INFORMATION SOURCE PREFERENCE OF FARMERS REGARDING MODERN AQUACULTURE TECHNOLOGIES IN BOGRA DISTRICT OF BANGLADESH

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A B S T R A C T

Bangladesh economy is relying on aquaculture for its export earnings and as a whole fisheries sector is performing very well to mitigate the crisis of dietary need of protein as one of the best animal sources. Main objective of present study was to bring out the extent of use of different information sources by the fish farmers. The study was conducted in Kahaloo and Sherpur upazilas of Bogra district. Respondent were entirely fish farmers selected by using simple random sampling technique. Quantitative data were collected using predesigned interview schedule and SPSS 16 software was used to analyze the collected data. Majority of the respondents (70%) was found as low to medium user of information sources. On the basis of utilization of information sources, mass media ranked first. Socio-demographic characteristics namely education, fish farming area, annual family income, social participation and innovativeness had positive and significant relationship with use of information sources except age of the respondents. Among all socio-demographic characteristics, education contributed 59.00%, age contributed 6.70% and social participation contributed 2.70 to the explained variance of 68.40%. Therefore educational background of a farmer may play a vital role to change the present scenario of farmers' preference about information sources. On the other hand there is rampant scope to improve the present condition of farmer's information management through extension workers, field supervisors and fisheries officer of GOs and NGOs as well.

Keywords: Aquaculture, Information, Technologies

INTRODUCTION

Among all other sectors, Agriculture, Forestry and Fisheries occupied 18.70%t GDP share of total Bangladesh economy, in which the fisheries sector independently contributed 4.37% of national GDP, due to this it is considered not only an agricultural country but also country of Fisheries as well (BBS, 2013). Besides projected demand (4.79 MT) for fish in Bangladesh is higher than the projected supply (3.79 MT) in the year of 2015 (Karim *et al.*, 2010). This is because it was forecasted about future scarcity of fish and fishery products in the beautiful deltaic area of the world. On the other hand, Aquaculture dominates the production of fish because of different manmade

disturbance in the natural sources of fish. To make improved Fisheries sector there is no alternative way to mitigate the current fish crisis to fulfill the dietary protein demand in this country. As far as we know yearly availability of fish in developing countries is 16 kg per person per annum compared to world average of 18 kg per capita (FAO, 2012). During 2003-2009, the export earning of fish and fishery product are gradually reduced from 57.10 to 30.00 million BDT in this country (BBS, 2010). Highlighted scenario indicates that the supply of fish in domestic markets and export earning is decreasing. In that case, only production of culture fisheries can be increased than capture fisheries because of management hurdle in open water resources and other anthropogenic pollution occurrences. That is why, production of open water bodies showed decreasing trend and availability of some species have greatly

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reduced but still there is a rampant scope to increase the fish production level by using modern aquaculture technologies i.e "acclimatization of fish fry", "poly culture of carp", "pond preparation with lime", "use of TSP", "use of Urea", "culture of Thai pangus", "culture of monosex tilapia", "culture of Thai koi". Since technology transfer is fully dependent on information source to enhance the production of fish. Therefore it is necessary to know about the present situation about use of information sources by the fish farmers. By considering above all this, the present study was conducted to i) bring out the extent of use different information sources by the fish farmers, ii) ascertain about the relationships between the farmer's socio-demographic characteristics and use of information sources by them, ii) asses the contributing factors regarding use of information sources by the fish farmers.

METHODOLOGY

Among 12 upazilas of Bogra District, Kahaloo and Sherpur were considered as study area. Kahaloo upazilla is situated at the western corner of Bogra district and very familiar about aquaculture practices, on the other hand Sherpur is also a upazila having enormous aquaculture activities to the south of Bogra. In order to take interview of fish growers, a list of farmersof study area was prepared with the help of the Upazila Fisheries Officers (UFO) from Kahaloo and Sherpur. Finally prepared list consisted of 366 farmers' name. Only heads of these 366 fish farmers constituted the population. From the population, 110 farmers were taken by using simple random sampling technique. Resultantly 110 fish farmers constituted the sample of this study. In order to collect valid and reliable information from the farmers

an interview schedule was developed considering the objectives of the study. Six selected characteristics namely age, education, fish farming area, annual family income, social participation and innovativeness of the respondents were the independent variables where use of information sources was the dependent variable measured as like as method of Muttaleb (2006).The dependent variable was categorized on the basis of range and ranked by following the procedure of Muttaleb (2006) and computation of index score as well. Index for each information source calculated by using the following formula:

Index = Pl x 1 + Pm x 2 + Ph x 3

Where, Pl = %age of respondents having low information utilization, Pm = %age of respondents having medium information utilization, Ph= %age of respondents having high information utilization; On the other hand correlation analysis was done to visualize the relationship between the farmer's socio-demographic characteristics and use of information sources by them. Moreover regression analysis has been employed to ascertain the important contributing socio-demographic factors regarding use of information sources by fish growers.

RESULTS AND DISCUSSION

Overall mean knowledge on Aquaculture practices: Overwhelming majority of the respondents (70%) fell in low to medium user category. On the other hand only 30 % of the respondents belonged to high user category. Saha and Devi (2014) observed similar consequence. They found that 86.25 % respondents used information sources at low to medium extent.

Table 1. Distribution of the respondents according to their level of utilization of information sources.

Overall utilization	User categories (scores)	Respondents		Mean	SD
		Number	%		
Information sources	Low (upto5.33)	41	37.3	6.24	1.80
	Medium (5.33-7.66)	36	32.7		
	High (above7.66)	33	30.0		
	Total	110	100.00		

On the other hand, Gedam and Padaria (2014) brought out that 85 % respondents needed medium to high level of information on orange cultivation in Maharastra, India. Above scenario depicts that more information circulation is needed through mass media and other vital communication channels as well. This study reveals that most of the respondents were deprived to use all the

information sources to attain knowledge on modern aquaculture technologies in order to rampant improvement of present situation of aquaculture practices. This awkward situation Taken place due to lack of aquaculture relevant programs on TV and Radio, though these shorts of communication channels were used frequently in the study area.

Table 2. Distribution of the respondents regarding utilization of information sources and ranking among the different information sources.

Information sources	User categories (scores)	Respondents		Index	Rank
		No.	%		
Mass media (Radio, Television, Educational film, Newspaper, Poster, Booklet, Leaflet, Agricultural magazines/ books)	Low (<1)	9	3		I
	Medium (1-2)	84	8	241	
	High (>2)	17	74		
Group contact (Result demonstration, Farmer's training, Field days, Agricultural fair)	Low (<1)	11	10.0		II
	Medium (1-2)	46	41.8	238.2	
	High (>2)	53	48.2		
Personal cosmopolite (Fisheries officers, Other department officers, Field workers, Pesticide dealers, Fertilizer dealers, NGO workers)	Low (<1)	64	58.2		IV
	Medium (1-2)	40	36.4	147.5	
	High (>2)	6	5.5		
Personal locate (Family members, Relatives, Friends and neighbors, Progressive farmers)	Low (<1)	29	26.4		III
	Medium (1-2)	52	47.3	200.2	
	High (>2)	29	26.4		

Preference of different information sources: Almost three fourths of the respondents (74%) belonged to high category in case of mass media utilization. On the other hand majority of the respondents (90%) had fallen medium to high category regarding group contact. The %age of the respondents who preferred medium to low utilization of personal cosmopolite sources was 94.5. Most of the respondents (73.6%) fall medium to high category about preference to use of personal locate information sources. Among all information sources mass media ranked first on the basis of index score followed by group contact, personal locate and personal cosmopolite. Table 2 indicates that most of the farmers have not maintained close contact with their neighbors, GOs and NGOs field workers.

Relationship between the selected characteristics of the respondents and their knowledge on aquaculture practices: Socio-demographic characteristics namely education, fish farming area, annual family income, social participation and innovativeness had positive and significant relationship with use of information sources except age of respondents. This finding has concordance with the study of Saha and Devi (2014). Dhaka and Chayal (2010) found positive and significant relationship between respondents' use of ICT and their innovativeness, education which is similar to this result. Table 3 evinces that educated farmers have the tendency to procure the latest technology from the mass media and other efficient information sources. Further, large farmers are more interested to engage themselves with the fruitful information sources. Moreover in case of rich farmers, there is a provision to use different news receptacle. It can be said that farmers who are collaborated with different social institutions have possibility to efficient use of information sources and besides in case of innovativeness of farmers were given same findings as well.

Table 3. Relationship between the selected socio-demographic characteristics of the respondents and their Use of information sources.

Independent variables	Coefficient of correlation (r)	Dependent variable
Age	0.159NS	
Education	0.768**	
Fish farming area	0.527**	Use of information sources
Annual family income	0.717**	
Social participation	0.522**	
Innovativeness	0.221*	

*=significant at 5% level of significance,
**=significant at 1% level of significance
NS = Not significant

Contribution of Factors to respondents' use of information sources: General linear multiple regression analysis was employed to bring out contributing characteristics of the respondents information sources utilization. Pearson correlation test indicates that five characteristics of the respondents have significant relationship with the overall utilization of four shorts of information sources. These five significant variables were included to run the multiple regression analysis. Findings are presented in Table 4.

Table 4. Regression coefficient of farmers' utilization of information sources with their selected characteristics.

Farmers characteristics	Unstandardized coefficients	Standardized coefficients	t-value	Level of significance
Constant	2.698		5.666	.000
Age	.025	.155	2.624	.010
Education	.194	.551	6.805	.000
Fish farming area	.156	.082	.885	.378
Annual family income	0.000001154	.183	1.600	.113
Social participation	.174	.173	2.834	.006
Innovativeness	.007	.024	.404	.687
R^2 = .718	Adjusted R^2 =.702	F-value= 43.697	P = 0.000	

The regression coefficient of three variables namely, Age, education and social participation were being indicated their significant contribution to the use of information sources to get information on aquaculture practices. The remaining characteristics had no significant contribution to the respondents' knowledge. The R^2 value was 0.718 and the corresponding F value was 43.697,at 0.000 significance level. This R^2 value indicated that 71.80% of the total variation in the respondents' information sources utilization was explained by the six variables included in the regression analysis. To ascertain the proper contribution of the characteristics, stepwise multiple regression analysis was run and the findings are presented in Table 5.

Table 5. Regression coefficients of farmers' use of information sources with their characteristics entered in regression model.

| Respondents characteristics | Coefficients | | t-value | Level of significance |
	Unstandardized	Standardized		
Constant	2.880		6.648	.000
Education	.254	.720	11.734	.000
Age	.034	.208	3.594	.000
Social participation	.189	.188	3.009	.003
R^2 = .684	Adjusted R^2 = .675	F-value=76.609	P = 0.000	

Table 5 evinces that three characteristics viz. education, Age and social participation entered into the stepwise regression model and the contribution of each of these variables was at 0.01level of significance. Hence, whatever variation was in the respondents' information utilization was mainly due to the contribution of these four characteristics. The coefficient of multiple determinations (R^2) for the stepwise regression model was 0.684 which indicated that the independent variables explained 68.40% variation to the farmers' utilization of information sources to attain knowledge about aquaculture practices. Finally, another linear multiple regression analysis was run involving only the four significantly contributing variables found in the stepwise regression analysis. In this regression analysis, R^2 value was also 0.684(significant at 0.000 level). This final analysis thus, indicated that 68.40% of the total variation in respondents'use of information sources regarding aquaculture practices was explained by the mentioned four characteristics (Table 5).

The unique contribution of each of the four characteristics was determined by taking the changes in R^2 value occurred for enter of a particular variable in the stepwise regression model. Individual contribution of four characteristics has been presented in Table 6.

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Table 6. Changes in the multiple R2 for enter of a variable into the stepwise regression analysis model for utilization of information sources by the respondents regarding aquaculture practices

Variable entered	Multiple R	Multiple R2	Change in R2	Variation explained %	level of Significance of F-change
1. Education	.768	.590	.590	59.0	0.000
2. Age	.811	.657	.067	6.7	0.000
4. Social participation	.827	.684	.027	2.7	0.000

Table 6 reveals that the education contributed 59.00%, age contributed 6.70% and social participation contributed 2.70 to the explained variance of 68.40%.

CONCLUSION AND RECOMMENDATIONS

Majority of the farmers performed medium to low in case of utilization of information sources. While they prefer mass media and group contact rather other sources. Socio-demographic characteristics namely education had strong positive and significant relationship with utilization of information sources by the farmers. It was found that this character contributed 59% to the explained variance of 68.40. Therefore educational background of a farmer may play a vital role to change the present scenario of farmers' preference about information sources. On the other hand there is rampant scope to improve the present condition of farmer's information management through extension workers, field supervisors and fisheries officer of GOs and NGOs as well.

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