



Chapter 5

Problems of Fish Farming

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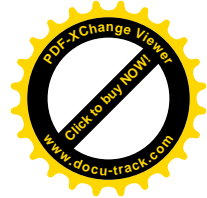
5 INTRODUCTION

In this chapter, an attempt has been made to examine the various problems face by fish farmers in fish farming. The problem has been classified into marketing, financial and infrastructural problem. This chapter has been divided into three sub parts, namely, financial problem, marketing problem and infrastructural problem.

5.1: FINANCING OF FISH FARM: RESULTS AND DISCUSSION

Farming is a business. In any business or any activities expenditure is very huge, and large amount is needed for investment in fixed and working factors of production. It is often big in terms of capital managed and amount of money handled. Modern farm businesses spend sizable amounts of money for items such as land, machinery, equipments, seeds, feeds and chemicals. The farmers also spend for services such as labour, machine hire, feeding and harvesting. In operating a farm, there are many business-associated activities that must be handled if the farm business is to be managed successfully. For fish farming, water body is the most essential fixed factor. Financial management is required for huge financial arrangement. Various individual and financial institutions are involved in fishing finance. Some of the money lenders give money to fish farmers for financing for fixed and working capital. The main components of fishing finance to fish farmers include commercial bank, informal sources like relatives, friends, money lenders, etc. NABARD acts as refinance for financing the fish farmers in the state. FFDA and department of fisheries give financial assistance to fish farmers for farming purpose.

There are several factors governing the paucity of farmers in a country. According to Meir and Baldwin, “a variety of obstacles inhibit entrepreneurship”. Same as the entrepreneur, many obstacles inhibit fish farmers. The development of entrepreneurship depends upon the availability of certain factors. These factors are broadly classified into

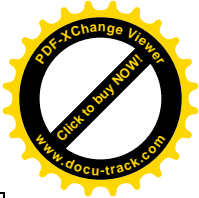


economic and non economic factors. Among the economic factors, capital is one of the most important prerequisite to establish an enterprise. Availability of capital facilitates the fish farmers to bring together the land of one, machine of another and raw material of yet another to combine them to produce goods. Fish farmers, the agricultural entrepreneurs usually make arrangement of their required capital either from their own accumulation or borrowing from financial institutions including banks.

Credit is one of the essential ingredients for increasing growth and development of agricultural sector. Without the supply of credit of the right type, in the right time, in right place in adequate quantity at low cost, farming practices is bound to suffer. Farmers who are engaged in fish farming do not have adequate resources to make investment in farming to increase the productivity of land. While satisfying the credit need of the agricultural sector, the farmers usually fall prey of the money lender in spite of high rate of interest on loan charged by them. Unless the rural credit system reoriented to provide the facility with the disbursement of loan quickly and with harassment, the farmers will not stop going to the money lender. Even though there is a change in the rural financial institutions following the nationalization of banks, the benefit of credit availability have not been distributed to different segment of the farmers of the rural population.

Figure 5.1 Sources of Rural Credit

Formal	Semi-formal	Informal
<ul style="list-style-type: none">➤ Apex development financial institution➤ Commercial banks➤ Regional rural banks➤ Cooperative banks• District central cooperative bank	<ul style="list-style-type: none">➤ Micro finance institutions (MFIs)➤ Self help group(SHG) bank linkage programs	<ul style="list-style-type: none">➤ Money lender➤ Traders➤ Local shopkeeper



<ul style="list-style-type: none">• State agriculture cooperative bank• Primary agriculture cooperative societies		
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Fish farming as a business needs finance. Management of funds is an important aspect of financial management. The term financial management is concerned with the efficient use of an important economic resource, namely capital funds. S.C. Kuchhal defines financial management as that part of management which deals with procurement of funds and effective use of these funds to achieve business objectives.

Funds can be obtained from different sources therefore their procurement is always considered as a complex problem by business concerns and as of fish farmers. Funds procured from different sources have different characteristics in terms of risk, cost and control.

In fish farming, fish farmer acts as a finance manager. The fish farmer is responsible for effective utilization of funds. He has to point out situation where the funds are being kept idle or where proper use of funds is not made. Hence it is crucial to employ the funds properly and profitably.

5.1.1 Importance of Records and Accounts:

Well organized records and accounts are the foundation of any successful business. No farmers, however good his memory can keep all the information of the business in his mind. One of the secrets of good management is to have a records keeping system so that farmers need not to remember all the details of his business. Records and accounts provide a major tool for sound business management. Fish farming as a business requires detailed records of resources use and production as well as financial accounts of the inflow and out flow of money of the business. The table 5.1 reveals that 43% of the respondents maintain book of accounts while 57% respondents do not



maintain any book of account. The study also reveals that 34.6% fish farmers of the owned farms have maintained book of accounts and the remaining 65.4% fish farmers have not maintain any records and accounts. For the cooperative farms, 100% of the farmers maintain records and accounts of the transactions made in their farms. Therefore, the study reveals that in the study area, cooperative fish farmers are more towards business minded. They keep all the information of the farms and they are able to take decision about the farms for precisely.

Table 5.1: Distribution of respondent according to type of ownership and book of account

Type of ownership	Maintain Book of Account		Total
	Yes	No	
Owned	111 (34.6)	210 (65.4)	321 (100)
Leased	0 (.0)	1 (100)	1 (100)
Co-operative	48 (100)	0 (0)	48 (100)
Total	159 (43)	211 (57)	370 (100)

Note: Figure in parentheses indicate percentage

Source: Field survey

For any business huge capital is needed whether it is farming, small and cottage industries or large industries. Farmers need fixed and working capital. Fixed capital for purchasing land, machinery, etc. and working capital for purchasing fish seeds, feeds and medicine, net, etc. and also to pay to the labourers. The study reveals that 100% of the respondents think that fish farming requires huge investment. Lack of finance hindrances the working of any type of business. As fish farming is also a business, lack of finance



hindrances the running of farms. The study also depicts that 99.2% of the respondents said that lack of finance is one of the problems in smooth running of fish farms. They need money in every step of fish farming from rearing to harvesting.

Table 5.2: Distribution of respondents according to necessary of capital and financial constraint

Type of ownership	Huge investment		Total	Finance as constraint		Total
	Yes	No		Yes	No	
Owned	321 (100)	0	321 (100)	318 (99.1)	3 (.9)	321 (100)
Leased	1 (100)	0	1 (100)	1 (100)	0 (0)	1 (100)
Co-operative	48 (100)	0	48 (100)	48 (100)	0 (0)	48 (100)
Total	370 (100)	0	370 (100)	367 (99.2)	3 (.8)	370 (100)

Note: Figure in parentheses indicate percentage

Source: Field survey

The table 5.3 and 5.4 shows the distribution of respondents according to the financial assistance obtained and also the source wise distribution. The study reveals that 31.4% respondents obtained financial assistance and 68.6% of the respondents did not obtain any financial assistance from any sources. From the fish farmers who have obtained financial assistance, only 1.4% respondents take financial assistance from commercial banks while 0.3% respondents seek assistance from FFDA and the remaining 38.6% respondents get financial assistance from department of Fisheries Government of Manipur. The fish farmers try to arrange finance for their fish farms from their family members.

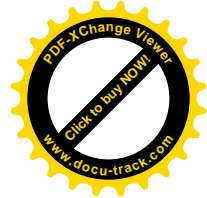


Table 5.3 Distribution of respondents according to financial assistance.

Type of ownership	Obtained financial assistance		Total
	Yes	No	
Owned	111 (36.1)	210 (63.9)	321 (100)
Leased	0 (.0)	1 (100)	1 (100)
Co-operative	0 (.0)	48 (100)	48 (100)
Total	111 (31.4)	259 (68.6)	370 (100)

Note: Figure in parentheses indicate percentage

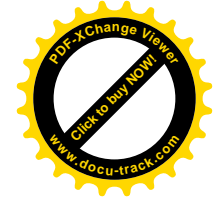
Source: Field survey

Table 5.4 Distribution of respondents according financial assistance received (Source wise).

Type of ownership	Name of the agencies				Total
	none	commercial bank	FFDA	other	
owned	209 (65.1)	5 (1.6)	1 (.3)	106 (33)	321 (100)
leased	1 (100)	0 (0)	0 (0)	0 (0)	1 (100)
co-operative	48 (100)	0 (0)	0 (0)	0 (0)	48 (100)
Total	258 (69.7)	5 (1.4)	1 (.3)	106 (28.6)	370 (100)

Note: Figure in parentheses indicate percentage

Source: Field survey



When the respondents were asked why they did not avail any financial assistance, the study reveals that 62.4% respondents feel that the interest rate for formal and informal sources of finance is high and the remaining 31.1% respondents said that the interest rate offered by different sources is not high. They are able to repay the loan on time if they cultured the fish in right manner and can repay their loan during one harvesting time. The study also reveals that to avail loan they also have to wait for a long period of time so they don't take loan. They are not able to avail loan at the time when they need money. The study also reveals that most of the farmers want financial support at the cheaper rate from the prevailing rate.

Table 5.5 Distribution of respondents according to reason for not taking loan.

Type of ownership	Interest rate is high			Total
	No reply	Yes	No	
Owned	23 (7.2)	216 (67.3)	82 (25.5)	321 (100)
Leased	0 (0)	1 (100)	0 (0)	1 (100)
Co-operative	1 (2.1)	14 (29.2)	33 (68.8)	48 (100)
Total	24 (6.5)	231 (62.4)	115 (31.1)	370 (100)

Note: Figure in parentheses indicate percentage

Source: Field survey

The table below shows the distribution of respondents according to the duration for getting loan and the table reveals that 0.81% respondents said that it took 1-3 months and another 0.54% respondents said that it took 4-6 months to get loan. Many respondents did apply for loan because of the reason that the process of getting loan is too long and they did not able to get loan at the time



of need. The table shows that 98.9% respondents did reply to the following query. The process of getting loan is too long and tough.

Table 5.6: Distribution of respondents according to duration for getting loan

Type of ownership	Duration for getting loan			Total
	No reply	1-3 months	4-6	
owned	317 (98.8)	2 (.6)	2 (.6)	321 (100)
leased	1 (100)	0 (.0)	0 (.0)	1 (100)
co-operative	48 (100)	0 (.0)	0 (.0)	48 (100)
Total	366 (98.9)	2 (.5)	2 (.5)	370 (100)

Note: Figure in parentheses indicate percentage

Source: Field survey

5.1.2 Working capital management:

One of the most important areas in the day today management of the farm is the management of working capital. Working capital management is concerned with management of the level of individual current assets as well as the management of total working capital. One of the function of financial management which is procurement of funds is firstly concerned for financing working capital requirement of the farm and secondly for financing fixed assets. In fish farming, working capital includes fish seeds, fish feeds, fish medicines, organic and non organic fertilizers, weeds, nets, water and labourers. 100% of the respondents save some money from the sales of fish and manage their working capital from this saving. If the saving does not fulfill all the need of working capital then they harvest and sell the fish at the time of need. With that money they manage their working capital. As

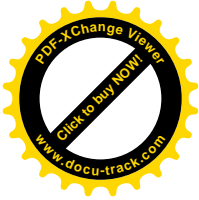
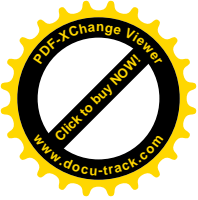


fish farming is done with other activities like agriculture, poultry, dairying, fish farmers also manage their working capital from these source of income. Around 68% respondents also manage their working capital from their family member income. Family member income includes income from agriculture, poultry, dairying, embroidery and job.

5.1.3 Cost- benefits analysis of fish farming:

Cost-Benefit Analysis (CBA) is a technique for evaluating a project or investment by comparing the economic benefits with the economic costs of the activity. Cost-benefit analysis has several objectives. First, CBA can be used to evaluate the economic merit of an entire project, and second the results from a series of cost-benefit analyses can be used to compare different types of investments. It is utilized to assess investment decisions, to examine the worth before funds are committed, or to assess the impact of the investments after a point in time. Cost benefit analysis will tell the overall performance of fish farming. There are certain costs incurred in fish farming. These are put under two board heads, namely, variable cost or input cost and labour cost. For the purpose of the study

- A) Variable cost:
 - 1) Seed cost
 - 2) Feed cost
 - 3) Medicine cost
 - 4) Net
 - 5) Others (weeds, fertilizers, etc)
- B) Labour cost
 - 1) Application of input
 - 2) Netting charge
 - 3) Cleaning of pond
 - 4) Watch and wards
 - 5) Harvesting



A) Variable cost are those input cost that are incurred in day to day functioning of fish farm. Every farm used different input in production process.

Table 5.7 Distribution of respondents according to the cost of fish seeds incurred.

Seed cost (in ₹)	Number of respondents	%
Below 20,000	131	35.41
20,000-40,000	125	33.78
40,000-60,000	89	24.05
60,000 and above	25	6.76
Total	370	100

Source: Field survey

The table above shows the distribution of respondents according to the cost of fish seeds incurred in running their fish farm. The seed cost is calculated on cost incurred per hectare. The table shows 35.41% respondents incurred seed cost below ₹ 20,000, 33.78% respondents incurred ₹ 20,000-40000 for fish seeds and another 24.05% respondents incurred seed cost of ₹ 40,000-60000. For fish farming fish seed sis the main input. The fish farmers incurred more cost on fish seed. The mean cost of fish seed is ₹30,450 per annum.

Table 5.8 Distribution of respondents according to the cost of fish feeds incurred.

Feed cost (in ₹)	Number of respondents	%
Below 10,000	22	5.9
10,000-20,000	139	37.57
20,000-30,000	181	48.93
30,000-40,000	0	0
40,000 and above	28	7.6
Total	370	100

Source: Field survey



The above table shows the distribution of fish farmers according to the cost incurred on fish feed. The table reveals that maximum of the respondents incurred ₹20,000 to 30,000 on fish feed per annum and 37.57 respondents incurred ₹10,000 to 20000 on fish feed. Mean of feed cost= ₹21,431.

Table 5.9 Distribution of respondents according to the cost of fish medicine incurred.

Medicine cost (₹)	Number of respondents	%
0-500	0	0
500-1000	140	37.84
1000-1500	176	47.57
1500-2000	54	14.59
Total	370	100

Source: Field survey

The above table shows the distribution of respondents according to the cost incurred on medicine for fish. The table reveals that 47.57% of respondents spend ₹1000-1500 on medicine for fish and another 37.84% respondents spend ₹500-1000 on medicine per annum. Mean cost of medicine incurred is ₹1,134 per annum.

There are other costs which are incurred in fish farming. It includes net charge and water charges. Net charge is calculated on three year basis. The cost incurred on net charge is ₹4,600 per annum. The cost of water charge is ₹3000 per annum.

B) Labour cost: In fish farming many activities are performed by the family members of the fish farmers. They hired labourers for cleaning of pond and also at the time of harvesting. So, it is very difficult to segregate labourers for different activities. However, 2-3 family members are used for the purpose of fish farming. Fish farmer hired 6 labourers @ ₹150 per person for cleaning



and maintenance of ponds and another 8 labourers @ ₹150 are hired in harvesting of fish.

Table 5.10 Cost table

Sl. No.	Items	Quantity per hectare	Cost per hectare (in ₹)
A	Input cost:		47650
1	Fingerlings (fish seed)	6000 nos. @ ₹3 per head	18000
2	Lime	300 Kgs. @ ₹10 per kg.	3000
3	Mustard cake	500 kgs @ ₹7 per kg.	3500
4	Feed	1000 kgs @ ₹15 per kgs	15000
5	Medicine (aqua health)	500 ml. @ ₹110/100 ml	550
6	Net (3 years life)		4600
7	Others (refilling and Dewatering)		3000
B	Labour cost:		2100
1	Application of inputs	Self	
2	Netting and cleaning of pond	6 nos @ ₹150 per head	900
3	Watch and ward	Self	
4	Harvesting	8 nos. @ ₹150 per head	1200
	Total cost:		49750

Source: Field survey

Total cost=Fixed Cost+ operating cost (input cost and labour cost)

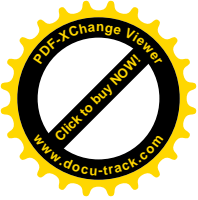
$$=₹30000+49750$$

$$= ₹79750$$

Average gross yield= 3000kgs

Gross income @ ₹80/kg =₹240000

Net profit = Gross income-Total cost



=₹240000-79750

=₹160250

Cost-benefit ratio is 1:3.01

The cost benefit ratio of the fish farm in the study area is 1:3.01 which corroborate the findings of Central Inland Fisheries Research Institute (CIFRI 2005) where the average cost benefit ratio is calculated to be 1:3.51 in fish farming.

5.2 MARKETING PROBLEM: RESULTS AND DISCUSSION

The term fish marketing is a synthesis of two words- fish and marketing. The word agriculture and allied activities which include horticulture, sericulture, plantation, fisheries, dairy and dairy products, livestock, poultry, and rearing of pigs are in combination and not separable in rural life. Hence, in general, the term 'agriculture' connotes all the above activities.

Marketing generally involves a series of planned activities involved in moving goods from production place to the point of consumption. Marketing starts with human needs, wants and demands. American Marketing Association defines marketing as the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfy individual and organizational goals. Kotler defines marketing as the set of human activities directed at facilitating and consuming exchanges.

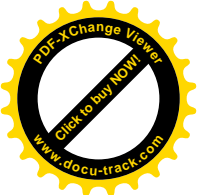
There are many types of market. On the area of coverage, market is divided into local, national and international market. On the basis of location village market, primary market and on the basis of volumes of trade, market is divided into retail markets and wholesale market. Market is also divided into cash market and forward market, long term and short term market.

National Commission on Agriculture (NCA) defines agricultural marketing as a process which starts with a decision to produce a



saleable farms commodity, and involves all aspects of marketing structure or system, both functional and institutional, based on technical and economic considerations and includes pre-harvest and post-harvest operation of assembling, grading, storages, transportation and distribution.

Fish marketing concepts have changed with the increasing fish production and increasing demand for fish. Fish is treated as a cheap source of animal protein. Production of fish requires marketing. Marketing is one of the most important aspects in fish farming. Fish is a highly perishable commodity with unpredictable supply. Production and marketing of fish play a significant role in contributing to economic growth. (Kumar, 2008) Farmer friendly fish farming is an important economic activity of the rural people of India for augmenting their income, generating employment and ensuring food and nutritional security (Ranadhir, 1984). To make the fish available to consumers at reasonable prices, right time and place require an effective marketing system. Therefore, fish marketing is a vital aspect for sellers, consumers and other facilitating agencies, including the government. Hence agriculture becomes the backbone of the Indian economy. A simple definition of fish marketing is buying and selling of fish and fish product. In the olden days, when villages were self sufficient and self contained, the farmers used to barter or sell their produce in the village market. Today the agriculture markets have evolved. There are stages and interdependence in the fish marketing activities. The fish changes many hands before it reaches the ends users. (R.V.Badi & Badi, Rural Marketing, 2008). The degree of consciousness among respondents about the environment and its impact on fish production and marketing is limited. Infrastructural facilities and information dissemination about marketing are two very important issues which need immediate attention (Roy, 2008). (Ravindranath, 2008) had identified some of the problems in fish marketing which include high perishability and bulkiness of material, high heterogeneity in size and weight among species, high cost of



storage and transportation, no guarantee of quality and quantity of commodity, low demand elasticity and high price spread. (Gupta, 1984) and (Srivastava, 1985) had also studied the marketing of fish and fishery products in India, wherein they had analyzed price variations among species across states and had identified infrastructural problems in marketing of fish. An efficient fish marketing system could eliminate some of the depressed pockets of malnutrition by supplying fish at reasonable prices to people living on subsistence level (Rao, 1983). There are some studies conducted on the production and marketing of fish in India (B. Ganesh Kumar, 2008), Ali et.al (2008), Hussain (2003). The domestic fish marketing system in Manipur is neither efficient nor modern and is mainly carried out by private traders with a large number of intermediaries between producer and consumer. Manipur lives in village where agriculture is the main occupation. Since fishery is state subject, the success in fisheries performance is crucially dependent on the policies and actions initiated by the state. This is an opportune time to give serious considerations to various facets of fish farming to bring rural development. The role of fish production and marketing of fish in initiating and stimulating the process of rural development is well recognized, studies on fish farming in Manipur is somewhat rare. Further empirical studies on fish marketing and related problems will help in augmenting fish production and in bringing rural development in Manipur. An attempt has been made to study the different production and marketing aspects of fish farming in Manipur.

The producer's price of fishes is collected from different fish farmers and the wholesalers and retailers price are collected from different markets of these four districts. The data is tabulated and statistical analysis like percentage and ranking method are used.

In the study area however, production of fish is mainly done to meet the local demand and the marketing activities is restricted mainly to nearby markets and mainly done at farm place. Marketing



of inland fish in different states, though has some common features, differs in many ways.

5.1.1 Production:

In Manipur most of the fish farmers are marginal and small farmers. In study area, half of respondents are marginal farmers i.e. the size of the fish farms is 0-1 hectare. And half of the fish farmers are small fish farmers i.e. they hold farm with area ranging from 1-3 hectare in which 33% respondents are having water area of 1-2 hectare and 14.6% respondents are having 2-3 hectare of fish farm.

Table 5.11: Distribution of respondents according to the size of fish farm

Size of fish farm (in hectare)	Districts				Total
	Bishnupur	Imphal East	Imphal West	Thoubal	
0-1	43 (11.6)	116 (31.4)	22 (5.9)	5 (1.4)	186 (50.3)
1-2	30 (8.1)	32 (8.6)	50 (13.5)	10 (2.7)	122 (33)
2-3	22 (5.9)	6 (1.6)	16 (4.3)	10 (2.7)	54 (14.6)
More than three	1 (.3)	2 (.5)	4 (1.1)	1 (.3)	8 (2.2)
Total	96 (25.9)	156 (42.2)	92 (24.9)	26 (7.0%)	370 (100)

Note: Figure in parentheses indicate percentage

Source: Field survey

Many of the fish farmers adopted mixed fish or composite fish farming practices in Manipur, where they cultivate different types of fish in single fish ponds. Major carps (rohu, mrigal, catla), exotic carps (common, silver, grass carps) and indigenous fish (pengba, ngaton) are cultivated in the study area. Production of major carps and exotic



carps are more than the indigenous fish. The respondents also feels that grass carps is the most profitable fish that should be cultivated as it needs less caring and growth is faster than other types of fish. However, in the study area, 49.2% fish farms cultured major carps, exotic carps and minor carps while 41.3% fish farms cultured both major and exotic carps and only 9.5% fish farms cultured only major carps.

Table 5.12: Distribution of respondents according to the type of fish cultured

Fish cultured	Districts				Total
	Bishnupur	Imphal East	Imphal West	Thoubal	
Major carps	0 (0)	2 (.5)	28 (7.6)	5 (1.4)	35 (9.5)
Major, minor and exotic carps	22 (5.9)	85 (23.0)	14 (3.8)	9 (2.4)	182 (49.2)
Major and exotic carps	74 (20)	69 (18.6)	50 (13.5)	12 (3.2)	152 (41.3)
Total	96 (25.9)	156 (42.2)	92 (24.9)	26 (7.0)	370 (100)

Note: Figure in parentheses indicate percentage

Source: Field survey

The main activities of fish farms in Manipur are to produced fish seeds and table fish (fish that can be consumed). However, in the study area, 2.7% fish farms produce only fish seeds, 59.7% fish farms produce only table fish while 37.6% produce both fish seeds and table fish. This practice of producing both fish seeds and table fish is prevailing mostly in Imphal East district of Manipur. In all the four districts the main purpose of fish farming is to produce table fish. In Bishnupur district 25.9% respondents produce table fish. The



purpose of fish farms in Imphal West district is also used to produced table fish that account for 23% respondents.

Table 5.13: Distribution of respondents according to purpose of fish farming

Purpose of fish farming	Districts				Total
	Bishnupur	Imphal East	Imphal West	Thoubal	
Fish seed	0 (0)	2 (.5)	7 (1.9)	1 (.3)	10 (2.7)
Table fish	96 (25.9)	11 (3.0)	85 (23.0)	25 (6.8)	217 (58.6)
By-product of fishing industry	0 (0)	4 (1.1)	0 (.0)	0 (.0)	4 (1.1)
Fish seed and table fish	0 (0)	139 (37.6)	0 (.0)	0 (.0)	139 (37.6)
Total	96 (25.9)	156 (42.2)	92 (24.9)	26 (7.0)	370 (100)

Note: Figure in parentheses indicate percentage

Source: Field survey

In the study, harvesting of fish is mainly done by persons who have control on the water body. This could be owned or cooperatives. For the owned fish farm, the wholesalers and the owner of fish farms fix a date for harvesting the fish and harvested jointly by the owner and wholesalers. Both male and female members of the fish farms are engaged in harvesting of fish. There is a linkage (contract) between fish farmers and the wholesalers for selling the fish.

Grading of fish is observed at different levels. After harvesting fish is graded based on their different varieties like rohu, mrigal, grass carps, etc. overall, grading relates to final price of fish. Grading of fish based on weight range is not practiced in the study area. This is because price of fish prevails in different ranges.

When the farmers were asked about the production cycle of fish adopted in their farm i.e. how many times they harvest the fish in a



year, 91.6% of respondents harvested their fish only once in a year which means that the production cycle adopted in the study area is 8-10 months in a year. Remaining 6.2% of respondents harvested the fish two (2) times and 2.2% respondents harvested for three (3) times in a year. But, there is a variation in harvesting the fish. The fish farmers harvested any time when the fish reach the marketable size according to their needs. The fish is harvested to meet variables inputs (seeds, feeds, etc.) of the farms and also for their personal purposes.

Table 5.14: Distribution of respondents according to production cycle

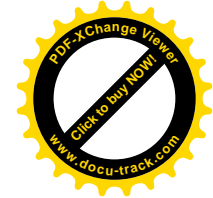
Size of fish farm (in hectare)	Production cycle (number of time fish has been harvested in a year)			Total
	1	2	3	
0-1	180 (48.6)	3 (.8)	3 (.8)	186 (50.2)
1-2	107 (28.9)	11 (3.0)	4 (1.1)	122 (33)
2-3	47 (12.7)	6 (1.6)	1 (.3)	54 (14.6)
More than three	5 (1.4)	3 (.8)	0	8 (2.2)
Total	339 (91.6)	23 (6.2)	8 (2.2)	370 (100)

Note: Figure in parentheses indicate percentage

Source: Field survey

5.2.1 Pricing:

Once the harvesting is done, the farmers sell the fish at a price generally fixed by mutual discussion mainly with the wholesaler. In most of the cases there is lack of appropriate storage facilities. Fish farmers made a regular visit to the local and main market located in the state to make itself aware of the prevailing price from different markets. The floor price is also applicable for retailers and consumers who would like to buy fish from farm site. But the fish farmers give some trade discount. The actual price of fish sold varies, which



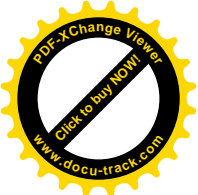
depends on amount of fish harvested, size of the fish and participation of middlemen in the supply chain of fish.

The price of the fish varies according to the size of fish. Both retail and wholesale prices of fish was observed to be similar for all the farms. The price range of wholesale level and retail level was observed to be ₹10 to ₹20 per kg. It depends on the distance between fish farm and the market and the availability of fish. The fish is marketed mostly at farm site to wholesalers; the producers' price of Indian Major Carps (rohu and catla) ranges from ₹100-110 per kg. and producers' price for mrigal is ₹90-100 The price of exotic carps other than silver carps ranges from ₹90-100 per kg. The price of Indian Major Carps is higher than the exotic carps (grass, common, silver). The price of silver carp is observed to the lowest among the carps cultured in Manipur and it ranges from ₹60-70 per kg. The wholesale price of Indian Major Carps (rohu and catla) is ₹120 per kg while the price of exotic carps and mrigal is ₹110 per kg and the price of silver carp is ₹80 per kg. Pengba, the State Fish of Manipur is the costliest fish in Manipur. The price of pengba is ₹400 per kg. The retail price of local fish is shown below:

Table 5.15: Producer, wholesale and retail price of fishes

Types of fishes	Producers' price (₹per kg)	Wholesale price (₹per kg)	Retail price (₹per kg)
Rohu	100-110	120	140-150
Catla	100-110	120	140-150
Mrigal	90-100	110	120-130
Common carp	90-100	110	120-130
Silver carp	60-70	80-90	100-110
Grass carp	90-100	110	120-130
Pengba	350		400

Source: Field survey



5.2.3 Main actors and activities in fish marketing

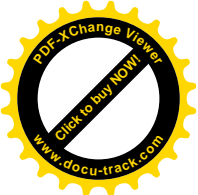
Fish passes through several intermediaries from fish pond to the consumers. The key intermediaries in fish marketing are wholesaler, retailer and vendor. There is no strict boundary between intermediaries and they perform several functions while marketing fish.

Wholesaler:

The wholesalers buy fish in bulk directly from the farmer at farm site and sell it to the retailer at local village market and also to the nearby market. They carry fish by head loading or by cycle to the nearby market and carry fish to the market of Imphal by jeep or van. Exact information on the marketing margin is not available but they used to get ₹ 10-20 per kg of fish. They usually know the demand of fish in the market and are aware of trend of daily fish catches. The wholesaler takes the risk of selling the fish. Transportation is the largest share of the wholesaler's cost.

Retailer:

The retailers sell the fish directly to the consumer. They have the knowledge of local demand and limitation of their purchasing power. The retailer grade, clean and display for the consumers. Retailers mainly buy fish from the wholesaler but in several cases, retailers buy fish directly from the fish farmers at farm site. Same as the wholesaler, marketing margin of the retailers is not available in exact amount but they used to get ₹15-25 per kg of fish. Transportation is the largest share in the retailer's cost followed by spoilage of fish due to bad transportation and spending considerably amount of time in selling the fish in the market. They keep the fish in tin container with water. Retailers sell in daily market depending on the availability of fish as it is somewhat seasonal in nature.



Vendor:

There are also fish vendors in the study area who sell fish directly at consumer's doorstep. Most fish vendor sell smoked fish and carry fish by head loading.

Transportation:

Transportation is the interlinked activity in the marketing of fish. The mode of transportation in the study depends on quantity of fish and travel distance. Head loading is used to carry fish when the distance of farm and local village market is between the ranges 0-2 km. mode of transportation like cycle, auto, jeep and van and sometime bus are used to carry fish when the distance the fish is to be transported for more than 2 km.

5.2.4 Market channels and margins:

Marketing channels relate to the demand and supply scenario across markets, and the consumers preference. The key marketing channel in the region includes harvesting of fish from water bodies and sell in different markets, which depends on quantity of fish harvested (Vrutti, Developing a Marketing Strategy for Fisheries Intervention aiming at Livelihood Promotion in Buldelkhand Region of India, 2008).

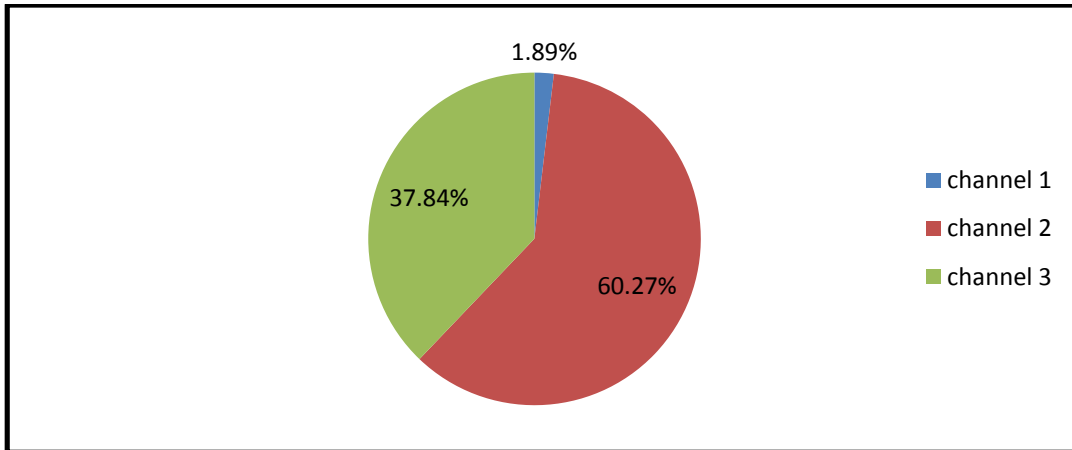
Marketing channels (or distribution channels) are an essential part in marketing of fish. Majority of fish farmers do not sell their product directly to consumers. They used intermediaries like agents, wholesalers and retailers to make available their product to the consumers. Decision of channels choice is very important as it decide other marketing decisions. The role of channels is not mere distribution. The intermediaries have to constantly interact with producers and customers to coordinate size, quantity and other expectation aspects of fish. As fish is seasonal in nature, it calls for constant track of up and downs of pricing.

Channel 1: Producer → Consumer (farm gate)

Channel 2: Producer → Wholesaler → Retailer → Consumer

Channel 3: Producer → Retailer → Consumer

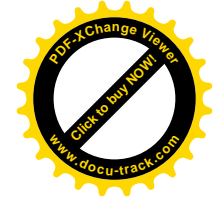
Figure 5.2: Distribution of respondents according to marketing channel



There are predominantly three channels in fish marketing in the study areas. In most of the farms, harvested fish goes to the local villages markets through wholesalers and retailers, from where it goes to main market of Manipur i.e. ima market(mother market) which is located in the hub of Imphal town. Fish marketing in study area confined to the local market only.

In channel 1, the farmers (producers) sell the fish directly to the consumer. This channel is not so common but still prevails in the study area. In this channel the consumers directly approach the farmers to sell their fish. This mainly happen when the consumers have function (party) at their resident as any function is incomplete without fish mainly for meetei (they are the inhabitant of Manipur).

Channel 2 and 3 are the most common marketing channels that prevail in the study area. In channel 2 the farmer sell fish directly to the wholesalers. The wholesales directly approach the farmer for harvesting the fish. Harvesting will be made when both the farmer and



the wholesaler agreed. After the fish is harvested, the fish is carried to the local village market and to the nearby market. There is no wholesale market in the study area. Producer's share in consumer price is around 70%.

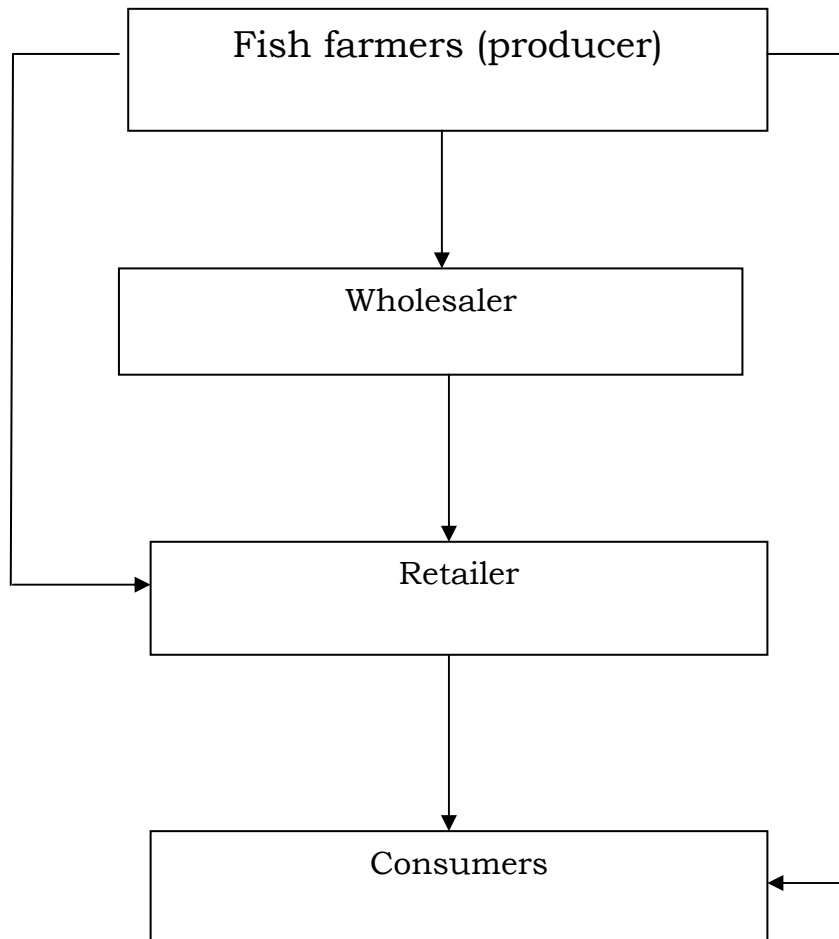
In channel 3, the farmer sells fish directly to the retailers in higher price than the wholesaler. Same as channel 2, producers' share in consumer price is around 70%. On the basis of fish selling market, there are three types of market viz. local, national and in international market. But the market in the study area is confined only to the local market. This includes Ima market, Moirang bazaar, Ningthoukhong bazaar, Bishnupur bazaar, Thanga bazaar, Nambol bazaar, Sekmajing bazaar, Mayang Imphal bazaar, Konung lampak market and Thoubal bazaar.

In the study area, most of fish is traded on farm site. Where 64.9% of the fish farmers traded fish on farms site only and 34.3% fish farmers traded fish both at farm gate as well as market. 60.27% fish farmers sell their produce to wholesalers and 37.84% farmers sell their produce directly to the retailers. Wholesalers buy fish at pond site and carry fish in bulk to the market in local villages where it sells to the retailers. Then, the retailers either sell the fish in local market or sell it to the ima market. Fish farmers sell the fish directly to the retailers in the local village market. The farmers sometimes sell their produce in fish fairs. The fish fair is organised by the Department of Fisheries, Government of Manipur every year on the eve of Ningol Chakouba festival held in October or November. The marketing of fish in mainly done by female.

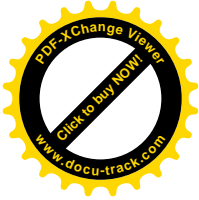
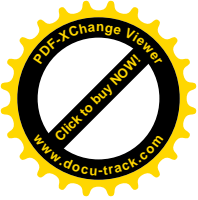
Besides this, certain quantity of fish goes for consumption at family level. At time, the farmers gifted the fish to their relatives and also sell it at a subsidized rate.



Figure 5.3: Marketing channel



Source: Field survey



5.2.5 Marketing problems:

There exists number of obstacles in the marketing of fish. To assess the degree of marketing problems faced by the fish farmers on 7 (seven) different aspects of marketing, the following methodology is adopted.

At the first stage, the respondents are asked to indicate the level problems on three point scale with the ratings high degree of problem, medium degree of problem and low degree of problem and weights have been assign as 3,2 and 1 respectively.

The mean values has been calculated for each attributes as mention below

$$\text{Mean value} = \frac{fx}{n},$$

Where f= number of responses obtain for each rating,

x = the value assign, and n= number of observation

At second stage, the mean value of different problems faced by fish famers is calculated as shown in the following table.

Table 5.16: Problems faced by fish farmers

Sl. No.	Variables	Actual score	Rank	Degree of problem
1	Transportation problem	2.76	1	***
2	Competition from other state	2.05	5	**
3	Price variation of local fish and imported fish	2.16	4	**
4	Lack or less demand of fish	1.00	7	*
5	High cost of input(fish seeds, feed)	2.71	2	***
6	Storage problem	2.58	3	***
7	Lack of refrigerated vehicle to carry fish	1.72	6	**

Source: Field survey

*less serious problem

**serious problem

***very serious problem



Transportation is the main problem faced in the study area. Food is the basic necessity to all human being and it can be reached only through transport. Transportation is an essential part of marketing activities for any type of product. Different type of transport activities are involved for B2B (Business to Business) and B2C (Business to Consumers) needs. This is because fish are not consumed totally at farm site. There is a movement of fish from farm site to the market. Fish gets spoiled due to poor transportation and it further reduces the profit of wholesalers and retailer. The study reveals that transportation problem is high in the study area. It score 2.76 and encountered high degree of problems and rank 1st among the marketing problems faced by the fish farmers.

The fisheries department of state has 1(one) refrigerated vehicle to carry fish. The distance the fish has to move is of short distance i.e. within the state only so the fish farmers do not feel the need of having this kind of refrigerated vehicle. This problem has been put in low degree of problems.

Fish farmers cannot fulfill all the demand of fish in the state. Supply is less than the demand of fish. There are many agencies who imported fish from other states. The main importers of fish are Andhra Pradesh, Assam and West Bengal. Fish farmers have to compete with imported fish for size, kind of fish and price. The problem relating to competition regarding size and various kinds of fish is 2.05 which also encountered high degree of problem and rank 5th among the marketing problems faced by the fish farmers. And the problem relating to price variation among local fish and imported fish is encountered high degree of problem with 2.16 score and ranked 4th among the marketing problems.

The most important function of any market is to determine the price of commodities that enter the market. Demand behavior of buyers and supply behavior of sellers are the two forces that affect price merge. In the study area demand for fish is more than the supply of fish. The fish farmers have control on the sale of fish. The



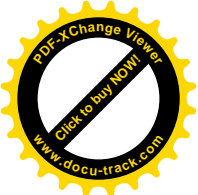
farmers ranked this variable as least problems or no problems among the marketing problems.

Fish seeds, feed, medicine is the most important inputs in fish farming. High cost of these inputs hindrances the production of fish farming. Fish seed is the most essential input. The farmers has to know the different types of fish seeds available in the market and also know the required quantity of fish seeds per hectare to give maximum production. There are special fish feed available in the market (lime, muhua cake). Most of the farmers are marginal and economically poor farmers they cannot afford all the quality fish seed and fish feed available in the market. However, in the study area, most of the farmer faced different marketing problems. Farmers used locally produced fish feeds like grass, muhua cake, etc. Problem of high cost of fish inputs score 2.71 points out of 3 and it has been recorded high degree of problem. It has been ranked 2nd among the marketing problems faced by the fish farmer in the study area.

Storage is one of the essential needs in marketing of fish. As fish is a highly perishable food item, it needs great care to preserve its quality. Practice of storage is as old as humanity. Only the method, quantity and safety factors have improved in the modern age. Storage is mainly done to protect from spoilage and pilferage and to sell in better price. When the farmers sell fish to the wholesalers or retailer at farm site, it does not require any storage of fish. But when the retailer has to sell fish in market for longer time period, it needs storage to preserve the quality of fish and to get reasonable return from the sale of fish. Fish farmers store fish in the tin container with water. There is no system of storing fish in ice. The respondents feel that storage is one of the marketing problems with high degree and rank 3rd immediately after high cost of inputs.

5.3 Related infrastructural problems: Results and discussion

Infrastructure is defined as the physical framework of facilities through which goods and services are provided to the public. To make



fish farming as a well establish business, one should know the problems faced by fish farmers so as to overcome these problems. Fish farmers suffer from many basic requirements for their farm. For the proper implementation of policy and programs, the problems faced by the fish farmers should be the starting point of research.

Here, the Null hypothesis (H_{02}) is being tested: The problems and productivity of fish are independent. The problems are further divided into ten (10) different problems. The sub hypotheses are formulated for each problem and have been tested individually using a chi square statistic with the help of SPSS 17.0 version at 5% level of significant. The sub-hypotheses are as follows:

1. The problem of inadequate availability of fish seed and productivity of fish are independent.
2. The problem of high price of fish seeds and productivity of fish are independent.
3. The problem of high fingerlings mortality and productivity of fish are independent.
4. The problem of maintaining pond and productivity of fish are not independent.
5. The problem of problems of netting and productivity of fish are independent.
6. The problem of catching and productivity of fish are independent.
7. The problem of lack of technical knowledge and productivity of fish are independent.
8. The problem of lack of training and supervision and productivity of fish are independent.
9. The problem of stealing and productivity of fish are independent.
10. The problem of small size of fish at harvest and productivity of fish are independent.



Table 5.17: Classification of degree of problem of inadequate availability of fish seed of respondents according to the productivity of fish

Inadequate availability of fish seed	Productivity of fish (kgs)					Total
	0-1000	1001-2000	2001-3000	3001-4000	4000 and more	
Low	19 (16.4)	43 (34.1)	22 (20.4)	5 (62.5)	2 (16.7)	91 (24.6)
Moderate	19 (16.4)	9 (7.1)	19 (17.6)	2 (25)	0 (0)	49 (13.2)
High	78 (67.2)	74 (58.7)	67 (62)	1 (12.5)	10 (83.3)	230 (62.2)
Total	116 (100)	126 (100)	108 (100)	8 (100)	12 (100)	370 (100)

Chi-square =26.73 df= 8 significant at 5% level

Note: Figure in parentheses indicate percentage

Source: Field survey

The above table shows the classification of degree of problem relating to inadequate availability of fish seed and productivity of fish face by fish farmers in Manipur. Fish seed is of the most important inputs in fish farming. The unavailability of this input hindrances the production of fish. The study reveals that 62.2% respondents are having high degree of problems, 13.2% respondents are having moderate degree of problems and 24.9% respondents are having low degree of problem relating to problems of inadequate availability of fish seed.

The study further reveals that the calculated Chi Square is 26.73 and it is greater than the table value i.e. 15.507 at 8 degree of freedom, so reject the null hypothesis. The inference is that the problem of inadequate availability of fish seed and productivity of fish are associated.



Table 5.18: Classification of degree of problem of high price of fish seed of respondents according to the productivity of fish

High price of fish seed	Productivity of fish (kgs)					Total
	0-1000	1001-2000	2001-3000	3001-4000	4000 and more	
Low	14 (12.1)	41 (32.5)	23 (21.3)	3 (37.5)	0	81 (21.9)
Moderate	13 (11.2)	23 (18.3)	15 (13.9)	3 (37.5)	0	54 (14.6)
High	89 (76.7)	62 (49.2)	70 (64.8)	2 (25.0)	12 (100)	235 (63.5)
Total	116	126	108	8	12	370

Chi-square=33.56 df=8 significant at 5% level

Note: Figure in parentheses indicate percentage

Source: Field survey

The table 5.18 shows the distribution of degree of problems for high price of fish seeds of respondents according to productivity of fish. As the economic condition of fish farmers are not so sound, fish farmers cannot afford to buy fish seeds at high cost. This will also affect the fish framing business. Out of the 370 fish farmers surveyed, 21.9% respondents are having low degree of problems, 14% fish farmers are having moderate degree of problems and maximum fish farmers that hold for 63.5% are having high degree of problem. The study further reveals that the calculated Chi Square is 33.566 and it is greater than the table value i.e. 15.507 at 8 degree of freedom, so reject the null hypothesis. The inference is that the problem of high price of fish seeds and productivity of fish are associated. It also means that high price of fish seeds is effecting the production of fish in the study area.



Table 5.19: Classification of degree of problem of high fingerlings mortality faced by respondents according to the productivity of fish

High fingerlings mortality	Productivity of fish (kgs)					Total
	0-1000	1001-2000	2001-3000	3001-4000	4000 and more	
Low	73 (62.9)	92 (73)	84 (77.8)	2 (25)	7 (58.3)	258 (69.7)
Moderate	26 (22.4)	32 (25.4)	24 (22.2)	6 (75.0)	5 (41.7)	93 (25.1)
High	17 (14.7)	2 (1.6)	0 (0)	0 (0)	0 (0)	19 (5.1)
Total	116 (100)	126 (100)	108 (100)	8 (100)	12 (100)	370 (100)

Chi-square=44.549 df= 8 significant at 5% level

Note: Figure in parentheses indicate percentage

Source: Field survey

The above table 5.19 the distribution of degree of problems of high fingerlings mortality faced by fish farmers according to the productivity of fish. Fish farmer has to take due care about the fish farm mortality because high fingerlings (fish seeds) will also affect the fish farming business. The table reveals that maximum respondents i.e. 69.7% respondents are having low degree of problems, 25.1% respondents are having moderate degree of problems and only 5.15 respondents are having high degree of problem. The study further reveals that the calculated Chi Square is 44.549 and it is greater than the table value i.e. 15.507 at 8 degree of freedom, so reject the null hypothesis. The inference is that the problem of high fingerlings mortality and productivity of fish are associated. It also means that high mortality rate of fish affect the productivity of fish in the study area. Irrespective of the productivity of fish, the degree of problems is low for the respondents.



Table 5.20: Classification of degree of problem of maintenance of pond faced by respondents according to the productivity of fish

Maintenance of pond	Productivity of fish(kgs)					Total
	0-1000	1001-2000	2001-3000	3001-4000	4000 and more	
Low	43 (37.1)	57 (45.2)	49 (45.4)	4 (50)	5 (41.7)	158 (42.7)
Moderate	43 (37.1)	36 (28.6)	24 (22.2)	2 (25)	7 (58.3)	112 (30.3)
High	30 (25.9)	33 (26.2)	35 (32.4)	2 (25)	0 (0)	100 (27)
Total	116 (100)	126 (100)	108 (100)	8 (100)	12 (100)	370 (100)

Chi-square= 13.235 df= 8 significant at 5% level

Note: Figure in parentheses indicate percentage

Source: Field survey

The above table shows the distribution of degree of problems in maintaining ponds by fish farmers and the productivity of fish. The table reveals that 42.7% are having low problem, 30.3% are having moderate problem and only 27% are having high problems relating to maintain problem. The study further reveals that the calculated Chi Square is 13.235 and it is less than the table value i.e. 15.507 at 8 degree of freedom, so we accept the null hypothesis. The inference is that the problem of maintaining pond and productivity of fish are not associated.

Table 5.21: Classification of degree of problem of netting of respondents according to the productivity of fish

Problems of netting	Productivity of fish(kgs)					Total
	0-1000	1001-2000	2001-3000	3001-4000	4000 and more	
Low	114 (98.3)	126 (100)	108 (100)	8 (100)	12 (100)	368 (99.5)
Moderate	2 (1.7)	0 (0)	0 (0)	0 (0)	0 (0)	2 (.5)
Total	116 (100)	126 (100)	108 (100)	8 (100)	12 (100)	370 (100)

Chi-square= 4.40 df= 4 significant at 5% level

Note: Figure in parentheses indicate percentage

Source: Field survey



The above table shows the distribution of degree of problems of netting by fish farmers according to productivity of fish. The study reveals that 99.5 are having low degree of problem and only .5% fish farmers are having moderate degree of problem. The study further reveals that the calculated Chi Square is 4.403 and it is less than the table value i.e. 7.815 at 4 degree of freedom, so we accept the null hypothesis. The inference is that the problem of problems of netting and productivity of fish are not associated.

Table 5.22: Classification of degree of problem catching of respondents according to the productivity of fish

Problems of catching	Productivity of fish (kgs)					Total
	0-1000	1001-2000	2001-3000	3001-4000	4000 and more	
Low	91 (78.4)	65 (51.6)	15 (13.9)	8 (100)	9 (75)	188 (50.8)
Moderate	9 (7.8)	39 (31.0)	41 (38)	0 (0)	2 (16.7)	91 (24.6)
High	16 (13.8)	22 (17.5)	52 (48.1)	0 (0)	1 (8.3)	91 (24.6)
Total	116 (100)	126 (100)	108 (100)	8 (100)	12 (100)	370 (100)

Chi-square= 112.91 df= 8 insignificant

Note: Figure in parentheses indicate percentage

Source: Field survey

The table above shows the distribution of problem of catching of fish (harvesting) faced by fish farmers and the productivity of fish. The above table also reveals that half of the fish farmers that accounts for 50.8% respondents are having low degree of problems, 24.6% fish farmers are having moderate degree of problem and the remaining 24.6% are having high degree of problem. The study further reveals that the calculated Chi Square is 112.91 and it is greater than the table value i.e. 15.507 at 8 degree of freedom, so we reject the null



hypothesis. The inference is that the problem of catching and productivity of fish are associated.

Table 5.23: Classification of degree of problem of lack of technical knowledge of respondents according to the productivity of fish

Lack of technical knowledge	Productivity of fish(kgs)					Total
	0-1000	1001-2000	2001-3000	3001-4000	4000 and more	
Low	9 (7.8)	1 (.8)	31 (28.7)	1 (12.5)	0 (0)	42 (11.4)
Moderate	0 (0)	4 (3.2)	1 (0.9)	0 (0)	0 (0)	5 (1.4)
High	107 (92.2)	121 (96)	76 (70.4)	7 (87.5)	12 (100)	323 (87.3)
Total	116 (100)	126 (100)	108 (100)	8 (100)	12 (100)	370 (100)

Chi-square= 53.986 df= 8 insignificant

Note: Figure in parentheses indicate percentage

Source: Field survey

The above table shows the distribution of degree of problem of lack of technical knowledge faced by fish farmers and productivity of fish. Fish farmer should have minimum technical knowledge about fish farming. This will helps in augmenting the fish production. The study reveals that 11.4% fish farmers are having low degree of problem, 1.4% is having moderate degree of problem and maximum fish farmers which account for 87.3% of total respondents are having high degree of problem. The study further reveals that the calculated Chi Square is 53.98 and it is greater than the table value i.e. 15.507 at 8 degree of freedom, so we reject the null hypothesis. The inference is that the problem of lack of technical knowledge and productivity of fish are associated. It also reveals that lack of technical knowledge is affecting the productivity of fish in the study area.



Table 5.24: Classification of degree of problem of lack of training and supervision of respondents according to the productivity of fish

Lack of training and supervision	Productivity of fish(kgs)					Total
	0-1000	1001-2000	2001-3000	3001-4000	4000 and more	
Low	30 (25.9)	62 (49.2)	10 (9.3)	6 (75)	1 (8.3)	109 (29.5)
High	86 (74.1)	64 (50.8)	98 (90.7)	2 (25)	11 (91.7)	261 (70.5)
Total	116 (100)	126 (100)	108 (100)	8 (100)	12 (100)	370 (100)

Chi-square= 56.13 df= 4 insignificant

Note: Figure in parentheses indicate percentage

Source: Field survey

The above table shows the distribution of degree of problem of lack of training and supervision and productivity of fish. The study reveals that 29.55 fish farmers are having low degree of problem and 70.55 are having high degree of problem. The study further reveals that the calculated Chi Square is 53.133 and it is greater than the table value i.e. 7.815 at degree of freedom 4, so we reject the null hypothesis. The inference is that the problem of lack of training and supervision and productivity of fish are associated.

Table 5.25: Classification of degree of problem stealing of respondents according to the productivity of fish

Problem of stealing	Productivity of fish(kgs)					Total
	0-1000	1001-2000	2001-3000	3001-4000	4000 and more	
Low	83 (71.6)	107 (84.9)	76 (70.4)	7 (87.5)	4 (33.3)	277 (74.9)
Moderate	13 (11.2)	9 (7.1)	25 (23.1)	0 (0)	6 (50)	53 (14.3)
High	20 (17.2)	10 (7.9)	7 (6.5)	1 (12.5)	2 (16.7)	40 (10.8)
Total	116 (100)	126 (100)	108 (100)	8 (100)	12 (100)	370 (100)

Chi-square= 35.77 df= 8 insignificant

Note: Figure in parentheses indicate percentage

Source: Field survey

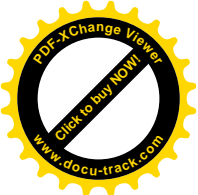


Table 5.27: Classification of respondents according to their problems

Sl. No.	Problems	Respondents in %	Rank	Seriousness of problems
1	Transportation problem	92.00	2	***
2	Lack of refrigerated vehicle to carry fish	58.09	8	**
3	Inadequate availability of fish seed	79.91	5	**
4	High price of fish seed	81.27	3	***
5	Lack of technical knowledge	92.82	1	***
6	Lack of training and supervision	81.09	4	***
7	Problems of catching fish	58.45	7	**
8	Problems of netting	33.82	10	*
9	Maintenance of pond	62.00	6	**
10	Small size of fish at harvest	33.91	9	*

Source: Field survey

*less serious problem

**serious problem

***very serious problem

Fish farming problems should be studied to bring rural development. 370 fish farmers have been asked about the problems faced in operating fish farm. Table 5.27 reveals that problem relating to technical knowledge is ranked 1st among the problems and it account for 92.82% respondents. Training and supervision are also the problems faced by fish farmers and that accounts 81.09% with 4th position. 92% are facing problem relating to transportation and it rank 2nd among the problems faced by the respondents. 79.91% of respondents are also facing the problem of high cost of fish seed and



holding 3rd place Problem of inadequate availability of fish seed is also face by majority of fish farmers i.e. 79.91% and it put in 5th place among the problems faced by the respondents. 57.27% of respondents are having problem relating to finance in operating their farm and it is put in 9th position and also found that 110 respondents depend on government subsidies. The problems are categorized into three types depending upon their seriousness. The very serious problems as indicated above should be addressed with high priority followed by serious problems. The fisheries department and related authority can take up necessary steps to solve the problems so that fish farming can be taken up as means of livelihood and generating employment among the rural people.

Table 5.28: Distribution of satisfaction level of government policies of the respondents according to educational qualifications

Government policies	Educational qualifications							Total
	Illiterate	upto primary	under matriculate	Matriculate	higher secondary	graduate	post graduate	
Dissatisfied	9 (2.4)	10 (2.7)	76 (20.5)	55 (14.9)	42 (11.4)	79 (21.4)	14 (3.8)	285 (77)
Neutral	1 (.3)	3 (.8)	10 (2.7)	13 (3.5)	4 (1.1)	12 (3.2)	1 (.3)	44 (11.9)
Satisfied	3 (.8)	0 (.0%)	4 (1.1)	9 (2.4)	11 (3.0)	12 (3.2)	2 (.5)	41 (11.1)
Total	13 (3.5)	13 (3.5)	90 (24.3)	77 (20.8)	57 (15.4)	103 (27.8)	17 (4.6)	370 (100)

Source: Field survey

Note: Figure in parentheses indicate percentage

The above table shows the distribution of respondents' satisfaction level towards government policies regarding assistance available for fish farmers with the education level of fish farmers. The table reveals that 77% respondents are dissatisfied with the government policies regarding fish farming, 11.1% respondents are



satisfied with the government policies regarding fish farming while the remaining 11.9% respondents are viewed neutral i.e., neither satisfied nor dissatisfied on the government policies regarding fish farming regarding fish seeds and other assistance for fish farmers. The table also reveals that irrespective of the educational qualification, all the fish farmers are dissatisfied with the government policies.

Table 5.29 Distribution of satisfaction level of government policies of the respondents according to type of ownership

Government policies	Type of ownership			Total
	Owned	Leased	Co-operative	
Dissatisfied	269 (72.7)	1 (.3)	15 (4.1)	285 (77)
Neutral	43 (11.6)	0 (0)	1 (.3)	44 (11.9)
Satisfied	9 (2.4)	0 (0)	32 (8.6)	41 (11.1)
Total	321 (86.8)	1 (.3)	48 (13)	370 (100)

Source: Field survey

Note: Figure in parentheses indicate percentage

The above table shows the distribution of respondents' satisfaction level towards government policies according to type of ownership. The table reveals that in owned fish farmers 72.9% of the respondents are dissatisfied with the government policies and of the cooperative fish farmers 8.3% respondents are satisfied with the government policies. The table also reveals that most of the fish farmers who owned the fish are dissatisfied and maximum most cooperative fish farmers are satisfied with the government policies regarding fish farming in the study area.



Table 5.30: Distribution of satisfaction level of bank services of the respondents according to type of ownership.

Bank services	Type of ownership			Total
	Owned	Leased	Co-operative	
Strongly dissatisfied	1 (.3)	0 (0)	0 (0)	1 (.3)
Dissatisfied	306 (82.6)	1 (.3)	48 (13)	355 (95.9)
Neutral	5 (1.4)	0 (0)	0 (0)	5 (1.4)
Satisfied	8 (2.2)	0 (0)	0 (0)	8 (2.2)
Strongly satisfied	1 (.3)	0 (0)	0 (0)	1 (.3)
Total	321 (86.7)	1 (.3)	48 (13)	370 (100)

Source: Field survey

Note: Figure in parentheses indicate percentage

Table 5.31 Distribution of satisfaction level of Bank services of the respondents according to educational qualifications

Bank services	Educational qualifications							Total
	Illiterate	Upto primary	Under matriculate	Matriculate	Higher secondary	Graduate	Post graduate	
Strongly dissatisfied	0 (0)	0 (0)	0 (0)	1 (.3)	0 (0)	0 (0)	0 (0)	1 (.3)
Dissatisfied	13 (3.5)	13 (3.5)	85 (23)	74 (20)	55 (14.9)	100 (27)	15 (4.1)	355 (95.9)
Neutral	0 (0)	0 (0)	2 (.5)	1 (.3)	0 (0)	2 (.5)	0 (0)	5 (1.4)
satisfied	0 (0)	0 (0)	3 (.8)	1 (.3)	1 (.3)	1 (.3)	2 (.5)	8 (2.2)
strongly satisfied	0 (.0)	0 (0)	0 (0)	0 (0)	1 (.3)	0 (0)	0 (0)	1 (.3)
Total	13 (3.5)	13 (3.5)	90 (24.3)	77 (20.8)	57 (15.4)	103 (27.8)	17 (4.6)	370 (100)

Source: Field survey

Note: Figure in parentheses indicate percentage



The above table 5.30 shows the distribution of respondents' towards banks services according to type of ownership. The table reveals that most the respondents i.e., 95.9% are dissatisfied with the bank services.

The above table 5.31 shows the distribution of respondents' satisfaction level towards bank services according to educational qualification of fish farmers. It is also found that irrespective of the educational qualification of the fish farmers, most of the respondents i.e., 95.9% are satisfied with bank services available of fish farmer. Most of the respondents said that they are not able to avail loan in time.

Table 5.32: Distribution of satisfaction level of training of the respondents according to ownership types

Training programme	Type of ownership			Total
	Owned	Leased	Co-operative	
Dissatisfied	219 (59.2)	0 (0)	14 (3.8)	233 (63)
Neutral	38 (10.3)	1 (.3)	1 (.3)	40 (10.8)
Satisfied	64 (17.3)	0 (0)	33 (8.9)	97 (26.2)
Total	321 (86.8)	1 (.3)	48 (13)	370 (100)

Source: Field survey

Note: Figure in parentheses indicate percentage

The above shows the distribution of respondents' towards training programme according educational qualification. The study reveals that more than half of the respondents i.e. 63% are dissatisfied with the training programme conducted for fish farming. 8.9% cooperative fish farmers are satisfied with the training programme.



Table 5.33: Distribution of satisfaction level of training programme of the respondents according to educational qualifications

Training	Educational qualification							Total
	Illiterate	Upto primary	Under matriculate	Matriculate	Higher secondary	Graduate	Post graduate	
Dissatisfied	10 (2.7)	10 (2.7)	64 (17.3)	51 (13.8)	27 (7.3)	60 (16.2)	11 (3)	233 (63)
Neutral	1 (.3)	3 (.8)	11 (3)	10 (2.7)	4 (1.1)	9 (2.4)	2 (.5)	40 (10.8)
Satisfied	2 (.5)	0 (0)	15 (4.1)	16 (4.3)	26 (7.0)	34 (9.2)	4 (1.1)	97 (26.2)
Total	13 (3.5)	13 (3.5)	90 (24.3)	77 (20.8)	57 (15.4)	103 (27.8)	17 (4.6)	370 (100)

Source: Field survey

Note: Figure in parentheses indicate percentage

The above table shows the distribution of fish farmers towards training programme conducted by the concerned authorities' according to educational qualification of fish farmers. The table also reveals that irrespective of educational qualification of fish farmers, most of them are dissatisfied with the training programme. The fish farmers want training to be conducted in their local village so that they can avail the training and get latest method of fish farming and hence increase the fish production.

Table 5.34: Distribution of satisfaction level of training programme of the respondents according to size of fish farm

Training programme	Farm size (in hectare)				Total
	0-1	1-2	2-3	more than three	
Dissatisfied	123 (33.2)	69 (18.6)	39 (10.5)	2 (.5)	233 (63)
Neutral	18 (4.9)	17 (4.6)	5 (1.4)	0 (0)	40 (10.8)
Satisfied	45 (12.2)	36 (9.7)	10 (2.7)	6 (1.6)	97 (26.2)
Total	186 (50.3)	122 (33)	54 (14.6)	8 (2.2)	370 (100)

Source: Field survey

Note: Figure in parentheses indicate percentage



The above table shows the distribution of respondents' satisfaction level towards training programme according to size of fish farm. The table reveals that irrespective of the size of fish farm. Most of the respondents are dissatisfied with the training programmes.

Table 5.35: Distribution of respondents' satisfaction level of selling price of fish according to type of ownership

Price of fish sold	Type of ownership			Total
	Owned	Leased	Co operative	
Dissatisfied	276 (74.6)	1 (.3)	14 (3.8)	291 (78.6)
Neutral	5 (1.4)	0 (0)	0 (0)	5 (1.4)
Satisfied	40 (10.8)	0 (0)	34 (9.2)	74 (20.0)
Total	321 (86.8)	1 (.3)	48 (13)	370 (100)

Source: Field survey

Note: Figure in parentheses indicate percentage

The above table shows the distribution of respondents' satisfaction level of selling price of fish according to type of ownership. The table reveals that 78.6% respondents are dissatisfied with the price of fish they sold. Irrespective of the type of ownership of the fish farmers, maximum respondents are dissatisfied with the selling price of the fish.

Table 5.36: Distribution of respondents' satisfaction level selling price of fish according to size of farm

Price of fish sold	Size of fish farm (in hectare)				Total
	0-1	1-2	2-3	more than three	
Dissatisfied	148 (40)	93 (25.1)	43 (11.6)	7 (1.9)	291 (78.6)
Neutral	0 (0)	1 (.3)	4 (1.1)	0 (0)	5 (1.4)
Satisfied	38 (10.3)	28 (7.6)	7 (1.9)	1 (.3)	74 (20)
Total	186 (50.3)	122 (33)	54 (14.6)	8 (2.2)	370 (100)

Source: Field survey

Note: Figure in parentheses indicate percentage



The above table also reveals that maximum of the respondents irrespective of the size of fish farm are dissatisfied with the selling price of the fish. 40% of respondents having 0-1 hectare of fish farm are dissatisfied with the selling price of fish. 25.1% respondents having 1-2 hectare of fish farm are also dissatisfied with the selling price of fish.

Maximum respondents are dissatisfied with the government policies, training programme conducted for fish farmers, bank services available for fish farmer.

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