Effect of mobile phones on fisherman profit

Methods

Information through mobile phones reduce price dispersion, increase fishermen's profit and consumer's welfare and due to profit self-sustaining mobile phone companies provides information, at the same time fishermen willing to pay to providers because of their increased earnings (Jensen, R., 2007).

Akter J. C. (2008) empirically analyzed impact of cell phones on grain markets in Niger with the detailed information on mobile phone coverage from 2001 to 2006 and also collected information on grain market operation from 2005 to 2007. The dataset includes monthly grain price data from 1996-2006, after analysis Akter J. C (2008) found that introduction of mobile phones reduced price dispersion across grain market and improved consumer as well as trader welfare in Niger.

After evaluating the role of telecommunication within the context of Bangladesh rural development in general and poverty reduction Bayes A. (2001) concludes that mobile phone has positive effect on women empowerment and relatively poor mobile phone owner tends to raise their social status, pave the way for change in the social equilibrium.

Availability of mobile technology enables new mode of cooperation, using mobile phones in culturally enhancing and ecologically oriented ways improve the working and living condition of fishers community (Sreekumar, T. T., 2011).

Mobile phones requires basic literacy so that accessible to large segment of the population and advantages of mobile phone technology can be used for the purpose of health, education, commerce and Governance (Rashid A. T. and Elder, L., 2009).

Direct impact are less and greater use of mobile phone for social purposes and emergencies, rather than dedicated economic activity; mobile phone's impact on small enterprises, farmers, and the self-employed is not clear-cut (Souter et al., 2005; Donner, 2004 and 2008).

Gordon, J. (2007) used three critical situation (a) Chinese SARS outbreak (2003), (b) the south-east Asian tsunami (December 2004) and (c) the London bombings (July 2005) as case studied and explored the influence of mobile phones. After the analysis, author concludes that mobile phone technology amongst the public sphere helped ameliorate the effects of those situation by being providing information via voice or sms.

A socio-economic questionnaire was administrated in each household. The questionnaire included quantitative semi-open and closed (multi-choice) questions. The questionnaire was structured to collect detailed information on household income, general socio-economic background (number of family members, age, and education), productive assets, and livelihood strategies (on-farm and non-farm activities). Income referred to the household's income earned in cash plus payment in kind that could be valued at market prices. The cash earning components of income included crop and vegetable sales, petty trade, remittance and fish sales. Also, it was hypothesized that wealth would also influence the household income structure.

2. 1 Study area and Sample

Data for this paper were collected in first half of 2011 from a surveys in Sylhet and Hobiganj. The sample consist of 205 sardine fishing units, in which 121 data from Sylhet region and 84 data from Hobiganj region. For data collection purpose, randomly choose two villages of Sylhet region Mirzargaon and Uzanmiragaon from the local government village list. About 95% people of these villages are fishermen. In Sylhet region, 77 data obtained from Mirzargaon and 44 data obtained from Uzanmiragaon randomly. Following the same procedure, 84 data randomly obtained from two villages of Hobiganj; Chorgaon and Umednagar. Data obtained from both the fishermen who are mobile phone users and the fishermen who are not. The respondents were the head of the household. The sample characteristics are shown in Table-1 and Table-2.

Table 1: Sample Characteristics of the Fishermen

Variable	N (%) or mean (±S. D.)
Sample size	205
Study Area	
Mirzargaon	77 (37. 6 %)
Ujanmiragaon	44 (21. 5 %)
Chorgaon	41 (20. 0 %)

Umednagar	43 (21. 0 %)
Mobile Users	153 (74. 6 %)
Gender (Male)	205 (100 %)
Age (years)	36. 18 (±13. 67)
Primary Education	63 (30. 7 %)
Marital status	
Married	117 (57. 1 %)
Widowed/widower	1 (0. 5 %)
Single	87 (42. 4 %)
Number of person per household	7. 23 (±3. 22)

The questionnaire is also included with qualitative questions about their lifestyle that how they manage fishing, or they receive any microcredit or have to pay any usury, about their productivity, do they face any harassment or do mobile phone use can reduce their search cost and improve markets or they receive any health assistance through initializing mobile phone etc.

Table 2: Professional Characteristics of the Fishermen

Professional Related Question	Frequency	Percentage
Ownership of fishing zone		
Self	162	70. 02%
Other	43	20. 97%
How do you manage fishing?		
Self	82	40%
Other	123	60%
Type of Jal		
Normal	179	87. 31%
Current	26	12. 68%
Have you receive any microcredit?		
Yes	66	32. 19%
No	139	67. 80%
Do you pay any usury?		

| Yes | 58 | 26. 34% |
| No | 151 | 73. 65% |

2. 2 Econometric Tool

A major part of the paper relies on comparative study of different socio-economic aspects between these two groups of fishermen. We also have developed a probit model to show if there is any economic as well as person specific determinants providing incentives to use mobile phone.

A probit model (Bliss C. I., 1935) works well when the probabilistic dependent variable can take limited values. Probit model serves an appropriate framework for statistical analysis, avoids likelihood direct evaluation and thus avoids calculating choice probabilities associated problems (Daykin, A. R. and Moffatt, P. G., 2002; McCulloch, R. and Rossi, P. E., 1994).

A probit model is a popular specification for an ordinal or binary response model that employs a probit link function. This model most often uses standard maximum likelihood procedure, an estimation technique suitable for optimization. Suppose, the binary response variable Y can have only two possible outcomes: users of mobile phone = 1 and non-users = 0. We also have a vector of determinants X, which are assumed to influence the outcome Y. Specially, we assume that the model takes form

Pr (Y= 1| X) = Φ (X´β),

Where, Pr denotes probability and Φ is the Cumulative Distribution Function (CDF) of the standard normal distribution. The parameters β are typically

estimated by maximum likelihood. It is also possible to motivate the probit model as a latent variable model. Suppose there exists an auxiliary random variable Y* such that:

$$Y^* = X´\beta + \varepsilon,$$

Where $\varepsilon \sim N(0, 1)$. Then Y can be viewed as an indicator for whether this latent variable is positive:

$$Y = 1\{y^* > 0\} = \{1 \text{ if } Y^* > 0 \text{ i. e. } -\varepsilon < X´\beta, 0 \text{ otherwise.}\}$$

The binary response variable predicted by the model is the decision to use mobile phone. Research objective lies in searching a probable impact of mobile phone usage on income profile of fishermen households. The X vector thus include three major independent variables representing impact of mobile phone use on individual income: the change in fishing income (Fishych), the change in other income (Otherych) and the capability of selling all (almost all) of the last couple of catches (Sell all).

Fishing income is actually defined as fishing firm earnings in this study. It can also be viewed as fishing firm owner's income. Other income means the income earned by activities other than fishing which includes agricultural income, remittances, wage or salary, business profit, interest income etc. The change in the above two types of income is captured either by the difference between incomes earned before & after starting the use of mobile phone; or by the difference incomes earned current year & the previous year. We also used a dummy variable showing reception of microcredit. Because of the absence of any well-defined and generalized indicator of

household wealth status, we use the above dummy to identify if a household has the opportunity of easing its financial constraint. Age, education and marital status are also included as independent variables to show the impact of individual characteristics in determining the decision for using mobile phone.