iSocial
Unifying Opportunities

Need Assessment Report






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Background

iSocial has been working to build a digital ecosystem, where suppliers can offer products and services and buyers can access relevant products and services at the door-steps. At the bottom of the value chain of this platform there is a network of Kallyanis (Kallyani and Sukormi Network, KSN), who are micro-franchisee, enrolled with iSocial, offer critical products and services of various mainstream and local suppliers with a profit margin. There are Kallyanis, who are specialized. For example, there are, Shasthyo Kallyani (healthcare), Kishori kallyani (adolescent care), Tothyo Kallyani (SBCC and data collection), and Krishi Kallyani (agriculture, focusing on homestead farming primarily). Based on the needs, new specialization can be developed. This proposal is to develop a revised basket of products (primarily fish feed, medicine and machineries) and services (water testing), which can meet the needs of the small-holder aquaculture farmers as well as profitability of Kallyani by adding other relevant products and services. The above product and service lines are tentative and will be finally selected based on the findings from Need Assessment.

The primary goal of the project is to create a sustainable micro franchise-based supply chain model to serve the needs to small scale aquaculture farmers. In this process the project will build a network of community-based change agents for meeting critical needs of the community in multiple SDG impact areas including decent job creation, nutrition and partnership. Around 370 Micro-Franchises will be created within a year. The small farmers working in aquaculture will get access to inputs and knowledge from authentic sources. This will allow them to increase income, ensure nutrition balance within family and community and contribute to food security. The project will contribute to developing a replicable business model through this experimental project for spreading in other F-t-F areas. It will also help to understand what kind of viability gap funding is required for commercially sustainable models.

Objective of the Study

To create locally relevant and business viable product & service portfolio for the small-holder farmers, other clients and micro-franchise.

Specific objective of the study-

1. *Analyzing the need of the products & services under the lens of availability, accessibility, acceptability and affordability by the target citizens.*

2. *Illustrating the supply-chain of identified products & services to be delivered to target group.*

3. *Drawing the matrix of Products & Service Portfolio including Unique Selling Point (USP) frequency, demand, cost driver, investment, price, margin, portability, competition, channels, limitations, impact, etc.*

Participants of the Study

Participants selection for this study was done by focusing on the objective of the current study. The project targets to serve 5500 Fish Farmers through Micro-Franchise, so the study focused to connect important components of aquaculture sector which are- Fish Farmers- who are the main target audience of the project, Input traders- who holds all kind of trading in aquaculture market and Hatchery owners- who plays an important role in the development of fish farmer's field.

Following table represents the total number of selected participants.

Category of participants	Details of participant and rational behind consideration
90 Small Fish Farmer	The individuals who are raising fish in tanks or in ponds in order to sell or to do business.
15 Input Retailer/Traders	The individual/ companies who trades fish feeds, pesticides and other products related to fish farming to fish farmers.
5 Hatchery Owners	An installation or building in which the hatching of fish is artificially controlled for commercial purposes.

Study location

The project under which the "*Need Assessment Survey*" was conducted- is being implemented in "***Jashore District***" of the country Bangladesh. The district is located in the southwestern part of the country.

The study was conducted in the following upazila of "***Jashore***" district.

District	Upazila		
Jashore	Jashore Sadar	Jhikargacha	Sharsha

Methodology of the Study

The data collection method includes- Primary Data Collection by In Depth Interview of the selected participants of the study. Following table represents the data collection tool details-

Sl.	Tool Name	Details
1	Assessment Tool	Primary Data Collection: In depth Interview
2	Data Collection Tool	Questionnaire
3		Kobo Collect

Three persons from iSocial field team was engaged in collecting field data per district. Three people from HQ was also be engaged. **Total 90 IDI** (30 IDI for per Upazila) was collected from "***Small Fish Farmer***", **Total 15 IDI** (5 IDI for each Upazila) was conducted with "***Input Traders***" and **Total 5 IDI** was conducted with "***Hatchery owners***".

The following table represents the tentative 3 days plan of the interviews. Note, *the dates can vary based on the scopes, situation and other related subjects.*

Date	Upazila	Small Fish Farmer	Input Traders	Hatchery owners	Sub Total
22/10/20	Jashore Sadar	15	4	2	21
	Jhikargacha	10			10
	Sharsha	10			10
23/10/20	Jashore Sadar	5			5
	Jhikargacha	10	3		13
	Sharsha	10	3		13
24/10/20	Jashore Sadar	5		2	7
	Jhikargacha	10	2		12
	Sharsha	10	2		12
25/10/20	Jashore Sadar	5	1	1	7
	Total	**90**	**15**	**5**	**110**

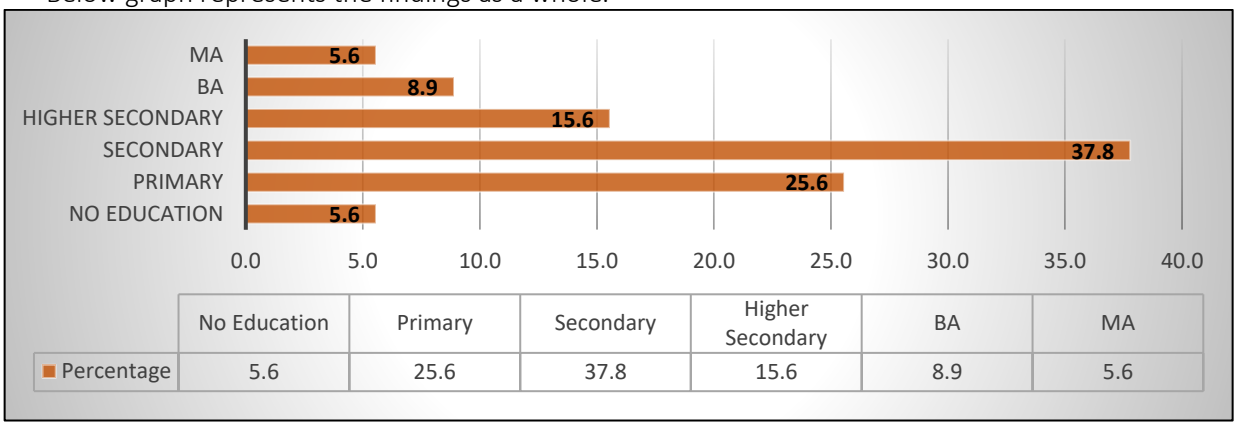
Demography of the Fish Farmers

Area Coverage: The survey covers ***40*** villages under ***11*** Union from ***3*** Upazila of Jashore district.

Sl.	Upazilla	Sl.	Union	Number of Respondents	Sub Total
A	Jashore Sadar	1	Chanchra	23	30
		2	Fotepur	6	
		3	Pourashova	1	
B	Jhikargachha	4	Jhikargachha	3	30
		5	Nirbaskhola	2	
		6	Nabharon	25	
C	Sharsha	7	Baganchra	1	30
		8	Goga	8	
		9	Kaiba	9	
		10	Putkhali	9	
		11	Ulasi	3	
Total				**90**	

- **Education:** Major portion of the respondents has completed their study from a minimum Secondary level to MA, which is almost **70% of the total**. It is commendable and also interesting that, people who has completed Bachelors (BA) and Masters (MA) are getting into this business.

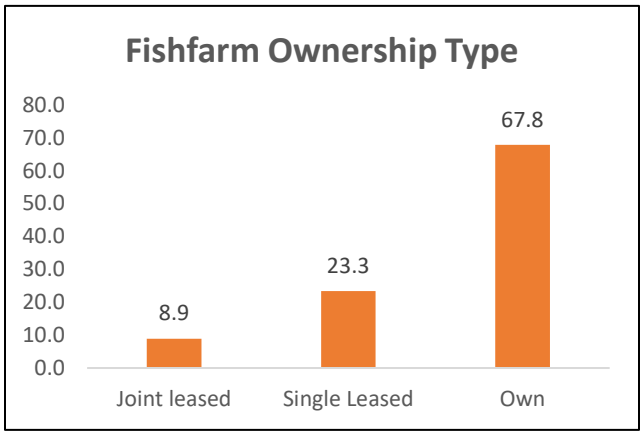
Below graph represents the findings as a whole.



Graph 1: Educational qualification of the respondents

Ownership Status and Area of Farm

Almost **67.8%** of the farmers have their own fish farm and the area of farm is mostly between 1 to 2 acres. However, the study observed that some of the farmers-who doesn't own farm-have tendency to take lease. On the other hand, the practice of owning the farm "Jointly" is less popular and the area of existing farms aren't much bigger.



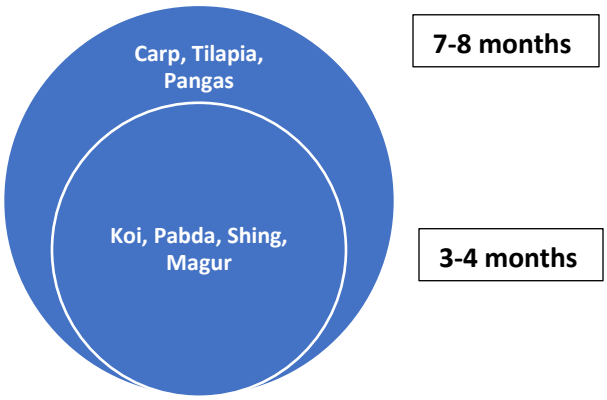
Graph 2: Fish Farm Ownership Type

Area of Farm	Joint	Single leased	Own	Total
Less than 1 acre	2	5	8	15
1 to 2 acres	4	5	40	49
2 to 3 acres	1	3	2	6
3 to 4 acres	0	1	5	6
5 to 10 acres	1	5	4	10
10 to 20 acres	0	2	1	3
Above 20 acres	0	0	1	1

Area of Specific Knowledge

Fish Farming Cycle

The section includes the matrix of fish, timeline & harvesting and fish farming process
The culture cycle depends on the selection of species-



Materials Required for Fish Farming

Following table represents the name of some important material which are required for the fish farming.

Name of the Materials	Lime	Yeast	Grower Feed
	Fertilizer	Oil Cake	Oxygen Enhancer
	Molasses,	Nursery Feed	Probiotic
	Rice Bran	Starter Feed	Medicine, etc.

Standard Process for fish farming

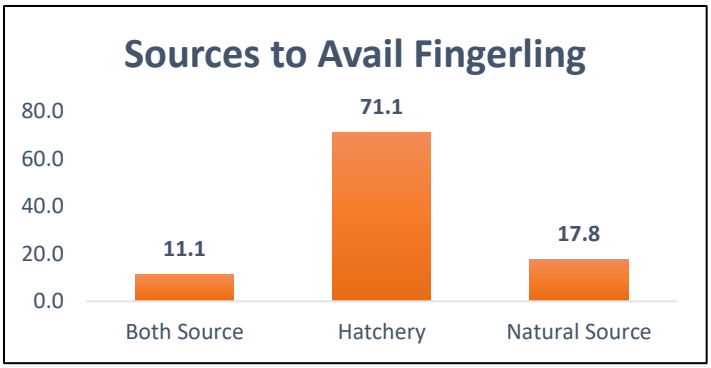
Water Management	Consists of proper soil use and proper design of pond to minimize erosion or overflow
	Water availability and proper water depth maintenance is necessary, should remain aware of water plants in shallow water (i.e. some plants like hyacinths are good as animal feed or organic fertilizer)
	Finding easy water source is necessary, which can vary from treadle pump to mechanical pump to tube well.
	Water draining technique can be varied from drain pipes to cutting a hole and keeping a filtering device
Pond preparation	For keeping quality of water intact lime stone, dolomite or agricultural limes are

	used
Obtaining seed	Seed or fingerling obtaining should be done wisely with consideration of reproduction rate, pond size and combination of crops.
	Different kinds of feeds are needed at different age. Maintaining feeding rate and frequency of feed is necessary.
	Probiotics are good for the health of fish. Medicines should only be used with consultation and with proper measurement and calculation when required
	Organic composts should be preferred for maintaining primary productivity of pond
Harvesting	Properly harvesting is crucial for keeping quality of fish, materials used to stack fish while harvesting to materials used while transportation should be chosen carefully.
Stocking	Selection of fish species, good quality fingerling, define stocking density, adjustment/acclimatization of fingerling and stocking.

Fish Farming Practices and challenges

Local Fish Farming Practice

While a small portion of Fish Farmers collect fingerlings from mixed sources. During the survey it has been observed that, **71%** of the total respondents are dependent on the **Hatcheries.**



Graph 3 Sources of availing Fingerling

While talking about the source of water for the farming with the respondents most of them answered that, they use deep tube wells as water source for Fish Farming. Almost, **80%** Farmers has mentioned "Tube Well' as their water source of Farming. Hence here comes the next step of testing water quality for pond preparation.

Water Quality Parameter Testing

Water quality is the most important factor affecting fish health and performance in aquaculture production systems. Good water quality required to understand the water quality requirements of the fish under culture very well. Fish live and are totally dependent on the water they live in for all their needs. Different fish species have different and specific range of water quality aspects (temperature, pH, oxygen concentration, salinity, hardness, etc.) within which they can survive, grow and reproduce.

Standard range of different parameters:

- **Pathogens**: This is important to figure out the disease-causing agents present in fish body.
- **pH:** Very high (greater than 9.5) or very low (less than 4.5) pH values are unsuitable for most aquatic organisms. Young fish and immature stages of aquatic insects are extremely sensitive to pH levels below 5 and may die at these low pH values. We need to maintain the range from 7.5 – 8.5 for

productive fish farming.

- **NH_3:** it is harmful gas which inhibit or cause problem in fish farming. We need to keep NH_3 <.01 ppm for good aquaculture.
- **DO**: Dissolve oxygen is very important water parameter considered for fish farming. We need to maintain 5 – 8 ppm DO range for good fish farming.
- **Salinity:** For good fish farming we need to maintain 0- 1ppt salinity range.
- **Alkalinity:** It is an important water parameter for fish farming, it indicates buffering capacity of waterbody to neutralize acids and base. And 120 – 180 ppm range is suitable for fish farming.
- **Hardness**: It is also an important water parameter for fish farming, which indicate minerals (calcium & magnesium) presence in water. And 80 – 120 ppm range is suitable for fish farming.

To ensure the hassle-free life-cycle of the fingerlings, it is important to test water quality of the farming ponds. In the current study it has been observed that, only **23%** farmers test water quality parameter which is low then the actual expected scenario.

Respondents who at least practices the testing mentioned about the following parameters- **pH, DO** and **Alkalinity** which are most frequent water testing parameters.

Harmful Pathogens	pH	Total NH3	DO	Salinity	Alkalinity	Hardness
14%	95%	43%	95%	5%	95%	38%

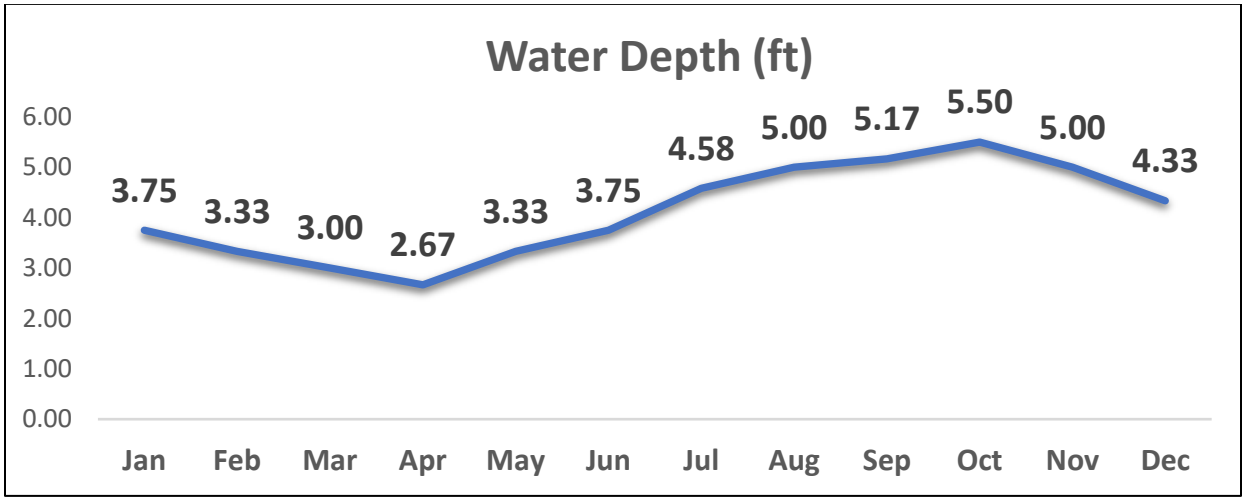
Challenge: Fish farmers tend to avoid this step of water quality parameter. It is mostly because they lack awareness regarding the necessity of water quality parameter testing.

Annual Water Depth Pattern

Although the best farming season timeline is very commonly known to everyone, still the study tried to figure out the current real scenario as weather is changing frequently nowadays. Fish farming season begins in **March-April** of a year and the water depth of pond starts to increase gradually during this timeline. Referring to respondents, the highest water depth in ponds has been noticed during the month of **September-October** and afterwards it starts to decrease gradually. During the dry season of the month **February-March,** it stands in the lowest depth.

5 ft water depth is considered standard water depth for fish farming. Generally, the peak of farming starts from the march (as shown in graph) as the water depth starts to reach to 5 ft and the best harvesting time is considered from October- December. However, the pattern varies from species to species.

Below graph represents the water depth throughout the year.



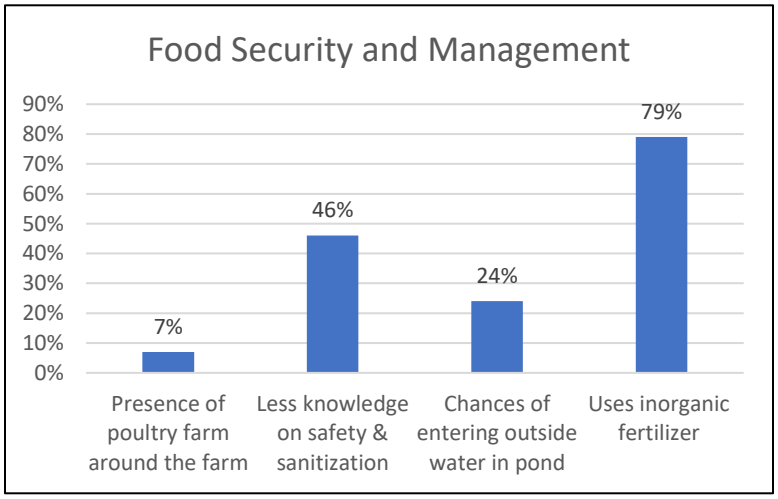
Graph 4: Annual Water Depth Pattern

Food Security & Farming Management

To understand the fish farming security and aquatic lives below water, the respondents were asked about the environment around their pond in which they are farming fish. The study found that, some of the farmer's pond water has risk of getting affected or already affected by the wastes of "*Poultry Farms*" which are present around the pond. Almost **7%** fish farmers reported, there are Poultry farms around their ponds.

Moreover, the very alarming finding of this study is, a major portion which is almost **46%** farmers don't hold proper knowledge on safety & sanitization. Which is taking the aquaculture field as well as the market in a huge threat.

The findings also show that, 24% of the total respondent's fish farm has a chance of entering outside water and **79%** farmers use inorganic fertilizer (Urea, TSP).



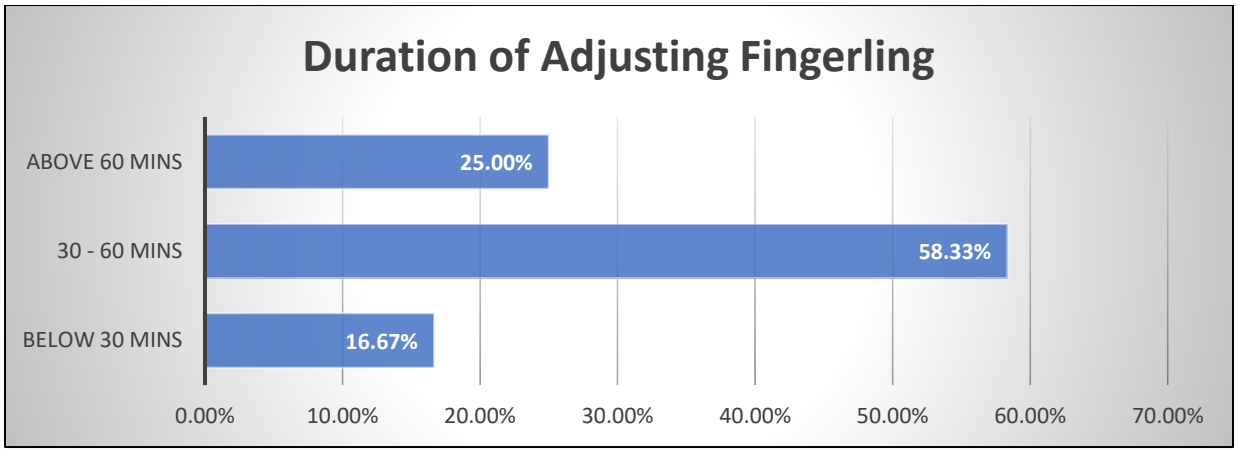
Graph 5: Food Security and Management system of fish Farmers

Challenge: Doesn't have proper knowledge on safety & sanitization and there's chance of Chances of entering outside water in pond as there're poultry farms nearby the ponds.

Process of Farming

The very common fish farming practice in Bangladesh is pond culture and most farmers tend to follow the traditional form of farming. Pond culture or the breeding and rearing of fish in natural or artificial basins, is the earliest form of aquaculture.

15% of the fish farmers adjust/acclimatize fingerlings prior to stocking which seems very low. The duration of adjustment varies significantly with the type of fish. However, 58% farmers among them maintain standard time to adjust fingerling prior to stocking. On the other side, 25% are more advanced & maintain above the standard time and the rest of the 17% farmers maintain below the standard time range.



Graph 6: Fingerling adjusting/acclimatizing duration

The study results show that only 40% farmers remove predators prior to pond preparation which is crucial for fish farming. Which points out to a major fact which is "*lack of fish farming knowledge*" in general. Furthermore, it has been noticed that, 59% farmers don't determine feed quantity on a rotation basis, which is also a crucial task in the process of fish farming.

On the other hand, 81% among the remaining 41% farmers determine feed on weekly basis. 45% farmers maintain feeding frequency once per day and remaining 55% maintain twice per day. Notably, 79% farmers use "*Factory made Pellet Feed*" in their pond. The study result also shows that, 35% farmers identify the diseases only by checking the general symptoms which is visible.

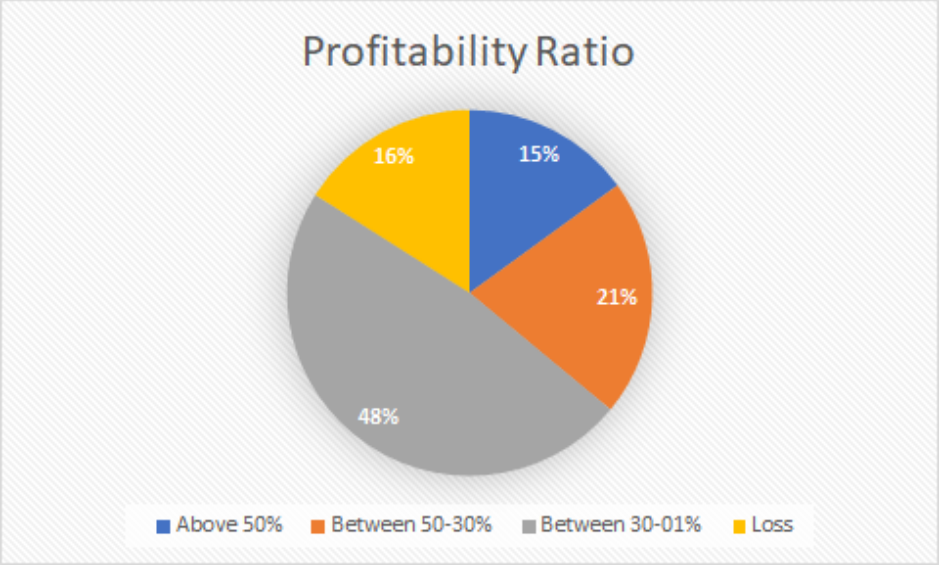
Challenge: The Fish mortality rate is getting high due to practice of poor fingerling adjustment; Fish growth slow down due to low feeding adjustment & water quality deteriorates for not maintaining quality feeding frequency practices.

Income expenditure calculation

- Referring to survey results, Average Income Per Acre: *352,825 BDT*
- Average Cost Per Acre: *295,848 BDT* (*Total cost includes: Labor, Lime, Fertilizer, Fingerling, Feed, Medicine, Harvest & Transportation cost)*
- Average profit*: 56,977 BDT (19%)*

Challenge: *The profit margin for the fish farmers is very low compared to the direct and indirect cost. This calculation only represents the materials and maintenance cost. It excludes the physical labor and time the fish farmer and other unpaid associates spends for a particular harvest.*

Profitability Ratio:



Graph 7: Profitability Ratio

⇒ Average feeding cost per acre 179,488 BDT which is 60% of total fish farming expenditure.

Challenge: *Deciding the good combination of crops, proper knowledge of farming and adequate quality resources are key challenges for the fish farmers to make the minimum profit to meet ends and prepare for the cycle.*

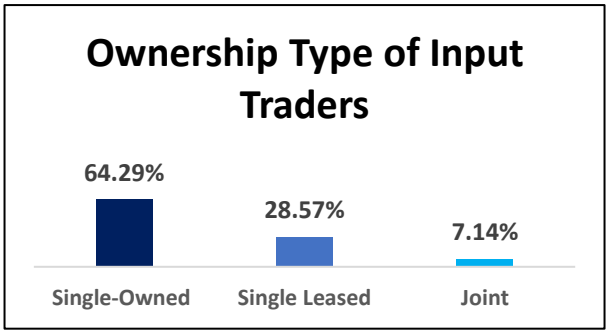
The Market

Input Trader's- at a glance

Ownership Type

The survey results show that, major portion of the total respondents has their own shop. Meaning that, 64**%** input traders run their business by "*Single Ownership*".

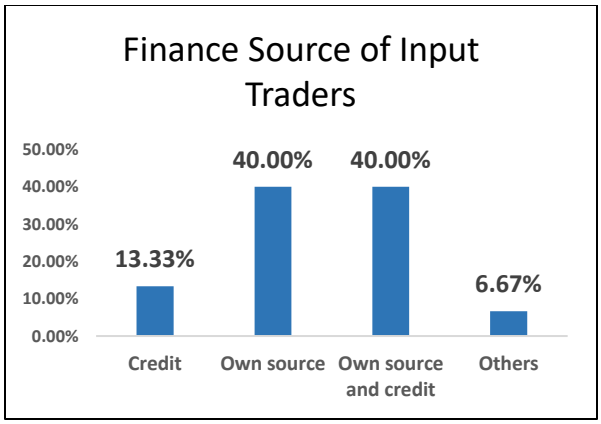
On the other hand, **29%** of the respondents said they run business in "*Single Ownership*" but they have *rented* their shop and rest of the **7%** run their business in "*Joint Ownership*".



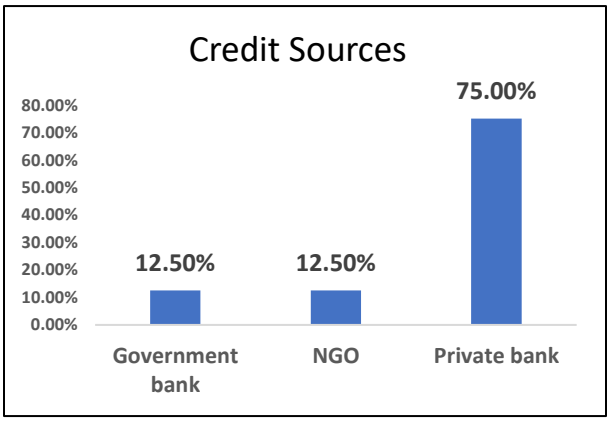
Graph 8: Ownership Type of Input Traders

Finance Source in Business

In any business, the sources of fund or finance is really important. As, based on the enough financial stability the business can change its route towards profit. In the current study, **40%** Input Trader's answers were in common who mentioned that, they have started and running their business with their "***Own Capital***". Likewise, **40%** said they run business with both "***Own Source and Credit***". **13% of** the total respondents have to depend on "***Credit***" and only one of them has taken financial support from his father. Below table represents the finance sources results of Input Traders-



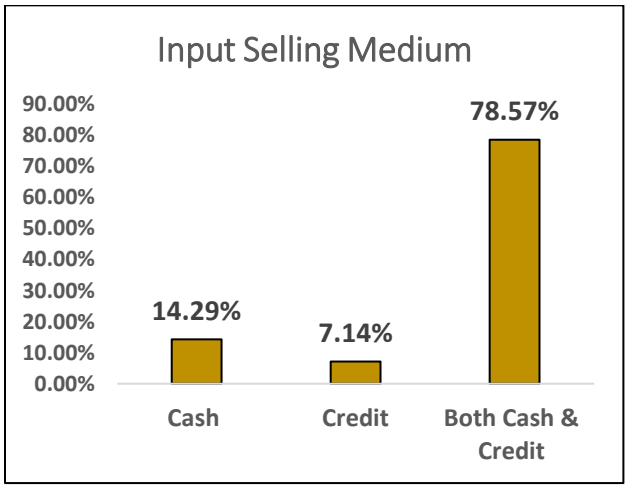
Graph 9: Sources of Finance- Input Traders



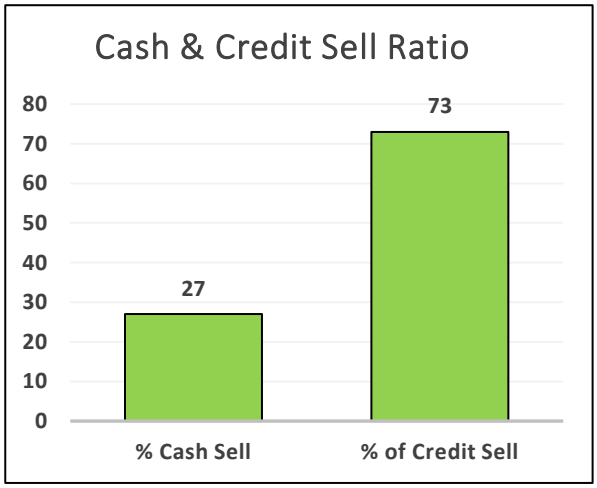
Graph 9: Credit Sources of Input Traders

Mode of payment for Input seller

Study results represented that, **78.57%** input traders sell their products in "*Both Cash and Credit*". Among which only **27%** uses the "*Cash Payment*" mode and rest of the **73%** sales makes business through "*Credit*".



Graph 10: Input Selling Medium



Graph 11: Cash & Credit Sell Ratio

Role of input traders in Fish Farming

Additional Services Beyond Selling Inputs

Collected data represents that, 12 among 15 Input Traders is providing additional service beyond selling inputs. The type of additional services includes- technical suggestion to farmers, facilitate credit or loan support from other organization or financial institutions, connecting with the stakeholders and many other services.

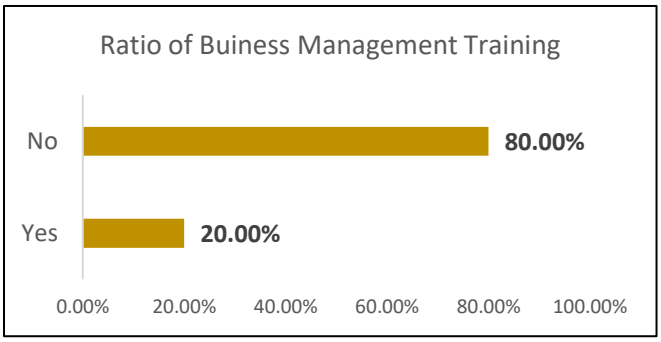
The current study shows the following are available by the Traders to Farmers-

- Credit Facilities for Fish Farming: Provide input by credit for the whole season.
- Fish Farming: Provides Technical suggestions
- Linkage with Other Market Actors: Feed traders/Medicine shop/MF institution

Improved Business Knowledge

Business Management Training; only 3 People have received training in Business Management from the following institutions-

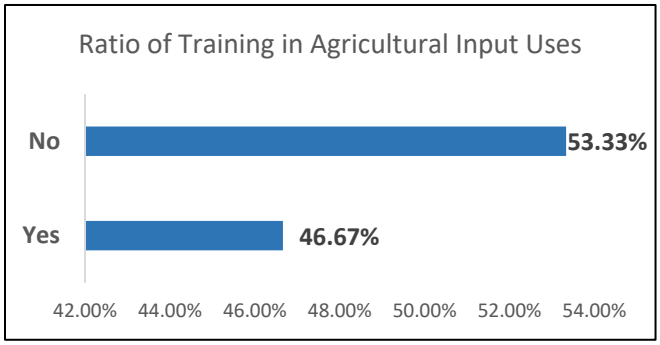
a. *Jubo Unnoyon Shonghastha*
b. *One from his education*



Graph 12: Business Management Training Ratio

Training on the Uses of Agricultural Inputs; 7 participants had training from the following institutions-

a. *AIN Project (Mostly answered)*
b. *Jubo Unnoyon Shonghtha*
c. *Department of Fisheries (DoF)*



Graph 13: Agriculture Input Use Training Ratio

Relationship dynamics (Dependency vs exploitation)

The survey found there is a huge limitation in the technical knowledge of Fish Farmers. So, farmers could not utilize their knowledge properly, lower ability to utilize input required for fish farming in right time and in a right frequency and yield inefficient harvest.

Availability & Accessibility

All the necessary process and techniques are not available for the fish farmers, as well as the market players like input traders and hatcheries. There is scope to work furthermore,

Fish Farmers

- No or limited access to good quality and variety of fish feed
- Limited water qaulity parameter testing facility
- No facility to identify disease or sickness of fish

Hatchery

- Lack of individual experts in specific sector! (***Breeding, Disease control, Maintenance & Machine Handler***)
- No water treatment procedures
- None of the hatchery has a microbiological lab
- None have knowledge on HACCP (*Hazard Analysis Critical Control Point*)
- Unaware of using probiotics
- No SOP

Input traders

- Business Expanson through product selling by Micro-Merchangts

The Real Picture for Fish Farmers

Farmers have lack of knowledge on advance farming technology or in methodology. They are reluctant in nature and go through traditional practices. The most common problems in the aqua-sector are as follows-

I. Low literacy level of farmers leading lack of access to knowledge on farming.
II. Farmers' tendency to purchase input by credit is leading nothing but high loss of farmer.
III. Low or less financial stability for minimum volume invest in farming business.
IV. Insufficient or small package or Micro loan Support from NGOs,
V. Insufficient Technical support and enough follow up by the technical personnel.
VI. Less availability of better-quality fingerlings/offspring.
VII. Less availability of better-quality inputs.
VIII. High Market Price of inputs.
IX. Frequent outbreak of diseases (e.g. lic, EUS)
X. Low survival rate of fish as well as low growth rate of fish.
XI. Lack of knowledge on safety and sanitization,
XII. The weight calculation error in the output market and lower market price of fish.

Scope of work from iSocial

The number of respondent and the study findings are proportionate and reflective to the overall population in our target group. By tapping the gaps identified through this survey we will create a sustainable channel of knowledge, service and product providers to help all the players in this eco-system.

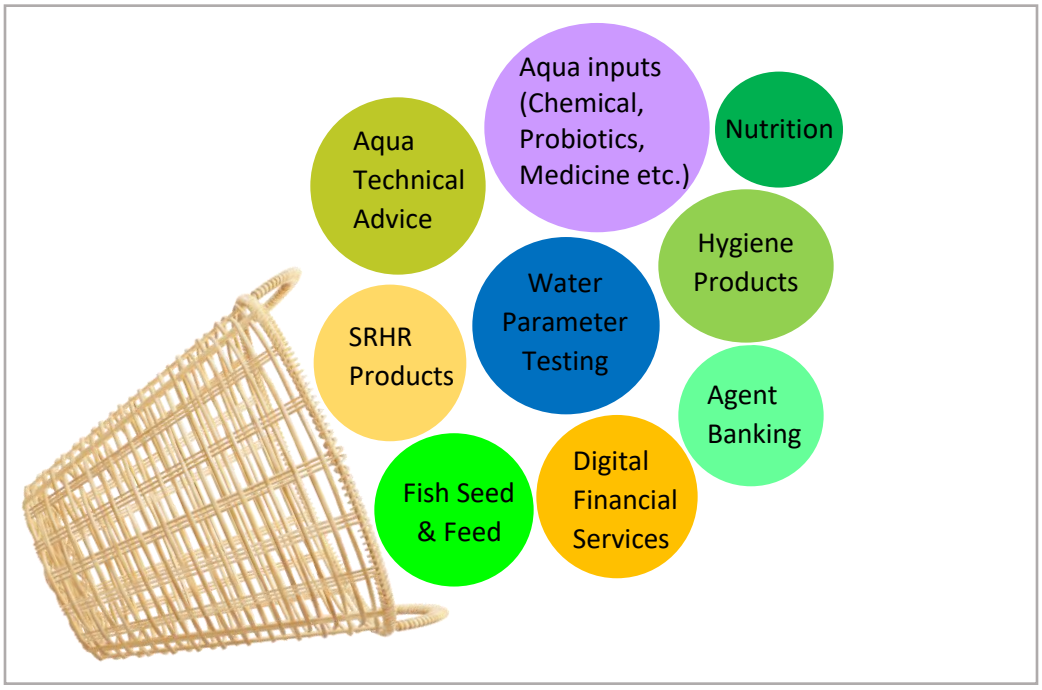
- High possibility to bring the remaining **77%** farmers under water quality parameter testing to maintain best fish farming management practices and also keep the best practice continuing, we

can provide support to the **23%** farmers who are already in practice of water quality parameter testing.

- **85%** of the farmers need to bring under the practices of fingerling adjustment, an area for us to tap which will enhance the survival rate of fish.
- The remaining **60%** farmers need to be brought under the practice of removing predators before preparing pond for farming where we can play our part and also kept the **40%** farmers who did.
- Need to make farmers aware about determining feed quantity on a rotation basis and keep them continuing the practices.
- From the **41%** who determines feed quantity, standard practices should be brought onboard
- No facility for testing disease, it is only done by visual observation
- Bring them to maintain feeding frequency 2 –3 times per day
- Promote proper and safe material usage in storage and transportation to maintain the quality of Fish
- We need to bring out standard and safe practices from available solutions with proper guidance & materials

Combination of Kallyani Products & Services

Based on the findings from the Need Assessment survey and following the discussion with the experts below products and services are planned to be added in the Kallyani product basket for this project. However, the products and services may vary based on standard requirements.



Conclusion

The survey was conducted to observe the present scenario of fish farming practices, present market situation of aquaculture inputs, hatchery operation status and to understand the linkage among different stakeholders related to fish farming. From the study we have tried to find out the area of work to improve fish farming practices and create a linkage among stakeholders through engaging micro-franchise.