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Exploring the Perception of Fish Farmers Regarding Farmers' Information and Advice Centers in Selected Areas of Bangladesh

Md. Ripon Mia, Iffat Ara Mahzabin✉, Mohammed Nasir Uddin, Mohammad Maruf Hasan and Debashish Sarker Dev

Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh 2202, Bangladesh

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ABSTRACT

Ensuring the success of fish farming is crucial for food security and economic development in Bangladesh. Farmers' Information and Advice Centers (FIACs) provide essential guidance to fish farmers. Considering the issues, the study therefore, assessed the perception of 117 fish farmers in Melandah and Islampur upazilas (sub-districts), Jamalpur district, regarding FIAC services, which are important to providing support for farmer's needs through FIAC. Data were collected through structured questionnaire from the sampled fish farmers during 16 August to 30 September 2022. Fish farmers' perception on FIAC was the focus variable and it was measured using a 4-point rating scale. Results showed an overwhelming majority of farmers (92.3%) had moderately favourable perceptions of FIAC services, while only a few had highly favourable perceptions. Correlation analyses revealed significant relationship between education, income, experience, training, and media contact with farmers' perceptions, indicating external factors determining the effectiveness of FIAC activities. The multiple linear regression analysis showed that experience in fish farming, training on fish farming and extension media contact were the influential variables that could significantly contribute to their perception and these variables could explain 32.4% variation. Concerning challenges, the most pressing issues included inadequate staffing, insufficient infrastructure for meetings, and inadequate long-term training programs through FIACs. These findings underscore the need for tailored, demand-driven services to enhance fish farmers' perceptions of FIAC services and improve their overall fish farming experiences.

1. Introduction

Bangladesh is one of the top fish-producing countries of the world. It's agroclimatic conditions and abundant resources make it one of the world's best destinations for freshwater rural fisheries (Rahman et al., 2021). The production of fish was 45.03 lakh MT, whereas the target was 44.85 lakh MT in the financial year 2019-2020 (DoF, 2020). The fisheries sector plays an important role in animal protein consumption, employment opportunities, foreign earnings, maintaining aquatic diversity and uplifting the socio-economic development of Bangladesh (Islam et al., 2016). It contributes about 3.52% to GDP, particularly 26.37% to agricultural GDP (Mamun-ur-Rashid et al., 2023). According Department of Fisheries (DoF), Bangladesh's per capita fish consumption has reached 62.58 grams per day, compared to the objective of 60 grams per day. This industry employs over 195 lakh

people, or 12% of the country's entire labor force (DoF, 2020). Bangladesh ranked third in the world for open-water fish harvesting, fifth in inland water fisheries, fourth globally and third in Asia for tilapia output, and first among the 11 key nations that consume hilsha (FAO, 2020). Inland aquaculture (8,36,796 ha), inland capture (38,66091 ha), and marine fisheries are the three main areas from which the fisheries sector contributes (DoF, 2021).

The government of Bangladesh has undertaken multiple projects to sustain the growth in agriculture as well as fisheries sector. In this connection, the National Agricultural Technology Programme-1 (NATP-1) was launched in 2008. This project addresses supply chain development, research, and extension in all agricultural subsectors (crops, fisheries, and livestock). It has given emphasize in increasing fish productivity by offering

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demand driven extension services to the fish farmers (Rana et al., 2021). Before the NATP-1 project was launched, there was no workforce in Bangladesh's DoF organogram at the union level. Local Extension Agent for Fisheries (LEAF) was introduced as field level extension agent through this project in a continued effort from the government to strengthen the technology dissemination in fisheries sector.

A progressive fish grower in the area is called a LEAF. The main responsibility of a LEAF is serving as a liaison between the Upazila Fisheries Office and nearby fish growers (Ahmed et al., 2018). Useful farm information is considered as one of the essential inputs of crop production, livestock raising and fish culture. The government is working to create a system that makes public services available to people rather than having them come to them (Siddiquee, 2016). This objective was accomplished by the establishment of the Union Information and Service Centers (UISCs) in various remote regions of Bangladesh. Operating within the nation's 4501 Unions Parishad (the lowest level of local administration), the UISC is a one-stop service facility. The primary goal of the UISCs is to guarantee that, via information and communication technology (ICT), the general public in rural areas may access government services and information (Hoque & Sorwar, 2015). Under the Public-Private-People Partnership (PPPP) model, these centers are managed by local entrepreneurs, accommodated by Union Parishad, and assisted by the central government administration. Three categories of services are often provided by UISCs: commercial, governmental, and informational (Mahiuddin & Hoque, 2013).

The Farmers' Information & Advice Center (FIAC) is located at the union level, and the LEAF has a room where they offer guidance and extension services to fish farmers from Sunday through Thursday from 10 am to 4 pm, except for government holidays. The prior objective of FIAC is to improve the two-way exchange of knowledge and information between the Common Interest Group (CIG), group members, and other stakeholders including extension staff, research scientists, NGOs, the private sector and the local government . FIACs collaborate with the Local Extension Agent for Fisheries (LEAF) and the Department of Fisheries (DoF). So far, 670 FIACs have been created and operationalized at the recently constructed Union Parishad complexes (Rahman et al., 2019). They offer the farmers coordinated services related to fish farming. In accordance with the NATP-DAE-recommended procedure and processes, FIACs collaborate with CIG. Each CIG group consists of 20 members, and the LEAF facilitates the acquisition of two CIGs for DoF in each block.

The FIACs are undoubtedly progressing, but a lot of their success is dependent on their diligent, driven, and innovative operators as well as ongoing improvement. The favorable perception of farmers towards FIAC might be a way to enhance the effectivenss of the services provided through FIAC. So, this study examined the extent of the perception of fish farmers on FIAC. The findings pinpoint the relationship between selected characteristics of the fish farmers and their perception of FIAC services; the factors influencing fish farmers perception on FIAC and identify the problems faced by the fish farmers in receiving services from the FIAC.

2. Materials and Methods

2.1. Study site

The study was conducted in Melandah and Islampur upazilas (sub-districts) of Jamalpur district. A map of the Jamalpur district showing the study area is presented in Figure 1. Ten unions namely Durmut, Nangla, Nayanagor, Charbanipakuria, Ghosherpara from Melandah and another five namely Gaibandha, Charguyaliny, Charputimari, Polbandha and Pathorshi unions from Islampur upazila were purposively selected where the FIAC was functional. Three hundred and ninety fish farmers of the study area constitute the population of the stydy, from which thirty percent i.e. 117 fish farmers were randomly selected as sample of the study using simple random sampling technique. Twenty fish farmers were kept from the population for resrves who were supposed to be interviewed if there was unavailability of the respondents from the original list. A pretested structured interview schedule was used to collect data from the respondents through personal interviewing during the period from 16 August to 30 September 2022.

2.2. Measurement of focus variable

The fish farmers' perception of FIAC services was the focus variable of the study. Perception was measured through 14 statements which were constructed through focus group discussion with local fish farmers involved with FIAC. Among 14 statements, seven were positive and seven were negative. Scoring for each positive statement was done one the basis of the response of the respondents by assigning score of 1 for strongly disagree,
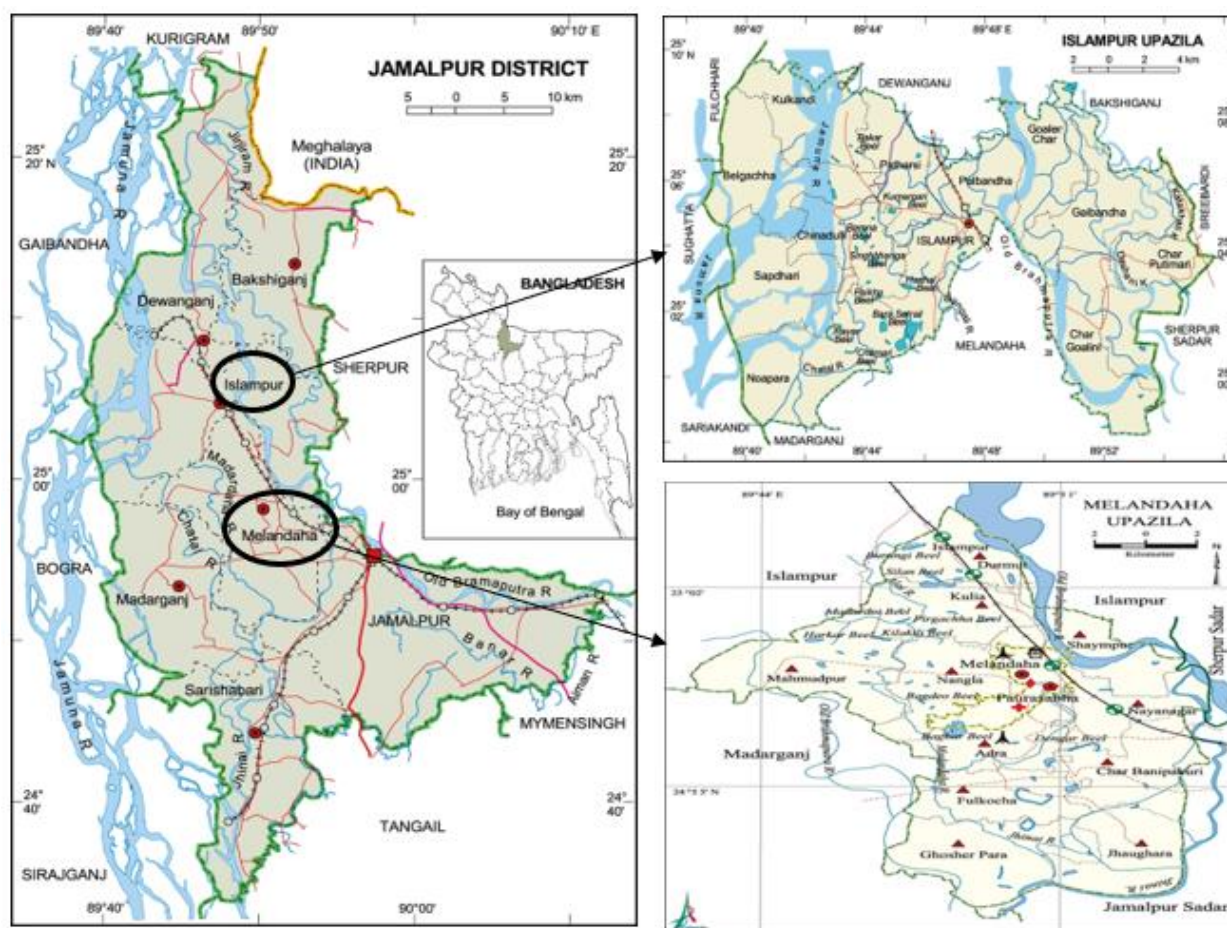
Figure 1. Map of Jamalpur district with the study Upazilas (sub-districts)

2 for disagree, 3 for agree and 4 for strongly agree. Reverse score was assigned for a negative statement. However, the perception score of individual fish farmer was calculated by adding the points for responses against each of the 14 perception statements (7 positive and 7 negative statements). As a result, the respondents' perception scores may be anywhere between 14 and 56. Based on the possible scores, the perception of fish farmers of FIAC services was classified into four categories i.e. 'highly unfavorable', 'moderately unfavorable', 'moderately favorable' and 'highly favorable'.

Rank order was made for each statement of perception which is presented in the Table 3. The rank order was made based on the mean values of the statements measuring the perception of the fish farmers. The number of respondents for any four options were multiplied by its respective weight. Thus, a mean perception value for a statement was obtained by summing all scores for four options. For a positive statement weightage of four responses viz. `strongly agree,' `agree,' `disagree,' `strongly disagree,' were 4, 3, 2, and 1 respectively. The case was reversed for a negative statement.

2.3. Measurement of independent variables

The independent variables of the study were fish farmers' age, educational level, household size, farm size, annual family income, experience in fish farming, training on fish farming, credit received, extension media contact and organizational participation. The measuring unit for independent variables are presented in Table 1.

The Statistical Package for Social Sciences (SPSS, V21) was used for data collection. Descriptive statistics like range, number, percentage, mean, and standard deviation were employed according to the objectives of the study. The relationship between the selected characteristics of fish farmers and their perception of FIAC was ascertained using inferential statistics, such as Pearson's Product Moment Correlation Co-efficient.

Multiple linear regression analysis was used to identify influential factors that might have significant effects on fish farmers' perception on FIAC. The equation of multiple regression is as follows:

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$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + e$$

Here,

$y = y\hat{} + e$ = Perception of fish farmers

β_0 = Intercept

X_1 = Age

X_2 = Educational level

X_3 = Household size

X_4 = Farm size

X_5 = Annual family income

X_6 = Experience in fish farming

X_7 = Training on fish farming

X_8 = Credit received

X_9 = Extension media contact

X_{10} = Organizational participation

Problems faced by the fish farmers in receiving FIAC services were identified through focus group discussion. Thirteen problems were finally kept in the interview schedule. Farmers were asked to give their opinion on it. A four-point rating scale was used for computing the problem score of a respondent. For each problem, score 3, 2, 1 and 0 was assigned to indicate extent of problem confrontation as serious, moderate, less and not at all, respectively. The possible score of problems could range from 0 to 39, where '0' indicated no problem while '39' indicated serious problems faced by farmers in receiving services from FIAC. To ascertain the comparison among the problems, Problems Faced Index (PFI) was computed by using the following formula:

$$PFI = (Ps \times 3) + (Pm \times 2) + (Pl \times 1) + (Pn \times 0)$$

Where,

PFI = Problems Faced Index

Ps = Frequency of the farmers having serious problem

Pm = Frequency of the farmers having moderate problem

Pl = Frequency of the farmers having less problem

Pn = Frequency of the farmers having no problem at all

3. Results and Discussion

3.1. Socio-economic characteristics of the fish farmers

Data presented in Table 1 indicates that the majority of the respondents (65%) were in the medium-aged to old age category compared to 35% young aged category. On the other hand, 22.2% of the farmers were illiterate, and 5.2%, 46% and 26.5% were in the primary, secondary, and above secondary levels, respectively. Data shows that most farmers (46%) had secondary education in the study area. The data implies that respondents of the study area might be conscious of the services of FIAC of the study area.

Data presented in Table 1 shows that the highest proportions of the farmers (60.7%) were in the small sized household, compared to 35.9% of them having a medium household size and 3.4% of them in the large household size category. The average household size of 4.29 of the farmers is almost similar to that of the national average of 4.9 (BBS, 2023). Data shows that large rural families are separating into medium- or small-sized households. The table also revealed that most respondents (64.6%) had small farm size, indicating the presence of marginal farmers in FIAC. The small farmers in the study area are more involved with FIAC than the other four categories of the farmers. The findings revealed that the highest proportion of the farmers (65%) were in the low-income category, where 29.9% and 5.1% were in medium and high-income category, respectively. The findings indicate that majority of the farmers (94.9%) were in the low to medium-income category. So, it can be mentioned that efficient FIAC service might play a vital role in increasing production, which will positively influence the farmers' income.

Data presented in Table 1 shows that more than half (53%) of the respondents had medium experience, 41% had low experience and only 6% of the respondents had high experience. The result also revealed that the highest proportion (89.7%) of the fish farmers had short duration training, 10.3% had medium-duration training and none had long duration training experience in the study areas.

Furthermore, Table 1 shows that the highest portion (63.2%) of the respondents received no credit while 23.1% of respondents received low, 6% received medium and 7.7% received high credit. The result indicates that most of the farmers had no credit received because FIAC provided funds under the NATP-2 project, fry and feed and demonstration plot to the farmers. Data presented in Table 1 indicates that the highest proportion (63.2%) of the farmers had medium extension media contact.

In comparison, 0.9% had high extension media contact and the proportion of respondents having low extension media contact was 35.9%. The data also indicated that the majority (93.2%) of the farmers had low participation. The number of organizational participation is not so remarkable.

3.2. Fish farmers' perception of FIAC

The study's main focus was on how fish farmers perceived the services provided by FIAC. Farmers' perception ratings ranged from 36 to 48, with a standard deviation of 2.66 and an average of 43.23, versus a possible range of 14 to 56. As indicated in Table 2, the fish farmers were divided into four groups according to the possible range of scores. The majority of respondents (92.3%) had a moderately favorable perception of FIAC service. Studies conducted by Rana et al. (2018), Maoba et al. (2016) have found that favorable perception frequently resulted in their participation in extension services activities. It meat that the favorable perception of the FIAC might be resulted in productive and successful fish farming operations.

Table 1. Characteristics profile of the fish farmers (n=117)

Characteristics (Measuring units)	Range		Respondent Categories	Respondents		Mean	SD*
	Possible	Observed		Number (n=117)	Per cent (%)		
Age	Unknown	25-70	Young (18-35)	41	35	43.03	11.23
			Middle-aged (36-50)	50	42.8		
			Old (above 50)	26	22.2		
Educational level (Years of schooling)	Unknown	0-18	Illiterate (0)	26	22.2	8.23	5.10
			Primary (1-5)	6	5.2		
			Secondary (6-10)	54	46		
			Above secondary (>10)	31	26.5		
Household size (No. of members)	Unknown	2-8	Small (up to 4)	71	60.7	4.29	1.23
			Medium (5-6)	42	35.9		
			Large (above 6)	4	3.4		
Farm size (Hectare)	Unknown	0.15-4.00	Marginal (up to 0.2)	1	0.9	0.995	0.73
			Small (0.21-1.00)	76	64.6		
			Medium (1.01-3.00)	37	31.9		
			Large (above 3)	3	2.6		
Annual family income ('000' BDT)	Unknown	40-630	Low (up to 150)	76	65	150.44	87.02
			Medium (151-300)	35	29.9		
			High (above 300)	6	5.1		
Experience in fish farming (Years)	Unknown	6-38	Low (up to 12)	48	41	15.65	6.58
			Medium (13-25)	62	53		
			High (above 25)	7	6		
Training on fish farming (Days)	Unknown	1-30	Short duration (Up to 7)	105	89.7	4.33	1.84
			Medium duration (8-30)	12	10.3		
			Long duration (above 30)	0	0		
Credit received ('000' BDT)	Unknown	0.00-600	No Credit (0)	74	63.2	34.02	9.63
			Low (1-50)	27	23.1		
			Medium (51-100)	7	6		
			High (above 100))	9	7.7		
Extension media contact (Scale score)	0-30	7-21	Low (0-10)	42	35.9	11.38	2.12
			Medium (11-20)	74	63.2		
			High (above 20)	1	0.9		
Organizational participation (Scale score)	0-14	1-10	Low (1-5)	109	93.2	2.62	1.62

Table 2. Distribution of respondents according to their perception of FIAC

Categories of farmers (unit: score)	No. of farmers (n=117)		Mean	SD*
	Number	Per cent		
Highly unfavorable (14-24)	0	0		
Moderately unfavorable (25-35)	0	0	43.23	2.66
Moderately favorable (36-46)	108	92.3		
Highly favorable (47-56)	9	7.7		
Total	117	100		

(Source: Field Survey, 2022); SD*= Standard deviation

Table 3. Rank order of the statements related to fish farmers' perception

#	Statements	No. of respondents				Mean	Rank order
		SD	D	A	SA		
1	FIAC provides regular fisheries advisory services (+)	0	2	75	40	3.32	5
2	It provides reliable, practical information and solution of contemporary problems (+)	3	28	86	0	2.71	12
3	FIAC provides assistance in collecting quality fish seed (+)	0	7	28	82	3.64	**2**
4	FIAC does not guide farmers in cultivar selection and farm planning (-)	1	79	28	9	2.62	13
5	FIAC can motivate fish farmers to adopt new technology (+)	0	4	95	18	3.12	7
6	It does not provide necessary information on feed, feed processing machines, pickups and aerators to fish farmers (-)	63	47	0	7	3.42	4
7	FIAC does not assist in installing modern equipment and machinery for fish farming (-)	4	91	22	0	2.85	11
8	FIAC helps farmers to maintain pond water quality through testing services along with corrective measures (+)	0	4	35	78	3.63	**3**
9	FIAC does not provide probable solution in case of outbreak of disease (-)	18	93	4	2	3.09	8
10	FIAC treats all category of fish farmers equally (+)	0	3	80	34	3.26	6
11	FIAC would not be recommended to others as a good services provider (-)	17	87	13	0	3.03	10
12	Good working relationship exist between LEAF and CIG members (+)	0	3	27	87	3.72	**1**
13	The existing infrastructure and sitting facilities of FIAC is not satisfactory (-)	4	6	70	37	1.80	14
14	FIAC demonstration plot is not effective in adopting fish farming technology (-)	6	111	0	0	3.05	9

(Source: Field Survey, 2022); SA: Strongly Agree; A: Agree; D: Disagree; SD: Strongly Disagree

Table 4. Coefficient of correlation (r) showing the relationship between farmers' selected characteristics and perception of FIAC (n=117)

Selected characteristics	Value of coefficient of correlion (r) with 115 df	Tabulated values of (r) with 115 df	
		0.05	0.01
Age	0.056		
Educational level	0.224*		
Household size	-0.151		
Farm size	0.035	0.182	0.238
Annual family income	0.215*		
Experience in fish farming	0.258**		
Training on fish farming	0.419**		
Credit received	-0.125		
Extension media contact	0.388**		
Organizational participation	0.026		

* Correlation is significant at the 0.05 level (2-tailed), ** Correlation is significant at the 0.01 level (2-tailed)

Table 5. Summary of multiple linear regression analysis explaining the focus variable for the fish farmers (n=117)

Explanatory variables	Unstandardized coefficients		Standardized coefficients	t	Sig. B	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	37.866	1.747		21.669	0.000		
Age (X_1)	-0.017	0.025	-0.072	-0.686	0.494	0.582	1.719
Educational level (X_2)	0.024	0.055	-0.046	-0.435	0.664	0.565	1.771
Household size (X_3)	-0.128	0.189	-0.059	-0.677	0.500	0.843	1.186
Farm size (X_4)	0.293	0.466	0.081	0.630	0.530	0.388	2.580
Annual family income (X_5)	0.004	0.004	-0.121	-0.908	0.366	0.361	2.769
Experience in fish farming (X_6)	0.119	0.041	0.294	2.880	0.005	0.613	1.632
Training on fish farming (X_7)	0.124	0.053	0.225	2.322	0.022	0.677	1.477
Credit received (X_8)	-0.004	0.003	-0.107	-1.222	0.224	0.833	1.201
Extension media contact (X_9)	0.437	0.124	0.350	3.520	0.001	0.646	1.547
Organizational participation (X_{10})	-0.054	0.150	-0.033	-0.357	0.722	0.761	1.315

n=117, R = 0.569, R^2 = 0.324, Adjusted R^2 = 0.261, F-value =5.088

Table 6. Frequency distribution of farmers based on the problems they faced in receiving FIAC services

Extents of problems (unit: score)	Farmers		Mean
	Number (n=117)	Percent	
Less problem (up to 13)	0	0	
Moderate problem (13-26)	116	99.1	22.22
Serious problem (above 26)	1	0.9	
Total	117	100	

Table 7. Rank order of the problems faced by the fish farmers in receiving FIAC services

#	Problems	No. of respondents				PFI	Rank
		SP	MP	LP	NP		
1	Lack of confidence in solving farmers problem	1	82	34	0	201	8
2	Insufficient FIAC staff	88	29	0	0	322	**1**
3	Service delivery from FIAC is hindered due to insufficient financial support	8	91	18	0	224	4
4	Insufficient modern equipment	2	48	42	25	144	11
5	Lack of appropriate program planning	0	91	24	2	206	7
6	Lack of effective long term training program for both farmers and staff of the center	10	98	7	2	233	**3**
7	Frequent contact with only resource-rich farmers	0	4	97	16	105	12
8	Lack of infrastructure and sitting arrangement for CIG meeting with fish farmers	85	32	0	0	319	**2**
9	Poor communication by FIAC staff	0	68	42	7	178	9
10	Lack of in-depth knowledge of FIAC staff	0	105	11	1	221	5
11	Lack of commitment of the FIAC staff	0	97	18	2	212	6
12	Poor/rude behavior of FIAC staff	0	13	51	53	77	13
13	Information given by the FIAC seems not updated	0	46	66	5	158	10

(Source: Field Survey, 2022)
Notes: SP = Serious Problem; MP = Moderate Problem; LP= Less Problem; NP = Not at all Problem and PFI = Problem Faced Index

Rank order was made for each statement of perception furnished in Table 3. Concerning the overall level of perception, mean frequencies suggested that the statement with the highest agreement level was, "Good working relationship exist between LEAF and CIG members" followed by the statement of "FIAC provides assistance in collecting quality fish seed". The statement "The existing infrastructure and sitting facilities of FIAC is not satisfactory'' clearly shows that farmers had confidence in FIAC services, but they were not happy with its services.

3.3. Relationship between the selected characteristics of the fish farmers and their perception of FIAC

The coefficient of correlation (r) between the selected characteristics of the farmers and their perception of FIAC is presented in Table 4. Among ten selected characteristics, five characteristics of fish farmers namely educational level, annual family income, experience in fish farming, training on fish farming and extension media contact had showed positive and significant relationship with their perception of FIAC. The results unequivocally showed that the trend was favorable as education levels rose, farmers became more conscious of the services they were receiving and improved their perceptions accordingly. Adeola (2012) observed similar findings in his respective study.

There was positive and significant correlation between annual family income with fish farmers' perception of FIAC. This showed that having a high income creates a solid foundation for the family economy and motivates farmers to think more favorably of FIAC services. It might be due to the reason that farmers with higher income would have greater access to resources—such as inputs, training, and other things, than farmers with lower income. The finding are consistent with a study by Uddin et al. (2017) on farmers' perceptions of climate change in coastal regions of Bangladesh. Experience in fish farming and perception of FIAC were significantly correlated. According to the aforementioned observation, fish farmers who have more experience in fish farming have accepted more services of the FIAC. Similar findings were noted by Issa et.al. (2014). The result of correlation also revealed that perception and fish farming training have a substantial relationship. Training in fish farming plays a significant role in raising an individual's level of awareness and motivation, both of which have a significant impact on perception. Apart from these four variables, extension media contact had shown significant positive relationship with perception of FIAC. Fish farmers can obtain beneficial and essential FIAC services by interacting with extension media, which creates a positive perception (Jones et al., 2010). Farmers can use variety of media

more effectively and efficiently to obtain FIAC services. These media include: 1) individual contact, such as UFO, LEAF, and input dealers; 2) group contact, such as attending meetings and demonstrations; and 3) mass contact, such as reading leaflets, posters, and bulletins, as well as listening to and watching agricultural programs on television and radio. Fish farmers' perception might improve as a result of increased extension media contact.

3.4. Factors influencing the perception of the fish farmers

The summery of linear regression analysis for the fish farmers is given in Table 5. The multicollinearity test among the model's variables was performed using the Variance Inflation Factor (VIF). Since the maximum VIF value was 2.769, multicollinearity was not a problem, and the variables also had high tolerance values. The model's F-test statistic value was 5.088 with a statistical significance of $p < 0.01$ and 0.261 as the adjusted R-squared value. This indicates that the projected model adequately fits the results and that none of the parameters had statistically meaningful zero significance.

The findings show that three variables out of ten were significant, with an F value of 5.008 and R2 of 0.324. Table 5 indicates the coefficient of experience in fish farming (t = 2.880; p = 0.05), training on fish farming (t = 2.322; p = 0.05) and extension media contact (t = 3.520; p = 0.05) had significant influence in predicting the perception of the fish farmers on FIAC. The regression coefficient indicates that experience in fish farming had a positive coefficient i.e., if the experience in fish farming increases by 1 unit (one number) then the perception of farmers would be increased by 0.119. That means fish farmers who had more experience in fish farming will have high perception on FIAC. Ahsan & Brandt (2015) conducted a study on Climate change and coastal aquaculture farmers' risk perceptions: experiences from Bangladesh and Denmark where they showed that experienced farmers had high perception on climate change risk. Again, the regression coefficient indicates that training on fish farming had a positive coefficient i.e., if the training on fish farming increases by 1 unit (one number) then the farmers' perception would be increased by 0.124. That means fish farmers who had more training on fish farming will have high perception on FIAC. Similar findings were reported by Uddin et al. (2022) in their study conducted in Bangladesh where they found that training of fish farmers was a significant factor in the measure on their risk perception.

Lastly, the regression coefficient indicates that extension media contact had a positive coefficient i.e., if the extension media contact increases by 1 unit (one number) then the perception of farmers would be increased by 0.437. That means fish farmers who had high extension media contact will have high perception on FIAC. A study conducted by Ahsan (2011) shwed that extension media contact of the fish farmers had a significant influence on their perception on risk during shrimp culture in the coastal region of Bangladesh.

3.5. Problems faced by the fish farmers in receiving FIAC services

Overall problems faced by the fish farmers ranged from 15 to 27 against the possible range of 0 to 39, with a mean of 22.22. On the basis of their problem score, the farmers were divided into three categories such as facing less problem, moderate problem and serious problem. The frequency distribution of the farmers based on the problems they faced in receiving FIAC services is given in Table 6. The data showed that about 99.1% of the farmers had faced moderate problem regarding FIAC services compared to 0.9% of them having serious problem. None of the farmers belong to the less problem category. So, desired level of perception will not be achieved through FIAC services if the different problems faced by the farmers are not mitigated. The problems faced by the farmers regarding FIAC services are given in (Table 7) with rank order.

The first ranked problem namely "Insufficient FIAC staff" had 322 PFI (Problems Faced Index). Though there are a number of FIAC staff in the research area but compared to the population of the area that number is very poor. It became very difficult for FIAC to provide service to a large number of farmers and that's why "Insufficient FIAC staff" is rightly in the first position of the problem table. The second-ranked problem namely "Lack of infrastructure and sitting arrangement for CIG meeting with fish farmers" had 319 PFI. The third ranked problem namely "Lack of effective long term training program for both farmers and staff of the center" had 233 PFI. The findings are in conformity with other relevant research. Rahman et al. (2019) revealed that the ineffectiveness of the center's employees and farmers, as well as the absence of long-term training initiatives were significant obstacles to the FIACs' service delivery.

4. Conclusion

The findings revealed that an overwhelming majority (92.3%) of the respondents had moderately favorable and (7.7%) had a highly favorable perception of FIAC in the study area. Therefore, there is an opportunity to enhance farmers' perceptions by increasing their involvement in CIG-related activities. Furthermore, fish farmers' perception of FIAC was found to have significant and positive relationships with their educational level, annual family income, experience in fish farming, training on fish farming and extension media contact. On the other hand, the results of the linear regression analysis showed that the three variables (experience in fish farming, training on fish farming and extension media contact) explained 32.4% of the total variation in the perception of the fish farmers. So, that these characteristics need appropriate focus to increase farmers' perception of FIAC services. Achieving fish farmers' perception cannot be done in a single step. In contrast, necessary steps should be initiated by the concerned agencies like DoF and other actors to provide FIAC services effectively and raise fish farmers' perception. This would be helpful in forming a more favorable perception of the fish farmers of FIAC services.

In order to increase fish farmers' capability, fisheries technologies through FIAC must be made available and accessible in the form of enough equipment and a balanced financing provision. As a result, it might be advised that the relevant authority should take initiative in skill development and training courses, organizational management, and leadership behavior. They should also make sure that CIG farmers meet monthly and that there is regular interaction amongst the CIGs under FIAC. To improve knowledge, managerial proficiency, and operational competence in the practice of fisheries activities, FIACs should create and widely implement need-based training programs and training facilities.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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