

## **Socioeconomic Status of Fish Farmers and Fishermen: A Comparative Study in Trishal Upazila under Mymensingh District, Bangladesh**

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### **Abstract**

Fish and fisheries resources play a vital role in improving socioeconomic conditions of the fishermen and fish farmers involved in its business. They are also central in combating mal-nourishment, providing foreign earning and creating employment opportunities in Bangladesh. This study was carried out to explore the socioeconomic status of fish farmers and fishermen. Descriptive and diagnostic type of survey research design was used in the study. The study was conducted in Konabari and Passpara villages of Trishal upazila in Mymensingh district of Bangladesh. Data were collected using interview schedule through face-to-face contact with 100 sampled respondents who were selected following proportionate random sampling technique. Data were analyzed using SPSS software. Findings revealed that in terms of fishing experience, the fishermen majorly had up to 10 years (42%), while fish farmers had 11-20 years (50%), average 14.4 and 12.16 years for the fishermen and fish farmers, respectively. The farm size of the fish farmers ranged from 0.04 to .81 hectares, while that of the fishermen ranged from 0.01 to 0.08 hectares, average being 0.019 hectares for the fishermen and fish farmers, respectively. Majority were living in poor housing condition with unsuitable sanitary facilities, limited access to medical services and lack training experience. Annual family income of the fish farmers ranged from Tk. 70,000 to Tk. 680,000 with mean of 190,610 Tk. Annual family income of the fishermen ranged from 45,000 Tk. to 100,000 Tk. with mean of 52,230 Tk. Generally, most of the fishermen were socioeconomically poor compared to fish farmers. Provision of good social services, financial support and enhancement of extension contact would certainly help ease their socioeconomic difficulties.

**Keywords:** Comparative study, fish farmers, fishermen, socioeconomic status

### **Introduction**

Employment in the fisheries sector has grown faster than the world's population. The sector provides jobs to tens of millions and supports the livelihoods of hundreds of millions. Fish continues to be one of the most traded food commodities worldwide. It is especially important for developing countries like Bangladesh. Food and Agriculture Organization of the United Nations (FAO, 2005) ranked Bangladesh as the sixth largest aquaculture producing country with its estimated production of 856,956 tons in 2003. A recent report of the FAO (2014), said Bangladesh is the fourth world leading country in inland fisheries production.

Freshwater fish farming plays an important role in the livelihoods of rural people in Bangladesh (Mazid, 2002). It creates diverse livelihood opportunities for a number of people; many of whom live below the poverty level, in the form farmers, operators, employees, traders, intermediaries, day laborers and transporters (Ahmed and Rahman, 2005). Aquaculture has been proved to be a profitable business than rice cultivation. So many farmers in rural areas are converting their rice fields into aquaculture pond (Islam et al., 2002). Many aquaculture practitioners in rural areas have taken fish farming activities as their secondary occupation and most of the people involved in fish farming

improved their socioeconomic condition through fish farming activities (Ara, 2005).

Inland water bodies of Bangladesh are blessed with vast water area in the form of ponds, canals, ditches, flood plains, *haors* (natural depression), *baors* (ox-bow lake), rivers, estuaries etc. covering an area of 4.8m ha in which only ponds and ditches occupy an area of 0.37m ha. Fish production from these water bodies during the year 2011- 2012 was 2.7m metric tons (MT) whereas, the total country fish production in the same year was 3.26 m MT. This is 82.26 percent of the total fish production (DoF, 2013). Bangladesh is a major producer of inland fisheries. The country is fortunate to have a vast area of inland water resources such as rivers, beefs, canals, ponds and estuaries from where it is getting over 72.0 percent of total fish production (DoF, 2002). In the recent years,

inland fish production as well as total fish production has increased due to various reasons, the establishment of inland pond farm is the most important one. Although fish farming increases day-by-day, the yield obtained by the fish farmers is not satisfactory.

Many fish farmers and fishermen in rural areas have taken fish farming and fishing activities as their means of earning a living, and most of the people involved in fish farming and fishing both for subsistence and improvement of their socioeconomic condition. Considering the financial hardship and other complexities of the rural fish farmers and fishermen, it is important to analyze their socioeconomic status. In view of that; the present study was undertaken to compare the socioeconomic status of the fish farmers and fishermen in the study area.

## **Methodology**

The study was conducted at Trishal upazila of Mymensingh district, which is located between 24.5817°N, 90.3948°E coordinates. Agroecologically, the area belongs to the Madhupur Tract. The soils developed over the Madhupur clay are deep red brown terrace, shallow red brown terrace and acid basin clays (BBS, 2000). The area has a moderately equitable subtropical monsoon climate, with average maximum and minimum temperatures in the hottest and coolest months of 35°C and 12°C, respectively (BBS, 2001). The rainy season runs from May to September, and the annual rainfall averages 2,085mm at the sub-district headquarter (BBS, 2001). Trishal was selected as it is an

important area for fish farming due to the availability of fish fry, favourable resources and climatic conditions, such as the availability of ponds and low lying agricultural land, warm climate, fertile soil, and cheap and abundant labour. Konabari and Passpars villages were the population of the study. A total of 100 respondents (50 fishermen and 50 fish farmers) were selected from these two villages as sample for the study following proportionate random sampling technique. Face-to-face interview schedule was administered to the respondents and data generated was subjected to both descriptive and inferential statistical analyses using SPSS software.

## **Results and Discussion**

### **1. Age**

Majority of both the fish farmers (54.0%) and fishermen (56.0%) fall within the age bracket of 36-50 years (Table 1). The mean age found was 42.06 and 44.0 for fish farmers and fishermen respondents, respectively. Results indicate that the highest portion of fish farmers and fishermen (54.0%, 56.0%) belonged to middle and young age categories. Similar results were reported by Ferdous (2014) in his study.

### **2. Education**

The educational level of the respondents ranged from illiterate to above SSC for both fish farmers and fishermen (Table 2). Average education level scores were found 7.52 and 1.76 for both the fish farmers and fishermen, respectively. The education level of the respondents indicates that most of the fish farmers attended secondary level (42.0%) and only few fishermen attended the secondary level (6.0%). Most of the fishermen

were found illiterate (68.0%) and only few fish farmers were found illiterate (14.0%). Only 20.0 percent of the fish farmers further above secondary level, whereas none was found to be above secondary level among fishermen.

Therefore, it can be said that above three-fourth (86.0%) of the fish farmers were literate, while

for the fishermen the literacy level was about one third (32.0%). The national literacy level of the country was 48.8 percent for the age 15 and above (BBS, 2013). The result obtained implies that fish farmers had literacy level higher than the national average, while fishermen had lower.

Table 1: Distribution of the respondents according to their age

Age group	Fish farmers			Fishermen		
	No.	Percent	Mean	No.	Percent	Mean
Young (25-35)	14	28.0	42.06	11	22.0	44.0
Middle (36-50)	27	54.0		28	56.0	
Old (>50)	9	18.0		11	22.0	
Total	50	100.0		50	100.0	

Table 2: Distribution of the respondents according to their educational level

Educational level	Fish farmers			Fishermen		
	No.	Percent	Mean	No.	Percent	Mean
Illiterate (No schooling)	7	14.0	7.52	34	68.0	1.76
Primary (1-5)	12	24.0		13	26.0	
Secondary (6-10)	21	42.0		3	6.0	
Above secondary (>10)	10	20.0		0	0.0	
Total	50	100.0			100.0	

### 3. Marital status

On the basis of their marital status, the respondents were classified into two categories as shown in Figure 1.

Majority of the fish farmers and fishermen were married (90.0%, 94.0% respectively) and a few of them were unmarried (10.0%, 6.0% respectively). Fish farming and fishing are a very hard work; for this reason a large number of young generation does not want to involve them. But, married people have many responsibilities. They have to support their family; as a result engaged in fishing though it is a very hard work.

### 4. Family size

The observed number of family members of the respondents ranged from 3-12 for both fish farmers and fishermen, with an average of 5.36 and 7.02, respectively. The respondents were classified into following three categories (Table 3) as recommended by Haider (2010). Highest portion of the fish farmers (62.0%) belonged to small family category and highest portion of

fishermen belong to both medium (40.0%) and large family (40.0%) categories.

The large portion of the fish farmers (88.0%) was found under small to medium family categories, but in case of the fishermen the large portion was found under medium and large family categories (80.0%). The average family size of the fish farmers and fishermen was higher than the national average family size 4.35 (BBS, 2011). Similar results were reported by Rahman (2011) and Chowdhury (2011) in their respective studies.

### 5. Educational status of children

Results indicate that 82.0 percent of fish farmers and 52.0 percent of fishermen sent their children to school, whereas 18.0 percent of fish farmers and 48.0 percent fishermen reported not sending their children to school (Figure 2).

It was observed that the 48.0 percent of the children of the fishermen that were not sent to school, do engage in fishing and other money making activities to help increase their family earnings.

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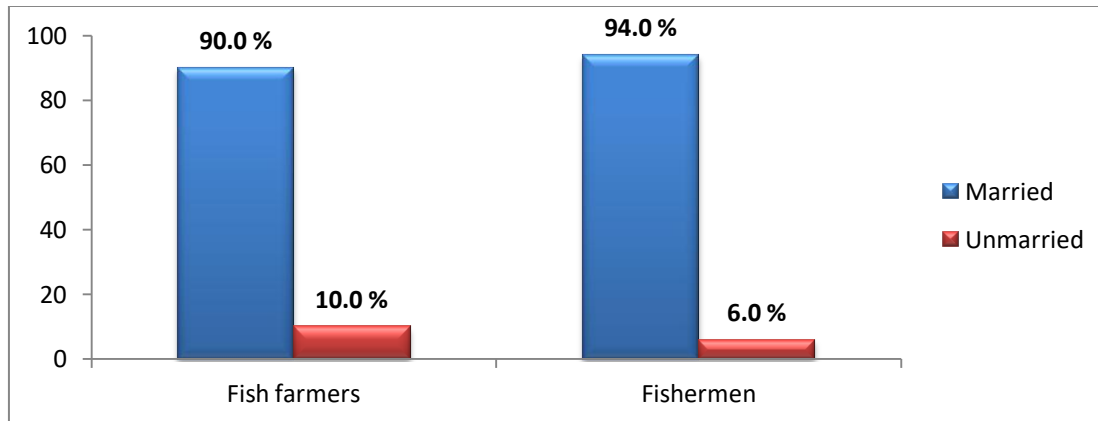


Figure 1: Distribution of the respondent according to their marital status

Table 3: Distribution of the respondents according to their family size

Family group	Fish farmers			Fishermen		
	No.	Percent	Mean	No.	Percent	Mean
Small family (<5)	31	62.0	5.36	10	20.0	7.02
Medium family (5-7)	13	26.0		20	40.0	
Large (>7)	6	12.0		20	40.0	
Total	50	100.0		50	100.0	

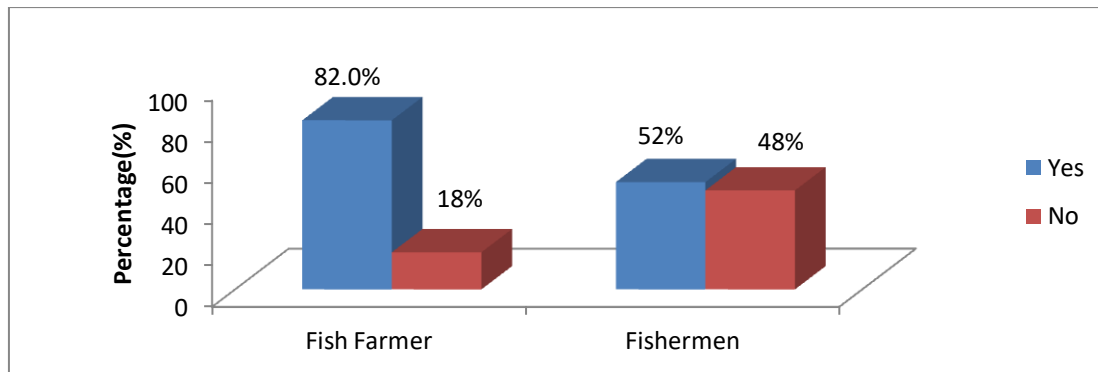


Figure 2: Distribution of the respondents according to their school going children

### 6. Housing condition

Housing condition is one of the important parameter in the study of socioeconomic condition of an individual. From the present study, it was found that 38.0 percent, 34.0 percent and 28.0 percent of the fish farmers had concrete, semi-pakka and kacha houses, respectively. For fishermen, 24.0 percent and 76.0 percent had semi-pakka and kacha houses,

respectively (Table 4). But, none of the fishermen had concrete building.

Most of the fish farmers had concrete and semi-pakka house, because majority of the farmers were middle class in their communities. Similar results were reported by Roy (2010). On the other hand, most of the fishermen had kacha house because majority of the fishermen were very poor.

Table 4: Distribution of the respondents according to their housing condition

Categories	Fish farmers		Fishermen	
	No.	Percent	No.	Percent
Concrete building	19	38.0	0	0
Semi-pakka building	17	34.0	12	24.0
Kacha	14	28.0	38	76.0
Table	50	100.0	50	100.0

### 7. Source of drinking water

Clear and safe drinking water was considered is a valued element in society. Fish farmers' households dominantly used owned tube well (74.0%) for drinking purpose, while fishermen households used public tube-well (62.0%) mostly (Table 5). The implication is that fish

farmers have more access to drinking water than the fishermen.

However, both the fish farmers and fishermen in the study area used underground source of water for drinking purpose. This source of drinking water is very common in Bangladesh (Ali, 2009; Ali et al., 2008; Zaman et al., 2006).

Table 5: Distribution of the respondents according to their source of drinking water

Source of drinking water	Fish farmers		Fishermen	
	No.	Percent	No.	Percent
Own tube well	37	74.0	19	38.0
Public tube well	13	26.0	31	62.0
Total	50	100.0	50	100.0

### 8. Sanitary facilities

Data presented on Table 6 indicate that the highest (78.0%, 58.0% respectively) of both the fish farmers and fishermen used sanitary latrine and semi-sanitary latrines, respectively. On the other hand, only 6.0 percent of the fishermen used sanitary latrines and 16.0 percent of the fish farmers used hanging latrines.

The improvement in the usage of latrine facilities further buttress efforts of the government in

addressing challenges of sanitation facilities nationwide. One of such efforts include the Sanitation, Hygiene Education and Water Supply in Bangladesh (SHEWA-B) project aimed to reach 30.0 million people in five years (2007-2011). According to Nooran (2007), Bangladesh is currently involved in the largest intensive hygiene, sanitation and water quality improvement project ever attempted in a developing country.

Table 6: Distribution of the respondents according to their sanitation facilities

Categories	Fish farmers		Fishermen	
	No.	Percent	No.	Percent
Sanitary latrine	29	58.0	03	6.0
Semi-sanitary latrine	16	32.0	39	78.0
Hanging latrine	05	10.0	08	16.0
Total	50	100.0	50	100.0

### 9. Health facilities

The health facilities used by the fish farmers and fishermen were not satisfactory. In the present study, it was observed that majority of the fish

farmers (38.0%) and fishermen (48.0%) were dependent on village doctor, while 22.0 percent fish farmers and 14 percent fishermen got health service from upazila hospital. Unfortunately,

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only 28.0 percent of the fish farmers and 2.0 percent of the fishermen used to receive health services from registered physicians. Furthermore, other source of health services received by both the fish farmers (12.0%) and fishermen (22.0%) was *kobiraj*.

Generally, most of the fish farmers and fishermen had poor knowledge on health services and live in such remote areas where qualified doctors are not available. For this reason, they have to depend on village doctors and *Kobiraj*. Similar results were reported by Khan (2011).

Table 7: Distribution of the respondents according to their health facilities

Categories	Fish farmers		Fishermen	
	No.	Percent	No.	Percent
Village doctor	19	38.0	24	48
Paurashava Hospital	11	22.0	14	28
Private M.B.B.S	14	28.0	01	02
Others	06	12.0	11	22
Total	50	100.0	50	100

### 10. Electricity facilities

The electricity facility of the households depends on multiple factors and position of homestead. Nowadays it is an important socioeconomic status indicating factor.

Results presented in the Figure 3 show that 86.0 percent of the fish farmers and 70.0 percent of

the fishermen had electricity facility. Only 14.0 percent of the fish farmers and 30.0 percent of the fishermen did not have the electricity facility. In line with this, Ali (2009) reported that 95.0 percent of farmers had electricity facilities in Mymensingh district.

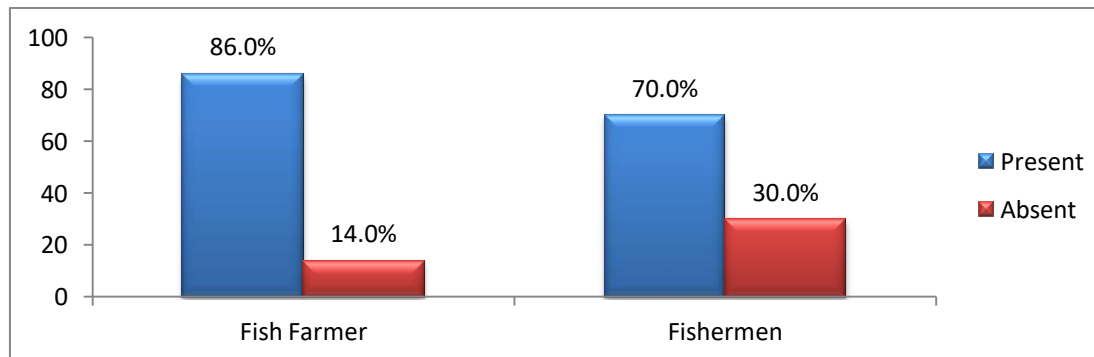


Figure 3: Distribution of respondents according to their electricity facility

### 11. Organizational participation

Based on their organizational participation score, the respondents were classified into three categories; low, moderate and high following Harun (2009). Results displayed on Table 8 reveal that majority of the respondents belonged to low category for both fish farmers (72.0%) and fishermen (82.0%). Interestingly, no fish farmer was found under high category among fishermen but, 2.0 percent for fish farmers. Haider (2010) in his study also found the similar results.

### 12. Means of contact

Results presented on Table 9 show that most of the fish farmers frequently used personal contact (72.0%) than mass contact (14.0%), while fishermen 80.0 percent used personal contact and 20.0 percent used mass contact. This means that the most available means of contact to both the fish farmers and fishermen is personal contact. Most of the fish farmers and fishermen have limited access to electronic communication

media and for that reason they have a little chance to use mass means of contact. Another reason is that, all the fish farmers and fishermen

communities have a close contact with each other and their relatives which avails the opportunity to access personal contact easily.

Table 8: Distribution of the respondents according to their organizational participation

Categories	Fish Farmers		Fishermen	
	No.	Percent	No.	Percent
Low (less than 2)	36	72.0	41	82.0
Medium (3-4)	13	26.0	9	18.0
High (above 4)	1	2.0	0	0.0
Total	50	100.0	50	100.0

Table 9: Distribution of the respondents according to their means of contact

Respondents	Means of contact	Communication used by the respondent					
		Frequently used		Moderately used		Partly used	
		No.	Percent	No.	Percent	No.	Percent
Fish farmer	Personal contact	36	72.0	14	28.0	0	0.0
	Mass contact	7	14.0	9	18.0	34	68.0
Fishermen	Personal contact	40	80.0	10	20.0	0	0.0
	Mass contact	5	10.0	10	20.0	35	70.0

### 13. Annual family income

Based on the annual family income, the respondent farmers were categorized as low, medium and high income groups (Table 10). The income category was in conformity with Rahman (2008). The observed annual family income of the fish farmers ranged from 70,000 to 670,000 taka and 32,000 to 96,000 taka in the case of the fishermen. The mean income was 190.61 thousand taka for fish farmers and 52.23 thousand taka for fishermen.

It is evident from the information presented on Table 10 that majority of the fish farmers

(60.0%) belonged to the medium income category, while a little above half of the fishermen (52.0%) belonged to low family income category. Similarly, 40.0 percent of the fish farmers belonged to high family income category and no fisherman was found in high family income category. The income of the fish farmers was much higher compared to the fishermen. In addition, the average annual income of the fishermen was quite lower than the national average per capita income of the country i.e. 92.8 thousands (BBS, 2013). Haider (2010) in a study found similar results.

Table 10: Distribution of the respondents according to their annual family income

Categories	Fish farmers			Fishermen		
	No.	percent	Mean	No.	percent	Mean
Low (up to 50 thousand)	0	0.0	190.61	26	52.0	52.23
Medium (51-150 thousand)	30	60.0		24	48.0	
High (above 150 thousand)	20	40.0		0	0.0	
Total	50	100.0			100.0	

### Other sources of income

Fish farmers and fishermen explore other sources of income alongside fish farming and fishing.

Results displayed in Figure 4 show that both the fishermen and fish farmers explored 5 different other sources of income. These were crop

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production, day labor, trading and menial jobs. Majority (38.0%) of the fish farmers took crop production as other source of income, while 30.0 percent of the fishermen took day labor as other

income source. However, 22.0 percent and 18.0 percent of the fish farmers and fishermen had no other income source, respectively.

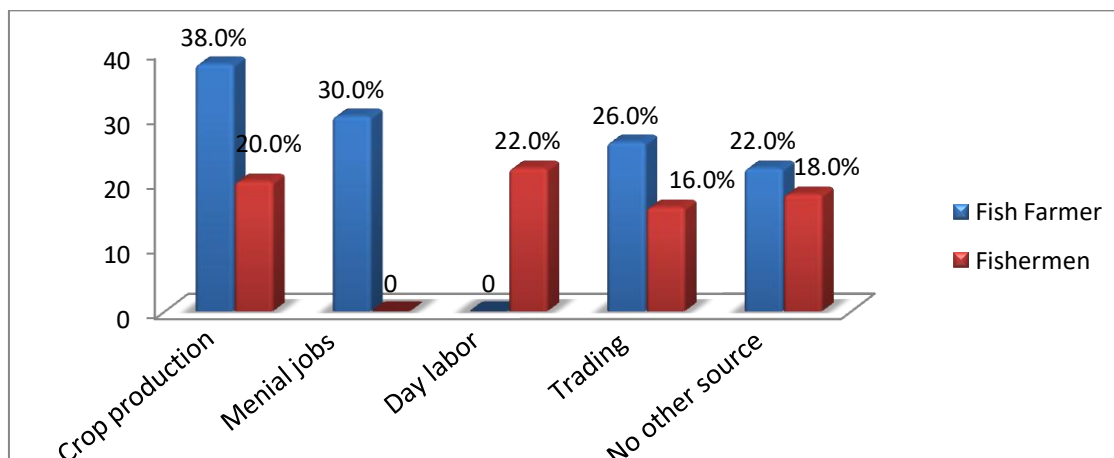


Figure 4: Distribution of the respondents according to their other sources of income

### **14. Farm size/land area of fish farmers and fishermen**

Fish farm size is an important factor for fish culture because all management measures are planned considering the size of ponds. Khan (1994) stated that fish culture efficiency varied with the size of ponds. It was found that the average pond size of the fish farmers was 0.19ha. Similar result was obtained by Saha (2004) in Tangail Sadar upazila. On the other hand,

Rahman (2003) found that the average pond size in Gazipur was 0.12ha. Fishermen in the study area have no farm property for fish cultivation; they usually capture fishes from open water body. Nevertheless, they had some land property for cultivating other agricultural crops.

Most of the fish farmers (82.0%) were found under medium farm family categories. But, all the fishermen had either small or medium farm size (Table 11).

Table 11: Distribution of the respondents according to their farm size

Categories	Fish farmers		Mean	Fishermen		Mean
	No.	Percent		No.	Percent	
Small farm size (<0.01 ha )	0	0.0	0.19	26	52.0	.019
Medium farm size (0.01-0.25 ha)	41	82.0		24	48.0	
Large farm size (0.25-0.5 ha)	07	14.0		0	0.0	
Very Large farm size (>0.5 ha)	02	4.0		0	0.0	
Total	50	100.0		50	100.0	

### **15. Fish farming experience**

Fish farming experience of the respondent fish farmers and fishermen were determined on the basis of their involvement in the fish farming activities. Observed mean experience was 12.16

years for fish farmers and 14.4 years for fishermen. Based on computed scores, the respondents were classified into three categories as shown in Table 12. These classifications were made in conformity with Hossain (2009).



Information contained on Table 12 show that half of the fish farmers (50.0%) had medium experience, while 20.0 percent had low experience. On the hand, majority of the fishermen (42.0%) had low experience, while 24.0 percent had high experience.

Table 12: Distribution of the respondents according to their fish farming experience

Categories	Fish farmers		Mean	Fishermen		Mean
	No.	Percent	12.16	No.	Percent	14.4
Low (0-10 years)	18	36.0		21	42.0	
Medium (11-20 years)	25	50.0		17	34.0	
High (above 20 years)	7	14.0		12	24.0	
Total	50	100.0		50	100.0	

### 16. Training experience

The mean training experiences of the respondents were 1.64 and 0.30 for the fish farmers and fishermen, respectively. The respondents were classified into four categories based on the training score as shown in (Table 13). This classification was in conformity with Gofran (2007).

Results presented on Table 13 indicate that 26.0 percent and 78.0 percent of the fish farmers and

fishermen, respectively, had no training experience. Whereas, 46.0 percent fish farmers and 20.0 percent fishermen had low training experience. It was also observed that fish farmers were more trained (74.0%) compared to fishermen (22.0%). This might be due to the reason that fish farmers had frequent contact with different GOs and NGOs.

Table 13: Distribution of the respondents according to their training experience

Category	Fish farmers			Fishermen		
	No.	Percent	Mean	No.	Percent	Mean
No trained (0)	13	26.0	1.64	39	78.0	0.30
Low trained (1-2)	23	46.0		10	20.0	
Moderately trained (3)	9	18.0		1	2.0	
Highly trained (above 3)	5	10.0		0	0.0	
Total	50	100.0		50	100.0	

### 17. Place of selling fish

Majority of the fish farmers (64.0%) and fishermen (76.0%) used to sell their harvested fish in local market. On the other hand, 36.0 percent of fish farmers and 24.0 percent of fishermen used to sell their fishes in the nearby town (Table 14).

Most of the fishermen live far from town, so its time consuming to go to the town for the purpose of selling fish only, when the fishes could be disposed at the nearby local market. Another reason could be that, fishermen were not adequately informed as such they possessed limited knowledge on fish marketing channels.

### 18. Reason for choosing specific client

As shown in Table 15, highest percentage of the fish farmers (44.0%) and fishermen (50.0%) choose specific client because they got reasonable price and other advantages. Fishermen were poorer, so having instant cash is crucial to them. In order to get loan in advance, 10.0% of the fish farmers and 4.0 percent of the fishermen choose specific clients because.

Some fish farmers and fishermen got loan from some clients such as village *mohajon* (wholesaler). During the time of getting the loan, fishermen had to sell fish in lower price all the year round (Ahmed, 1999).

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Table 14: Distribution of the respondents according to place of selling fish

Categories	Fish farmers		Fishermen	
	No.	Percent	No.	Percent
Local Market	32	64.0	38	76.0
Town market	18	36.0	12	24.0
Total	50	100.0	50	100.0

Table 15: The respondents' reasons for choosing specific client/agent

Reasons	Fish farmers		Fishermen	
	No.	Percent	No.	Percent
Known to me	12	24.0	14	28.0
Paid in cash	11	22.0	09	18.0
Get loan in advance	05	10.0	02	4.0
Get reasonable price	22	44.0	25	50.0
Total	50	100.0	50	100.0

### **19. Credit facilities**

Majority of the fish farmers (58.0%) and fishermen (68.0%) used their own money for the business and remaining others took loan from bank and local NGOs (Table 16). Ali (2009) reported a similar result among the fish farmers in Mymensingh district. He further reported that it is easy to get micro credit from local NGOs though the interest rate is higher compared to bank, and this corroborate the findings of the present study.

### **20. Purpose of receiving loan/credit**

Most of the fish farmers and fishermen received loan from different organization, relatives and

neighbors. Results presented on the Table 17 show that majority of the fish farmers (42.0%) and fishermen (36.0%) received loan to support their family. However, 30.0 percent and 32.0 percent of fish farmers and 28.0 percent and 32.0 percent of fishermen received loan for agricultural activities and house repairs, respectively.

Sometimes fish farmers and fishermen were not able to run their family life when they did not get enough fish to sell or during fishing off season, which usually lasts for three months. In this period, they need credit to support their family. That's why family support is the main reason of collecting credit.

Table 16: Credit facilities of the respondent fish farmers and fishermen in the study area

Credit facilities	Fish farmers		Mean	Fishermen		Mean
	No.	Percent		No.	Percent	
Not taking loan	29	58.0	1.75	34	68.0	1.61
NGO	15	30.0		16	32.0	
Bank	06	12.0		00	0.0	
Total	50	100.0		50	100.0	

Table 17: Distribution of the respondents according to purpose of receiving loan

Categories	Fish farmers		Mean	Fishermen		Mean
	No.	Percent		No.	Percent	
Family support	21	42.0	1.92	18	36.0	1.72
Farming or fishing	15	30.0		16	32.0	
House repairs	14	28.0		16	32.0	
Total	50	100.0		50	100.0	

### Conclusion and Recommendations

Based on the major findings of the study and their logical interpretations, a number of conclusions were drawn. Firstly, majority of both the fish farmers and fishermen were lacking in economic and social necessities. Secondly, most of the fishermen were socioeconomically poor compared to fish farmers. These are due to underprivileged housing condition, sanitary facilities and healthcare services, and low income and limited access to credit facilities.

On the basis of the findings and conclusions, a number of recommendations are put forward. Firstly, provision of social services should be

improved by government; especially education so as to develop social consciousness and bring majority under group activity. Secondly, most of the fish farmers and fisherman have little or no access to adequate financial support. Hence, GOs and NGOs should take necessary step to enhance access and availability of credit facilities. Finally, more contact with the extension worker would help in creating awareness and sensitization through transfer of modern technology. This will go a long way to improve the socioeconomic status of both the fish farmers and fishermen.

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