumstance, in order to encourage and accelerate the modernization in farming sector, there is a great need to understand the present extent of cellphone use by the farmers. Keeping this in mind, the present investigation was conducted to determine the extent of cellphone use by the farmers in securing need-based information.

Methodology

The study was conducted in three purposively selected neighbouring villages namely Chandpur, Dhulgari and Kumargari in Raipur union of Pirganj upazila under Rangpur district. Thirty percent (30%) of the farm family heads from each of the three selected villages were randomly selected. Thus, a total of 113 farmers constituted the sample for the present study. A pre-tested structured interview schedule containing direct questions and some scales was prepared for collection of valid and reliable data. Data were collected during November 12, 2009 to January 16, 2010.

The dependent variable of the investigation was extent of use of cellphone by the farmers. The independent variables of the study were 10 selected characteristics of the farmers. These were age, education, family size, effective farm-size, commercialization, annual family income, social participation,

extension contact, aspiration and conservatism.

Use of cellphone by the farmers was measured on the basis of the extent of cellphone use on 16 selected cellphone contact items. Cellphone contact items were selected by consultation with extension experts and considering pre-test experiences. Among these sixteen items, twelve (12) items were selected giving emphasis on agricultural activities and the rest four (4) items were selected considering non-agricultural activities. The extent of use of cellphone was determined by measuring the total extent of use of cellphone involving sixteen (16) cellphone using contact items considering only cellphone call and text messages. A six-point rating scale was used for computing extent of cellphone use by the farmers. The scores of 0, 1, 2, 3, 4 and 5 were assigned for no cellphone use (not even once per year), very low cellphone use (1-25 times per year),

low cellphone use (26-50 times per year), medium cellphone use (51-75 times per year), high cellphone use (76-100 times per year) and very high cellphone use (more than 100 times per year), respectively. The scores obtained by a farmer on each of the sixteen (16) items were added together to determine

his score on extent of cellphone use. Thus, the possible scores on extent of cellphone use by the farmers could range from 0 to 80, where 0 indicated no use of cellphone and 80 indicated very high use of cellphone by a respondent.

Findings and Discussion

Item-wise extent of cellphone use by the farmers

The extent of use of cellphone by the farmers involving 16 cellphone contact items was

explained in terms of index. For this, Cellphone Use Index regarding each item was determined by using the following formula:

$$\text{CUI} = \text{Cvh} \times 5 + \text{Ch} \times 4 + \text{Cm} \times 3 + \text{Cl} \times 2 + \text{Cvl} \times 1 + \text{Cn} \times 0$$

Where,

CUI = Cellphone Use Index of an individual contact item

Cvh = Number of farmers with very high cellphone use

Ch = Number of farmers with high cellphone use

Cm = Number of farmers with medium cellphone use

Cl = Number of farmers with low cellphone use

Cvl = Number of farmers with very low cellphone use

Cn = Number of farmers with no cellphone use

As the total number of the farmers was 113, the CUI of each of the contact items thus could range from 0 to 565. But, to express the Cellphone Use Index (CUI) in a meaningful way, it was necessary to convert and standardize the Cellphone Use Index (CUI) by using the formula in the following manner.

$$\text{Standard Cellphone Use Index (SCUI)} = \frac{\text{Computed CUI}}{\text{Possible Highest CUI}} \times 100$$

The SCUI of each of the contact items could range from 0 to 100, where zero (0) indicated no cellphone use at all and 100 indicated very high use of cellphone by the farmers. However, extent of use of cellphone by the farmers has been shown in Table 1 based on SCUI for each cellphone contact item regarding agriculture and non-agriculture sectors.

In Table 1, based on SCUI, among 12 agricultural cellphone contact items “contact with Sub-Assistant Agriculture Officer (SAAO)” was identified as the most important cellphone contact item. Among four non-agricultural cellphone contact items “contact with relatives, friends and others” was identified as the most important contact item.

Comparative extent of use of cellphone by the farmers regarding agriculture and non-agriculture sector

A comparison was made among two broad aspects of cellphone use i.e. agriculture and non-agriculture sectors based on Average

Standardized Cellphone Use Index (ASCUI). The ASCUI for each of the broad aspects was determined by the following formula:

$$ASCUI = \frac{\sum SCUI}{N}$$

Table 1 Extent of use of cellphone by the farmers regarding agriculture and non-agriculture sectors

| Cellphone contact items | Nature of response | | | | | | CUI | SCUI |
|--|--------------------|----------|------------|---------|--------------|--------|-----|-------|
| | Very high use | High use | Medium use | Low use | Very low use | No use | | |
| Agriculture sector | | | | | | | | |
| Contact with Sub-Assistant Agriculture Officer (SAAO) | 1 | 0 | 0 | 21 | 34 | 57 | 81 | 14.33 |
| Contact with businessman for market information | 0 | 0 | 0 | 22 | 36 | 55 | 80 | 14.15 |
| Contact with fertilizer dealer | 0 | 0 | 0 | 5 | 41 | 67 | 51 | 9.02 |
| Contact with progressive farmers | 0 | 1 | 1 | 2 | 32 | 77 | 43 | 7.61 |
| Contact with insecticide dealer | 0 | 0 | 1 | 0 | 37 | 75 | 40 | 7.07 |
| Contact for transportation of agricultural produce | 0 | 0 | 0 | 3 | 32 | 78 | 38 | 6.72 |
| Contact with seed dealer | 0 | 0 | 0 | 0 | 34 | 79 | 34 | 6.01 |
| Contact with land owner or tenant farmer | 0 | 0 | 0 | 2 | 25 | 86 | 29 | 5.13 |
| Contact with NGO workers | 0 | 0 | 0 | 2 | 22 | 89 | 26 | 4.60 |
| Contact with Assistant Agricultural Extension Officer (AAEO) or Agricultural Extension Officer (AEO) | 0 | 0 | 0 | 3 | 11 | 99 | 17 | 3.00 |
| Contact with Additional Agriculture Officer (AAO) or Upazila Agriculture Officer (UAO) | 0 | 0 | 0 | 2 | 10 | 101 | 14 | 2.47 |
| Contact with agro-processing industries | 0 | 0 | 0 | 0 | 9 | 104 | 9 | 1.59 |
| Non-agriculture sector | | | | | | | | |
| Contact with relatives, friends and others | 10 | 14 | 22 | 39 | 24 | 4 | 274 | 48.49 |
| Contact with ward member or union council chairman of the village | 1 | 1 | 1 | 5 | 38 | 67 | 60 | 10.61 |
| Contact with educational institutions | 0 | 1 | 3 | 7 | 15 | 87 | 42 | 7.43 |
| Contact with social welfare organizations | 0 | 1 | 1 | 5 | 10 | 96 | 27 | 4.77 |

Where,

ASCUI = Average Standardized Cellphone Use Index

\sum SCUI = Total standardized cellphone use index obtained from the items of particular cellphone use aspect

N = Number of items of particular cellphone use aspect

Table 2 Comparative use of cellphone regarding agriculture and non-agriculture sector

| Broad aspects of cellphone use | \sum SCUI | Number of items (N) | ASCUI |
|--|-------------|---------------------|-------|
| Cellphone use in agriculture sector | 81.7 | 12 | 6.80 |
| Cellphone use in Non- agriculture sector | 71.3 | 4 | 17.82 |

Data presented in Table 2 revealed that, extent of cellphone use by the farmers in agriculture sector and non-agriculture sector as indicated by ASCUI were 6.80 and 17.82, respectively. Hence, it was clearly observed that farmers used cellphone nearly three times more in non-agriculture sector than that of agricultural sector.

Overall extent of use of cellphone by the farmers

The extent of use of cellphone by the farmers ranged from 0 to 33 against the possible score-range of 0 to 80. The mean score for extent of cellphone use by the farmers was 7.65 with the standard deviation of 6.83 and co-efficient of variation of 89.28 percent. Considering the nature of data, farmers were classified into four categories based on their extent of cellphone use as no use (0), very low use (up to 13), low use (14 to 26) and medium use (above 26). It should be mentioned that no farmer had enough cellphone using score to distribute them as high cellphone user group. Distribution of the farmers according to afore-mentioned categories has been presented in Table 3.

Table 3 Overall extent of use of cellphone by the farmers

| Categories of farmers according to extent of use (scores) | Farmers | | Mean | SD | CV (%) |
|---|---------|---------|------|------|--------|
| | Number | Percent | | | |
| No use (0) | 3 | 2 | 7.65 | 6.83 | 89.28 |
| Very low use (up to 13) | 89 | 79 | | | |
| Low use (14-26) | 20 | 18 | | | |
| Medium use (>26) | 1 | 1 | | | |

Data contained in Table 3 revealed that, the highest proportion (79 percent) of the farmers had very low cellphone use, while 18 percent of the farmers had low cellphone use and only 1 percent had medium use. Two percent of the farmers did not use any cellphone at all. However, data also revealed that nearly cent percent (98 percent) of the farmers were cellphone user but their extent of use of cellphone for securing need-based information was very low to low. Only one farmer was categorized in medium cellphone use group recognizing that individual as 1

percent. Thus, findings indicated that in a rural setting of the study area, farmers were using cellphone but the frequency of using cellphone was very low. This provides a very gloomy situation as far as the overall extent of cellphone use by the farmers is concerned.

Relationship between selected characteristics of the farmers and their extent of cellphone use

The summary of the correlation test between selected characteristics of the farmers and their extent of cellphone use has been shown

in Table 4. Out of farmers' ten selected characteristics education, family size, effective farm-size, commercialization, annual family income, social participation, extension contact and aspiration were positively correlated with extent of cellphone use by them. On the other hand, conservatism was negatively correlated with cellphone use by the farmers. But only one variable i. e. age had no significant relationship with cellphone use.

Table 4 Correlation between farmers' selected characteristics and their extent of cellphone use (N=113)

| Independent variables (farmers' selected characteristics) | Computed 'r' values |
|--|---------------------|
| Age | 0.068 |
| Education | 0.530* |
| Family size | 0.387* |
| Effective farm-size | 0.606* |
| Commercialization | 0.508* |
| Annual family income | 0.724* |
| Social participation | 0.618* |
| Extension contact | 0.659* |
| Aspiration | 0.446* |
| Conservatism | -0.592* |

*Significant at 0.001 or above level of probability

Dependent variable: Extent of use of cellphone by the farmers.

An educated farmer generally becomes more conscious about using modern tools for communication purposes. More education made them aware of using cellphone for getting quickest information from others as well as to deliver necessary messages to others. Thus, education is positively correlated with use of cellphone by the farmers. This result was not beyond expectation as Chabosso *et al.* (2009) in their study found significant positive relationship between education, and mobile adoption and use. Barman (2009) in his study revealed that education of the farmers had significant

positive relationship with their use of mobile phone. Ofuoku *et al.* (2007) found that the educational attainment of the poultry farmers had significant relationships with adoption of mobile phones. Considering only the adult members of a farm family it is shown that a large family used cellphone more than a small family. A family with many adult members is generally involved with different persons, groups and organizations and they utilize cellphone as a communication channel to exchange urgent information quickly. This might be the probable reason of being positive correlation between family size and extent of cellphone use by the farmers.

Result revealed that effective farm-size was an important factor for using cellphone by the farmers. This result was not beyond expectation as Ofuoku *et al.* (2007) in a study found that the farm size of the poultry farmers had significant positive relationships with their adoption of mobile phone. Bhuiyan (1988) found in his study that farm size of the farmers had significant positive relationship with their use of communication media. High commercialization of agricultural crops had strongly significant and positive relationship with use of cellphone by the farmers. It also indicated that, cellphone is utilized by the farmers for marketing of agricultural crops and thus, they may get more benefit from cellphone. Again, high annual family income encourages one to use cellphone more than that of the farmers having lower annual family income. Thus, farmers having high annual income may use cellphone more times. Chabosso *et al.* (2009) in their study found significant positive relationship between income, and mobile adoption and use. A farmer highly involved in different social activities uses cellphone more because of maintaining his connectivity by linking with other persons. Similarly, extension contact motivates farmers to adopt new communication channel

to be linked with broader network of information. Thus, extension contact and social participation of the farmers were positively correlated with cellphone use by them. Strong will and aspiration help farmers to accept and use a new compatible technology relevant to communication of information like cellphone. This might be the

probable reason of obtaining significant positive correlation between aspiration and cellphone use. On the other hand, conservative farmers are opposed to desired technological changes and thus conservatism of the farmers was negatively significant with their cellphone use.

Conclusions

1. Findings of the study explored that 98 percent of the farmers were using cellphone. Therefore, it may be concluded that in rural setting cellphone has excellent acceptance by the farm people as a communication tool. In contrary, extent of using cellphone by them was very low to low. So, in order to gain informational empowerment regarding agriculture, it is essential to motivate farmers to use cellphone more for securing agricultural information from extension agents.
2. Findings of this study revealed that farmers used cellphone nearly three times more in non-agriculture sector than that of agriculture sector. Therefore, special motivational programmes need to be arranged by the DAE for motivating farm people to adopt cellphone emphasizing its use in agriculture sector.
3. Findings indicated that education had significant positive relationship while conservatism had significant negative relationship with the extent of cellphone use by the farmers. More education of the farm people is expected to minimize their conservatism as well as to increase cellphone use for informational empowerment by them. Government and non-government organizations need to arrange time bound informal educational programme for farmers.
4. Findings indicated that annual family income had significant positive relationship with cellphone use by the farmers. As majority of the farm families had low to medium family income, benefits of cellphone will not be available by them unless their annual family income is upgraded. Extension personnel need to initiate different income generating activities for the farm families in order to gain increased access and use of cellphone by them. Government should initiate necessary programmes to provide micro credit facilities to increase farmer subscribers of cellphone.
- 5.

References

- Anonymous. 2010. Mobile Phone Subscribers in Bangladesh. *Bangladesh Telecommunication Regulatory Commission*. Government of the People's Republic of Bangladesh. Available at: http://www.btrc.gov.bd/newsandevents/mobile_phone_subscribers/mobile_phone_subscribers_november_2010.php
- Barman, K. S. 2009. Use of Mobile Phone by the Farmers in Receiving Agricultural Information from the Input Dealers.

- M.S. (Ag.Ex.Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Bhuiyan, M.S.I. 1988. Use of Communication Media by the Farmers in the Adoption of Selected Improved Farm Practices in Rice Cultivation. *M.Sc. (Ag.Ex.Ed.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Chabosso, A., C. Sork and Z. Zohonogo. 2009. Mobile Telephony Access and Usage in Africa. 3rd Annual Conference on: *Information and Communication Technologies and Development: 2009 Proceedings*. 17-19 April, 2009. Carnegie Mellon University in Qatar. Education City, Doha, Qatar.
- Ofuoku, A.U., B.I. Isife and G.N. Emah. 2007. Adoption of Mobile Phone among Poultry Farmers in Delta State Nigeria. *Journal of Engineering and Applied Sciences*, 2(1): 10-16.