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Fish farmer's access to information communication media: A gender based comparative study in a selected village of Bangladesh

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Abstract

This paper reports gender based comparative study of fish farmers' access to important Information Communication Media (ICM). The study was conducted in a selected village of a renowned fish producing district named Chandpur in Bangladesh. A structured interview schedule was used to interview 66 randomly selected fish farmers of which 33 were male and the rest 33 female. The findings of the study confirmed that male farmers have comparatively more access to radio, television, news paper and cell phone. Lamentably, farmers- irrespective of gender- had almost no access to computer and internet. Results of t test represented that male and female farmers differ significantly in terms of ownership and access to ICM where male farmers were placed in a better position. Correlation coefficient mirrored that among the eight selected variables family farm size, availability, and ownership of ICM had significant positive relationship with farmer's access to ICM. Stepwise multiple regressions revealed that family farm size and availability of ICM described 32.2% variation in farmers' access to ICM.

Keywords: Fish farmers, access, Information Communication Media (ICM), Bangladesh

1. Introduction

The fishery industry is vital to the world economy. Fish farming secures livelihood of millions of people around the world (Greenfacts, 2004) [10]. Fish serves as a rich source of easily digestible protein for human consumption. As a result, fish flesh is considered suitable and complementary in regions with high carbohydrate diets (FAO, 2005) [7].

In Bangladesh fish farming plays a crucial role to the total national income. The fisheries sector contributed to 4.4 percent of national gross domestic product (GDP) and 25 per cent of agricultural GDP in 2012 (Haq, 2014) [11]. Bangladesh is tackling poverty and hunger with fish farming for last few decades. In a personal interview with scidev.net, Ben Belton- a researcher of world fish- posited that "Aquaculture has the potential to contribute to poverty reduction and food security through a number of pathways, including employment, incomes and fish consumption." However, Bangladesh ranked fourth in fish farming in the world and placed after China, India and Myanmar (Mahmood, 2014) [14].

Agricultural productivity is influenced remarkably by agricultural information in various ways. It is well accepted that timely, reliable, and relevant information can contribute to improved production (Demiryurek *et al.*, 2008) [6]. Information and communication media are increasingly being used to deliver information on agricultural research and their potentials for enhancing economic development is becoming transparent with the passes of time (Uganneya, 2008) [25]. In many cases, information is often considered more valuable than monetary resources.

Production inequalities regarding male and female headed farms are evident in many parts of the world. An attempt has been made around the globe to assess whether female farmers are as productive as their male counterpart and explored that women typically achieve decrease yields than man. However, a good number of literatures confirmed that women are as efficient as man and women's low productivity is connected with access to inputs, productive resources and services (FAO, 2014) [8]. Actually, gender gap in farmer's access to productive resource limits agricultural output, food security, and economic growth. Promoting gender equality in farmers' access to agricultural resources especially information communication media is not only beneficial for women but also congenial for agricultural development.

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Realizing this fact, the present study was designed to compare the access of male and female farmers in ICM, in a selected village of Bangladesh. The specific objectives of the study were to:

1. Describe the socio economic and personal characteristics of the sample male and female farmers.
2. Explore the extent of the information need, availability and ownership of functional information and communication media.
3. Ascertain the level of accessibility of fish farmers to information and communication media.
4. Compare male and female farmers in terms of the degree of information need, access, availability, and ownership of communication media.

1.1 Conceptual framework

Rural women in Bangladesh play a pivotal role in improving the overall wellbeing of their households and communities by ensuring food and nutrition security, increasing income and improving rural livelihoods (WorldFish, 2012) [26]. Rural women have substantial participation in small-scale fish culture, in particular. In Barisal and Rajshahi, women catch fish and carry out drying, curing and marketing of fish as hawkers, stall keepers in permanent and weekly market places (Mou, 2010) [16]. Rural women are directly involved in activities like making fishing nets, gears, repair and maintenance of gears, sorting of fingerlings (especially in coastal areas), fish processing, transportation and marketing, etc. (Ahmed *et al.*, 2012) [1]. In their study on rural coastal women in Bangladesh, Rashid and Gao (2012) [19] identified three major aspects of women participation in fish sector as feed application, taking care, and catching fish.

The term “media” was found occasionally in the 1930s and 1940s and did not become popular until about the 1960’s (Halper, undated). Communication media refers to the means of delivering, storing, and receiving data or information (Techopedia, 2014) [24]. In other words, communications media refer to the channels or ways people communicate information to each other (Rischarls, undated). There are several forms of media communication. Communication can be performed through television, radio, and through the printed world. Internet also provides a popular option of media communication in the forms e-mail, news pages and social websites. Mobile phone on the other hand is more powerful compared to other media, with greater reach and is growing faster. Different from the legacy mass media, all of which are witnessing a decline in their audiences and revenues, mobile like the internet, is and interactive communication media enabling it to fully capitalized on social networking and digital communication (Good, 2007) [9].

Likewise men’s, women farmer’s information channels are shaped by social networks. Unfortunately, women’s networks are often confined than men’s and have limited opportunities for learning about a new productive and commercial opportunity (Sebstad & Manfre, 2011) [21]. Although, using ICTs (Information Communication Technologies) to reach female could improve farming practices and reduce gender gaps in terms of yield and productivity if they are designed and

used considering gender-specific constraints (Manfre & Nordehn, 2013) [15]. Paying necessary attention to the inequality of male and female farmers’ access to information may provide insights into how ICM (Information Communication Media) can be used to deliver appropriate agricultural messages.

2. Methodology

This study was conducted in a selected village of Chandpur sadar Upazila. The name of the selected village is Gobindia under 13 number Hanarchar union. Chandpur- an east central district of Bangladesh- is renowned for the presence of a large number of ponds, canals, and floodplains. In addition, its presence in the vicinity of the areas of two major river estuary declares the significant in total fish culture and captures in the country (Pravakar *et al.*, 2013) [18]. According to Chandpur Sadar Upazila Fishery Office, there are 41 fishing villages in Chandpur Sadar Upazila and the total number fisherman is 13,751.

To fulfill the purpose of the study 66 respondents 33 male and 33 female farmers were randomly selected from a total of 330 farmers. Primary data were collected using structured schedule from October 25 to 30, 2014. The independent variables of the study were age, education, gender, total income, income from fish sector, family farm size, degree of information need, availability of ICM, and ownership of selected ICM. All the independent variables of the study were measured using appropriate scales. However, the dependent variable of this study- access to information communication media- was measured based on a four point continuum namely- frequent=3, often=2, rarely=1, and never=0. To compare male and female farmers in terms of the degree of information need, availability of ICM, ownership of ICM and access to ICM, t-test was administered. Correlation analysis was executed to see the association between independent and dependent variables. Finally, stepwise multiple regression was employed to see the contribution of independent variables on farmer’s access to information and communication media. All the analyses were done using SPSS 16.0.

3. Results and findings

The descriptive statistics of the respondents of this study are presented in the following table (Table 1). Basic statistical concepts like mean, standard deviation, median, mode, minimum and maximum are used to describe the selected variables of this study. Among the total 66 respondents, 8 farmers conduct fish farming with commercial motive while 5 farmers conducted fish farming for family consumption and the rest 53 farmers considered both of the mentioned purposes. Data presented in the third column of Table 1 indicated that the respondents had moderate information need and the majority of them own two ICM. In addition, the same table further showed that the average value of availability and farmer’s access to communication media is 9.87 and 7.72 respectively. It is also found from the last two columns that the minimum and maximum value of farmer’s access to ICM was 0 to 14. However, a complete detail of the remaining variables of this study can be observed from Table 1.

Table 1: Descriptive statistics of some selected characteristics of fish farmers (N=66)

Variable	Scoring method	Mean	Std.	Med.	Mod.	Min.	Max.
Age	Year	40.63	12.98	40	40	21	72
Education	Year of schooling	8.03	2.99	8	10	1	17
Total income	Thousand TK*/year	90.73	59.59	70	60	9.20	250
Income from fish sector	Thousand TK/year	46.43	43.85	32.50	30	1	199
Family farm size	Hectare	0.60	0.47	0.52	0.24	0.10	2.83
Farming experience	Year	10.40	8.57	8	5	2	40
Degree of information need	Score	12.96	4.45	13	12	4	22
Availability of ICM	Score	9.87	3.29	10	8	1	18
Ownership of ICM	Score '1' for each media	2.00	0.822	2	2	0	4
Access to ICM	Score	7.72	2.67	8	6	0	14

Note: *1 USD= 78 TK (Approximately)

Source: Field survey, 2014

The degree of information need was determined on a four point continuum- frequent, often, rarely and never- against nine selected aspects. Table 2 represents that despite little dissimilarities both male and female farmers have similar kind of information need. Based on average score, top aspects of information need were: type and amount of feed necessary to apply; fish pest and disease control; fish collection method and harvesting time; and selecting appropriate fish varieties; etc.

Table 2: Degree of information need of fish farmers (Male=33, Female=33)

Sl. No	Aspect	Weighted mean*	
		Female	Male
1	Pond selection and preparation	1.12	0.87
2	Selecting appropriate fish variety	1.42	1.48
3	Fish fry collection and transportation	1.36	1.51
4	Water and pond management	1.12	1.36
5	Fish pest and disease control	1.66	1.63
6	Type and amount of fish feed need to apply	2.54	2.54
7	Fish collection method and harvesting time	1.48	1.54
8	Fish preservation and marketing	1.30	1.60
9	Weather information	0.69	0.96

Note: *Mean score for each aspect= (frequentX3+oftenX2+rarelyX1+neverX0) ÷33

Source: Field survey, 2014

Table 3 shows the ownership of different information communication media by male female farmers. The Table explores that almost all the female farmers (30) owned mobile phone while other owned media were television (20), radio (7), newspaper (1) and internet (1). For male farmers, the ownership of media can be ranked as mobile phone (32), television (19), radio (13), newspaper (7) and internet (1). Hopelessly, almost none of the respondent either male or female own computer.

Table 3: Ownership of Information Communication Media (ICM)

Type of media	Female		Male	
	Yes	No	Yes	No
Radio	7	26	13	20
Television	20	13	19	14
News paper	1	3	7	26
Mobile phone	30	3	32	1
Computer	0	33	0	33
Internet	1	32	1	32

Source: Field survey, 2014

Mean score/weighted mean regarding availability of ICM is presented in Table 4. It can be noted that the availability of ICM was measured based on a five point (Highly available=4, available=3, moderately available=2, hardly available=1, unavailable=0) scale against six selected ICM. The findings in Table 4 represent that for both male and female farmers the most available media were cell phone and television. However, other two available media for female farmers were radio and newspaper where as, for male farmers other available media were newspaper and radio. Lamentably, irrespective of gender computer and internet was almost unavailable.

Table 4: Availability of ICM

Media	Average score	
	Female (N=33)	Male (N=33)
Radio	1.87	1.78
Television	2.75	2.51
News paper	1.78	1.87
Cell phone	3.48	3.96
Computer	0.30	0.09
Internet	0.15	0.09

Source: Field survey, 2014

The respondent's frequency of accessibility to selected information and communication media is presented in Table 5. Data in the table indicate that except computer and internet, male farmers had comparatively more access to the selected media compared to female farmers.

Table 5: Distribution of farmers based on access to information communication media.

Name of Media	Gender	Degree of access			
		Frequent ^a	Often ^b	Rarely ^c	Never ^d
Radio	Male	8	9	0	16
	Female	8	0	4	21
Television	Male	19	8	3	3
	Female	15	4	5	9
News paper	Male	11	7	8	7
	Female	11	4	5	13
Cell phone	Male	32	1	0	0
	Female	29	2	0	2
Computer	Male	0	1	0	32
	Female	0	0	1	32
Internet	Male	0	0	1	32
	Female	1	1	0	31

Note: ^a3-4 times/week, ^b2-3 times/15 days, ^c Once/month, ^d Don't use in last 6 months,

Source: Field survey, 2014

3.1 Comparison of male and female farmers based on some selected variables

In Table 6 comparisons of male and female farmers were done based on the degree of information need, availability of ICM, ownership of ICM and access to ICM. Data presented in the table revealed that a significant gap exists between male and

female farmers in terms of access and ownership of ICM. Male farmers are found to be in a better position compared to female farmers. It is important to note that there is no gender biased difference in the degree of information need and availability of ICM.

Table 6: Comparison of male and female farmers based on some selected ICM issues. (Male=33, Female=33)

Variables	Gender	Mean	Std.	t-value	ρ
Degree of information need	Male	13.09	3.84	0.246	0.807
	Female	12.84	5.05		
Availability of ICM	Male	10.03	3.03	0.350	0.729
	Female	9.72	3.58		
Ownership of ICM	Male	2.21	0.960	2.51	0.017
	Female	1.78	0.60		
Access to ICM	Male	8.42	2.47	2.34	0.026
	Female	7.03	2.72		

Source: Field survey, 2014

3.2 Determinants of farmer access to ICM

To reveal the determinants of farmer access to ICM, correlation test was administered. According to the results presented in Table 8, among the selected eight independent

variables farm size, availability of ICM and ownership of ICM had positive significant relationship with farmer's access to ICM.

Table 7: Correlation estimates of independent variables with farmer's access to ICM (N=66)

Independent variable	Dependent variable (access to information)
Age	0.161 ^{NS}
Education	0.014
Total income	0.138
Farm size	0.262*
Farming experience	0.172
Degree of information search	0.211
Availability of ICM	0.535**
Ownership of ICM	0.440**

Note: *= Significance at 5% level of probability, **= Significance at 1% level of probability, NS= Non-significant

To see the proportion of the contribution of the selected variables, all the correlated variables along with gender were entered in regression equation following stepwise method. The results presented in Table 8 indicate that farmer's access to ICM is the function of availability of ICM (0.524, $\rho=0.000$) and gender (-0.238, $\rho=0.023$). The estimates further revealed that the availability of ICM had the strongest contribution

(28.6%) to the variance of farmer's access to ICM. Gender, on the other hand, showed 5.7% variation in farmer's access to ICM in negative direction i.e. access to ICM decrease if the farmer is female. However, availability of ICM and gender jointly create 32.2% variance in farmer's access to information and communication media.

Table 8: Predicting farmer's access to information and communication media (N=66)

Variables	R ²	A. R ²	R ² Chg.	β	SE	t	ρ	F Chg.	ρ
Availability of ICM	0.286	0.275	0.286	0.524	0.083	5.12	0.000	25.67	0.000
Gender	0.343	0.322	0.057	-0.238	0.543	-2.33	0.023	5.43	0.023

3.3 Discussion

Data on the degree of information need (Table 2) represents that male and female farmers had almost equal level of information need. This finding helps us to grasp the recent changes in fish farming in Bangladesh in terms of gender role. Actually, women are playing an increasing role in fish sector of Bangladesh. Supporting our findings, a book describing women involvement with fish farming in Trishal Upazila of Mymensing district depicted that women involvement in fish farming has increased fish production. Based on qualitative and quantitative findings, the same study further revealed that

women were involved in various activities of fish farming such as pond preparation, pre-stocking management and fry stocking, feed and fertilizer application, fish harvesting and marketing, etc.(Shirajee, 2011) [23]. Ownership of different information communication media represents that ownership of newspaper and radio was the lowest while ownership of television and mobile phone showed highest level of ownership. In recent years, a tremendous change has been taken place in the ownership of television sets in Bangladesh. According to Zia (2007), satellite television in Bangladesh is no longer restricted to

upper-middle class only, with the availability of low priced television and cable connections, it has become a common household facilities for the lower class people also. National Media Survey in 2002 revealed that television is the most important media in Bangladesh. The viewership of TV is experiencing a steady increase while radio listeners are showing a declining trend.

Bangladesh is a developing country where mobile phone comes in 90s. In recent times, especially, in last five years the user of mobile phone is booming very rapidly due to low cost of mobile phone set and reasonable call rate. Latest statistics of BTRC (Bangladesh Telecommunication Regulatory Commission), the number of active mobile phone subscribers is 79.67 million until the end of August, 2011. Agreed to our findings, a study on ICTs for agriculture in the Indian Himalayan region revealed that 80% of the households owned at least one prepaid mobile phone connection. It was also explored that most households own television, and radio is rarely used in the study area (Kameswari *et al*, 2011) [13].

The findings of this study represents that rural respondents had almost no use of computer and internet service, although they are considered as the most important modern communication media. According to the information provided by Bangladesh Bureau of Statistics (2005), only 0.17 percent rural households own computer and none of them use e-mail service for communication. Actually, computer is still expensive in Bangladesh as majority of the people have lower level of earnings. Nonetheless, using computer required frequent electricity supply, higher level of skill and increased availability of service centers. As all most all of these factors are absent in majority of the rural areas in Bangladesh, so usage of computer is heavily restricted in rural areas. Similarly, internet service in Bangladesh and its potential is largely underutilized. The reason encompasses high service charges, lack of awareness, poor telecommunication systems, government policy, low buying power of potential clients, and lack of institutional support (Azad & Islam, undated). Although, in May 2013 Bangladesh has become one of the worlds' top 12 countries with 100 million cell phone users, but only 25 percent mobile users have access to internet service (Chawdhury, 2013 [5]; Sharif, 2012) [12]. In fact, majority of the rural people use ordinary phone rather than a smart phone. So, their access to internet service is very limited.

3.4 Problems in accessing ICM and probable solutions

Problems of farmer access to ICM and probable solution was measured using open questions in the interview schedule. According to the respondents, irrespective of gender, absence of electric connection and frequently interrupted electricity supply was the major cause hindering access to information communication media. Lack of economic ability to purchase media like television, computer, internet, etc. ranked second to impede access. Handicapped skill in using modern media like computer and internet was another predominant cause limiting access. Unavailability of media like news paper, internet was also a big issue. Poor communication infrastructure, especially road transportation was another crucial problem restricting access to information media. Some other minor problems limiting access to information media were high call rate and poor cell phone network, social and religious superstition, illiteracy, unavailability of private channels and fish related programs, and scarcity of fish related printed media, etc. The respondents of study come up with several suggestions for enhancing fish farmers' access to information communication

media. Providing electric connections along with uninterrupted supply is the most essential requirement. Giving economic assistance from government and NGOs for purchasing media is also important. Training for improving skill in using communication media like computer, internet, mobile phone, etc. is necessary. Development of communication infrastructure particularly road communication with nearby town and city is also important. Computer based information center in rural area can also improve access to modern information communication media like computer, internet, etc. Other proposed measures can enhance access to ICM are increasing number of private channels, awareness building for driving religious and social superstition away, and making internet connection available in rural areas, etc.

4. Conclusions

Impartial access to information communication media is very crucial for both male and female farmers. This study attempts to make a gender biased comparative study on farmers access to information communication media. Based on t test output, this study established the fact that male and female farmers differ significantly in terms of access and ownership of ICM and male farmers laid in better position compared to female farmers. Correlation findings represented that among the eight selected variables farm size, availability of ICM and ownership of ICM had positive significant relationship with farmer's access to ICM. Stepwise multiple regressions showed that availability of ICM had the strongest contribution (28.6%) on the variance of farmer's access to ICM followed by gender (5.7%). According to the perception of the clients, more electric connection accompanied by uninterrupted electricity supply, economic assistance for purchasing communication media, and farmer's skill development in handling modern media like mobile, computer, internet, etc., can facilitate farmer's access to ICM.

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