A case study on economic aspects of fishing in Tiruchendur coast, Southeast Coast of India

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In the present study, catch/unit, expenditure for one fishing trip, time spent for fishing per day, selling price and net profit for boat owners and fishermen were calculated on direct observations and direct interview with the boat owner and fishermen. This study was carried out for a period of six months along the coast off Tiruchendur, Southeast coast of India from January to June 2009. During this period, the types of gears and fishing grounds used by the Tiruchendur fishermen were also studied. Month wise fish landing from January to June were taken through direct observation during fish auction and direct interview with middleman and with Boat Owners. Fish caught per day and profit per sample boat per week / per month / person for six months period was also estimated.

Introduction

The fisheries sector has been recognized as an important income and employment generator as it stimulates the growth of a number of subsidiary industries[1]. Marine and inland fisheries play an important role in Tamil Nadu's economy. Marine fish landings in the state are estimated around 3,80,000 MT per annum and about 58,000 MT of seafood valued at about Rs.21,000 million is exported annually from the processing units located in Tamil Nadu[2]. Fisheries have been recognized as a powerful income and employment generator as it stimulates growth of a number of subsidiary industries. One million people rely on fisheries as the main source of protein and 35 million people worldwide are directly engaged in fishing activities[3] . However, the fisher folk represent a major segment of the world's population considered among the poorest of the poor.

Though fishing industry earns good amount of foreign exchange to India, fisher folk are living under poverty condition. Living conditions are very poor in the coastal villages along Gulf of Mannar[4]. Their economic condition is below the poverty line (BPL) and the neglected aspect is

education. The income of the local fishermen are very low and is attributed to low productivity and improper marketing system[4]. In this scenario, the present study on economic aspect of fishing is

essential. The cost of fishing for one trip, net profit for boat owner and monthly incomes for fisher folk were calculated. Market prices of fish and market fluctuation were studied through direct observations on the landing centre and direct interview with *Vattakarans* (*Vattakaran* is a middleman who carries out the work of auctioning fishes on behalf of the craft owners for commission). They also play a role in the collection of money from the middleman[5]. Two fishing landing centres namely Amali nagar and Jeeva nagar are situated in Tiruchendur coast. one hundred and eighty (180) FRB boats with outboard engine, 4 catamarans without engine and one catamaran with engine are actively engaged in fishing activity in Amali nagar and 15 boats without board engine and 6 *vallams* with inboard engine, one catamaran without engine are engaged in fishing in Jeeva nagar. The present study deals with the economic aspect of fishing in Tiruchendur coast, Southeast coast of India.

Materials and Methods

To assess the economic aspect of fishing, one sample boat was chosen and fish catch, running cost, total hours spent for one trip of fishing viz. travel time to reach the fishing ground and time required to reach the landing centre and actual fishing hour were monitored through direct observation. For the rest of the boats, this information was collected through direct observation during fish auction and personal interview with boat owners and from TMSS (Tuticorin Multipurpose Social Service - NGO). The selling prices of various species of fishes were observed during fish auction at landing centre. Besides, running cost for sample boat for one fishing operation per day/ week/ month and net profit/ day/week/ month/ person was calculated.
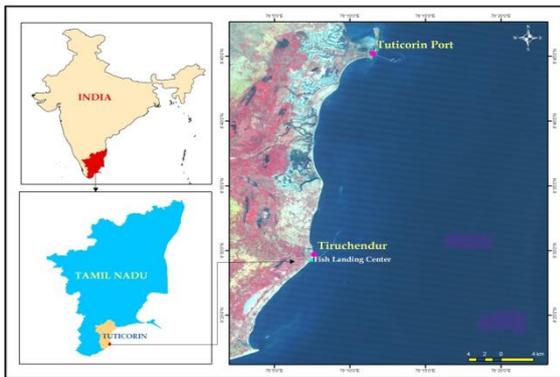

Fig.1.Study area - Fish landing centre

In Amali Nagar, 180 crafts and 760 fishermen are engaged in fishing activity. Of them, 160 to 170 crafts is usually engaged for fishing almost every day. Fishermen depart to sea for fishing between 3.00 am and 5.00 am depending upon the type of fish catch. After fish catch, they return to shore from 9.00 am to 11.30 am. The sample boat will leave the shore from 3.30 am to 4.30 am and return between 10.00 am and 11.00 am. In the present study, expenditure of the fishing operation is divided into four categories (Cannizzaro *et al.,* 1999) as follows. The study area is given in Fig. 1, 2 and 3.

1. Cost of capital: Craft, Craft engine and GPS (Table1)
2. Cost of fishing gear (Table 2)
3. Cost of Running coast: fuel (petrol, kerosene, oil, spare parts and maintenance) (Table 3)
4. Labour cost: varies depending upon the fish catch (Table 4)

About 6% of the total selling amounts were given to *Vattakarans* followed by salary for fishermen (labour) was calculated from the net revenue. Net revenue was estimated through deducting the running expenditure and auction commission (6%) from the gross income. Net revenue was divided fifty-fifty between the boat owner and the fishermen. Most of the fishermen had borrowed advance money from the middle man. In the sample boat, four members were engaged in fishing activity among them one person is the boat owner. Monthly income for the fishermen was estimated by multiplying weekly fish catches and selling prices.

Fig.2. Boats in Amali Nagar Fishing Village

Fig.3.Fishermen collecting fish from (drift gill net)

Results and Discussion

All the fishing villages in Tiruchendur Taluk adopt the same type of fishing techniques and marketing procedures[5]. Auction system is employed in Amali nagar. Poor financial positions do not permit the fishermen to concentrate on marketing activities. Another important aspect is that fish is a perishable commodity and hence; the

fishermen have to sell it quickly, as they don't have the storage facility. Most of the craft owners borrowed advance money from the *Vattakaran* who is a middleman and carries out the work of the auctioning fishes on behalf of the craft owners and getting 6 % commission. They also do the work of collecting money from the middlemen (Soundrarajan., 1989). Selling prices of the same species varies depending upon the market price. Fish catches from all boats are undergoing auction process in landing centre of Amali Nagar. About, six *Vattakarans* (middlemen) are engaged in fish auction process in Amali nagar. In the sample boat, 6% of the total selling amount was given to *Vattakaran*.

Table.1. Cost of capital for a boat

S. No	Items	Cost in Rupees (INR)
1	FRB boat	85,000.00
2	Engine Yamaha	65,000.00
3	GPS	15,000.00
	Total	1,65,000.00

Table.2. Cost of fishing gear

S.No	Type of fishing gear	Material	Mesh Size	Approximate cost (Rs)	Species caught
1	Drift gill net (Sardine net)	Nylon Twine	20-26 mm	2,500	*S. longiceps* , *S.albella*, *Stolephorus sp*, and other small size fishes
2	Drift gill net (Mackeral and Shark)	Nylon Twine	50-56mm	2,000	*Malabar trevally* , (Caranoides spp), *Mackerels* sp, *Barracuda* sp, *Shark* sp, Seer fishes, *Snapper* sp
3	Bottom set gill net (Prawn net)	Nylon Twine	20-30 mm & 80- 120 mm	2,000-3,000	Prawns
4	Hook and line	Nylon wire with Hook (500 to 5000 hooks)	------	5,000-8,000	*Caranx sp, Lethrinus* sp, Snapper sp, Barracuda sp, *Pomfret* sp, Sea bass etc
5	Lobster net	Nylon	80-100 mm	2,000-2,800	Lobster, Caranx sp

Table.3. Running Cost

S.No	Months	Petrol Qty in litter and Price (INR)	Kerosene Qty in liters & Price (Rs)	Oil in (Rs) (100 ml = Rs.18)	Total expenditure
1	January	45 l x 48.75 = 2,193.75	441x32=14,112	1300ml = 234.00	16,539.75
2	February	55 l x 48.75 = 2,681.25	449x32=14,368	1310ml = 235.80	17,285.05
3	March	55 l x 48.75 = 2,681.25	456x32=14,592	1370 ml= 246.60	17,519.85
4	April	57 l x 48.75 = 2,778.75	468x32=14,976	1425ml = 256.50	18,011.25
5	May	40 l x 48.75 = 1,950.00	198x32= 6,336	1190ml = 214.20	8,500.20
6	June	42 l x 48.75 = 2,047.50	262x32= 8,384	1135ml = 204.30	10,635.80
	Total	294 l x 48.75 = 14,332.50	2274x32=72,768	7730ml =1391.40	88,491.90

Sixty percent of the fishermen have chosen their fishing grounds at about 15 to 20 nautical mile and 30 % of the crafts carry out fishing at 10 to 15 nautical miles. Remaining 10 % of the crafts are fishing at less than 10 nautical miles. The catamarans are fishing at less than 5 nautical miles. A wide variety of fin and shellfishes are landed at Amali nagar. Among them emperors, groupers, jacks, skates, snappers, sardines, seer fish, ray, sea bass, anchovies, ribbon fish,

Table.4. Fishing Effort (Hours)

S.No	Months	No of fishing days/month	Total fish catch (Kg)	Fishing effort (hours)	Active fishing hour	Fish catch/ Hour	Fish catch / fisherman
1	January	26	494.35	182	78	6.337 kg/hr	1.584 kg
2	February	24	431.9	168	70	6.170 kg/hr	1.542 kg
3	March	25	447.25	162.3	62	7.210 kg/hr	1.800 kg
4	April	26	447.85	174	70	6.390 kg/hr	1.590 kg
5	May	24	407	120	48	8.500 kg/hr	2.125 kg
6	June	22	469.8	132	66	7.100 kg/hr	1.775 kg
	Total	147	2792.1	938.3	394	42.910 kg/hr	10.717 kg

Table.5. Details of fish catch and profit portion of Owner (Rs in INR)

S.No	Months	No. of days	Fish catch (in kg)	Selling price	Average price /kg	Total Exp	6% auction commission	Net profit [5-(7+8)]	Profit to Boat Owner (50%)	Net profit per day
1	2	3	4	5	6	7	8	9	10	11
1	Jan	26	494.35	43,088.75	73.24	16,539.75	2,585.26	23,963.74	11,981.37	460.82
2	Feb	24	431.9	47,530.00	110.05	17,285.05	2,851.77	27,393.18	13,696.59	570.68
3	Mar	25	447.25	45,640.75	102.05	17,519.85	2,738.45	25,382.45	12,691.22	507.65
4	Apr	26	447.85	46,920.00	104.77	18,011.25	2,815.20	26,093.55	13,046.77	501.8
5	May	24	407	22,059.70	54.2	8,500.20	1,323.58	12,235.92	6,117.96	254.91
6	Jun	22	469.9	27,705.70	58.97	10,635.80	1,662.35	15,407.55	7,703.77	350.18
	Total	147	2698.25	2,32,943.40	83.42	88,491.90	13,976.61	1,30,474.89	65,237.43	2,646.04

carangid, pomfrets, sharks, threadfin bream, barracuda, reef cod, cuttlefish, and mackerel are predominant species in this village. Chalai valai (Sardine net), paru valai (No.5), prawn net, singi valai (lobster net), trawl net, hook and lines (Thoondil), crab net, drag net and cast net are commonly used for fishing.

Most of the fishermen are fishing at about 20 km from the shore. Time taken for reaching the fishing ground upto 20 km is one hour and forty-five minutes (1.45 hrs). If a boat leaves the shore at 3 am, it reaches the targeted fishing ground at 5 am. After reaching the ground, the fishermen lay fishing nets before sunrise, and within an hour they will collect the net. However, if they have not collected the sufficient quantity of fish, they will again lay the net and collect it and return to the shore. Active fishing hour varies depending upon the distance at which fishing is carried out and depending upon the fishing net. Approximately 3 to 4 hours is spent for active fishing. Nearly 8 hours per day is spent for fishing

operation. When returning to the shore boat's speed is decreased and fuel consumption increases due to the fish load. Average speed of a boat without load is 12 nautical miles per hour and average speed with load is around 9 nautical miles per hour.

To start the boat's engine only petrol is used, thereafter, kerosene alone is used to operate the fishing boat. Petrol is used for starting the boat engine, but after that, the boat is run by kerosene. The details of the cost of capital for a boat are given in Table.1. Approximate capital cost for one boat operation is around Indian Rupees INR 1,65,000 (One lakh and sixty five thousand). Table.2 illustrates the cost of fishing gear for various types of gears and corresponding species caught by the fishing net. Nearly INR 60,000 (Rupees sixty thousand) are invested for purchasing the fishing gears. Running cost expenditure of petrol, kerosene and oil details are given in the Table 3 and Table.4, reveals the month wise fish catch expenditure, selling price,

net profit and daily wages for fisherman. The total fish catch collected during the study period was 2698.250kg with minimum and maximum were recorded during May and February months respectively (Table.5).

Conclusion

The economics aspect of fishing in Amali Nagar was carried out for a period of six months. This is the first study in Tiruchendur coast. Though fishing industry earns a good amount of foreign exchange to India, fisher folk in India are living in poverty. Their economic condition is below the poverty line and the neglected aspect is education. From this study, monthly income of the fisherman is estimated around Rs.3200- 4000. Maximum net profit is earned in the month of February. When compared to other months, average price per kg is high during February. The fishermen are engaged in fishing activity only for 22 days in the month of June, due to the strong wind and sea roughness. This kind of natural disturbances reduces the income of the fishermen. 38 % of the money is spent for fuel expenditure and 6 % of the money is given to middleman as auction commission. Maximum of the fisherman in the village are in debt due to the low income. Middleman and whole sale merchants are getting more profit than boat owners and fishermen. From this study we can conclude that the boat owners having money potential are going long distance for fishing and they are getting better profit than fishing in less than 20 km distance away from the shore.

Acknowledgement

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