19

Socio-Economics of Small Scale Fishermen with Emphasis on Costs and Earnings of Traditional Fishing Units Along Trivandrum Coast, Kerala- A Case Study

R. SATHIADHAS and K. K. P. PANIKKAR
Central Marine Fisheries Research Institute, Cochin-31

Socio-economic parameters such as family size, age structure, customs, beliefs and habits, employment potentials and education and living standards of fishermen influence their response to new technology and their participation in developmental schemes. Studies on these variables attempt not only to explain the overall socio-economic condition of the fishermen but also identify the factors constraining the realisation of full potential of traditional fishery and the appropriate area for government intervention.

The Central Marine Fisheries Research Institute has been continuously monitoring the socio-economic aspects of the artisanal fishery sector. A number of micro-level studies have been conducted to examine the socio-economic status of the sector, to analyses the details of costs and earnings of different fishing techniques and systems in different locations, to identify the major socio-economic constraints and bottlenecks for the fishery development and to assess the impact of introduction of new innovations and improved techniques on traditional fishery. Such studies have mostly been conducted in selected marine fishing villages of different maritime states. The present study was conducted in Poonthura, a major fishing village in Trivandrum district of Kerala State.

DATA AND METHODOLOGY

A preliminary investigation was carried out in Trivandrum coast extending from Kollencode (south) to Kappil (north) during June-July 1985. Fishing activities in many of the landing centres in this region remain suspended during the monsoon months (June to August) as the traditional fishermen find it difficult to launch their catamarans through the breakers. Poonthura, located 5 Kms from Trivandrum is one of the few landing centres in this region where fishing is carried out throughout the year. Since this village is also a typical traditional fishing centre supplying considerable quantity of fish to the nearby markets, it has been selected for detailed socio-economic survey.

A household survey was carried out in Poonithura fishing village during August 1985. There are about 1400 households in this village. All the fishermen households near the shore were covered in the survey. Information pertaining to size of family, educational status, housing and occupational pattern ownership of means of production, investment on fishing equipments, household income and expenditure pattern, indebtedness, source of credit, utilization of credit and extent of infrastructure facilities available was collected through the household schedule. To study the economics of operation of different types of traditional fishing units, cost and earning data have been collected from sample units of each catamarans operating gillnets, hooks and lines and plank built canoes fitted with OBM operating gillnets.

Two types of schedules were used for cost and earning study-one for collecting fixed cost details of the selected units and the other for collecting daily operational costs and returns at the landing centre by direct observation. Local enumerators were entrusted the work of data collection under the supervision of the project leader. The operational costs and earnings data for the selected units were collected for continuous ten days in each month from September 1985 to August 1986. The costs and returns data were analysed separately for three district fishing seasons of the period 1985-86 viz. as premonsoon (February-May), monsoon (June-August) and post-monsoon (Sept.-January).

RESULTS AND DISCUSSION

I. *Socio-economics:*

Poonthura fishing village is well connected by road and frequent bus services are available from Trivandrum. There is a Catholic church and 2 high schools located in this village. The public facilities like bank, post office, police station, primary health centre, private dispensaries, Matsyafed, market, housing society and drinking water taps are available within the village. An ice plant of 10 tonnes capacity is also located at this centre.

The average size of a fisherman family in Poonthura is 6.3. About 69 per cent of the families are living in huts. The literacy rate of fishermen is 46 per cent and among the literates 89 per cent have only primary education. The earning members and dependents are in the ratio of 1:3 in the village. About 36 per cent of the people come under the category of working population of which 29 per cent is women, engaged mainly in net making/repairing and fish processing. About 64 per cent of the workers are active fishermen. Among the active fishermen 62 per cent are owner operators, 4 per cent non-operating owners and the rest are wage-earners.

In Poonthura, 66 per cent of fishermen households have ownership of means of production. The ownership pattern of fishing equipments is given in Table 1. About 44 per cent of the owners have either catamaran or canoe with only one type of net and 32 per cent have same with two type of nets. Almost 17 per cent of them have three or more type of nets along with catamarans or canoes.

Table—1

Ownership pattern of means of production

Sl. No.	Item	Owned by No. of families	Per cent
1.	Catamaran alone	4	2
2.	Net alone	10	5
3.	(i) Catamaran and one net	86	44
	(ii) Canoe and one net	11	
4.	(i) Catamaran and two type of nets	49	32
	(ii) Canoe and two type of nets	20	
5.	(i) Catamaran and three type of nets	18	10
	(ii) Canoe and three type of nets	4	
6	Catamaran and 4 or more type of nets	11	5
7.	Catamaran and canoe with more than 4 type of nets	6	2
	Total	219	100

The investment pattern on fishing equipments is given in Table 2. About 28 per cent of the fishermen households having ownership on means of production invested less than Rs. 3000/- towards fishing implements. The capital investment is in the range of Rs. 3001/- to 5000/- for 17 per cent Rs. 5001/- to 7000/- for 14 per cent Rs. 7001 to 10000/- for 11 per cent, Rs. 10001/- to 15000/- for 8 per cent, Rs. 15001/- to 20000/- for 7 per cent and above Rs. 20000/- for about 15 per cent. The study reveals that 70 per cent of the owners have invested less than Rs. 10000/- for fishing equipments.

Table 2

Familywise break up of capital investment on fishing equipments.

Capital investment (Rs)	No. of families	per cent
Less than Rs. 3000	62	28
3001—5000	37	17
5001—7000	30	14
7001—10000	24	11
10001—15000	17	8
15001—20000	15	7
20001—30000	13	6
30001—40000	12	5
Above 40000	9	4
Total	219	100

The average annual income of a fisherman household in Poonthura works out at Rs. 11063/-, the per capita income being Rs. 1756/-. Active fishing is the major occupation for about 97 per cent of the fishermen households. Out of these active fishermen, 35 per cent are wage earners who do not possess any fishing equipments. The classification of fishermen families based on major occupation and annual income is given Table-3.

Table—3

Classification of fishermen families based on major occupation and annual income

Income group (Rs)	Owners of canoe/catamarans	Wage earners	Fishery related	Others	Total
Less than Rs. 3000/-	—	1	1	—	2
3001—5000	3	6	3	—	12
5001—7000	17	24	—	—	41
7001—9000	32	28	—	—	60
9001—12000	63	24	1	1	89
12001—15000	51	17	3	—	71
15001—20000	35	2	—	1	38
Above 20000	18	2	—	—	18
Total	219	102	8	2	331

Among the owners of canoe and catamarans maximum number earns an income in the range of Rs. 9000 to 20000/- per annum and among the wage earners maximum is in the income range of 7000 to 12000/-. The average annual income of the owner operaters is Rs. 12185/-, wage earners Rs. 9130/- and families engaged in fishery related activities Rs. 8200/-. About 50 per cent of fishermen families in Poonthura are in debt. The total outstanding debt of these fishermen families works out at 14.5 lakhs and per indebted household Rs. 9022/-. The sources of credit to these fishermen are money lenders, boat owners and fish traders, commercial banks and cooperative societies. Mony lenders are supplying about 65 per cent of the credit needs of fishermen. The Institutional agencies like banks and cooperative societies meet only 23 per cent of the credit requirement. Some craft owners also advance loans to fishermen on the condition that they should work only in the creditors' units. The loanee have to return the entire money with interest if they want to leave that unit. Usually craft owners take loans from fish traders on the condition that their catch will be sold only to those traders. In such case fish traders by the catch at price fixed by them and recover the loan on instalments at the time of transactions.

The extent of credit supplied by different agencies to fisherman households of various income groups at Poonthura is given in Table 4. Maximum credit is supplied by money lenders to the fishermen households of all income groups. The contribution of commercial banks is comparatively more for higher income groups. The supply of credit by banks ranges from 2.5 per cent for those in the income range of Rs 3001—6000/- to 24 per cent for those of above Rs. 20000/- annual income. The role of cooperative societies for providing credit in Poonthura is comparatively meagre. However the fishermen households in the income group of Rs. 5000-9000/- have taken maximum advantage of the cooperative societies.

Table—4

Supply of credit by different agencies to fishermen of various income groups*

Income group	Supply of credit by different agencies					Total
	Money lenders	Boat owners & Fish traders	Banks	Co-operative societies	Others	
3001—5000	25300	1100	700	—	3000	30100
	(84)	(3.5)	(2.5)	—	(10)	(100)
5001—7000	69800	—	11700	1500	12050	105050
	(66)		(11)	(11)	(12)	(100)
7001—9000	44700	—	11200	12100	10550	78550
	(57)		(14)	(15)	(14)	(100)
9000—12000	178525	—	5950	13750	47850	299625
	(60)		(20)	(4)	(16)	(100)
12001—15000	358000	10400	101900	18000	39600	527800
	(68)	(2)	(19)	(3	8)	(100)
15001—20000	165000	8500	41500	10000	15350	240350
	(69)	(4)	(17)	(4)	6)	(100)
Above 20000	102500	5000	41700	—	21800	171000
	(60)	(3)	(24)		(13)	(100)
Total	946525	25000	281100	65350	150000	1452475

*Figures in brackets indicate Percentages

The percentage utilization of credit for different purposes is given in Table 5. The loans taken for purchase and repairing of fishing equipments, construction and maintenance of house buildings and education of children are considered for investment purposes. The amount taken for household expenditure, expenditure on social and religious functions, loans spent for seeking employment in gulf and on miscellaneous items are considered for consumption purposes. About 62 per cent of the loan amount is utilised for investment purpose of which 54% is for

investment on fishing equipments leaving only 8% for other purposes. The break up of credit requirement for consumption and investment purposes by various income groups is given in Table 6. It is seen that lower the income, higher is the percentage of loan amount spent for consumption purposes and vice-versa. In the lower income group (less than Rs. 5000) credit is mainly used for household expenditure whereas for higher income groups (above Rs. 12,000) the diversion is mainly towards social functions especially marriages.

Table—5

Pattern of credit utilisation

Purpose	Percent utilisation of loans
I. INVESTMENT	
(i) Fishing equipments	54
(ii) House construction/ repairing	7
(iii) Education of children	1
II. CONSUMPTION	
(i) Household expenditure	1
(ii) Expenditure on social and religious function	28
(iii) For seeking employment in Gulf	8
(iv) Miscellaneous	1

Table—6

Proporation of utilisation of credit for consumption and investment purposes by various income groups

Income group	Consumption %	Investment %
Less than Rs. 3000	—	—
3001 — 5000	65	35
5001 — 7000	58	42
7001 — 9000	57	43
9001 — 12000	52	48
12001— 15000	40	60
15001— 20000	40	60
Above 20000	30	70

The average annual expenditure of a fisherman family in Poonthura works out at Rs. 10598/-, the per capita expenditure being Rs. 1682/-. The annual expenditure pattern towards various needs is given in Table 7. The expenditure on food items alone works out at 78.5 per cent of the family budget. Of the food expenditure about 10 per cent is spent by earning members on their personal expenses like consumption of liquor, tea and smoking.

Table—7

Average annual expenditure pattern of a fisherman household in Poonthura

Sl. No.	Item	Annual expenditure	Per cent to total
1.	Food	8318	78.5
2.	Education	1025	10.0
3.	Clothing	447	4.0
4.	Medicine	247	2.5
5.	Recreation	124	1.0
6.	Social and religious functions	269	2.5
5.	Miscellaneous	168	1.5
	Total	10598	100

II. *Costs and returns of traditional fishing units*

For a catamaran unit operating gillnet the average initial investment for the logs comes about Rs. 3000/- and for the gillnets Rs. 5500/-. The purchase value of hooks and lines comes about Rs. 350/-. The initial investment on plank built canoes fitted with OBM operating gillnets averages Rs. 40800/-. In a catamaran, normally 2 crew members go for the operation of hooks and lines and 2 to 5 go for the operation of gillnets. Most of the fishermen operating catamarans

leave the shore in the early morning at about 5' O clock and return between 2 and 5 P. M. In a plank built canoe fitted with OBM, 4 to 5 persons go for the gillnet operations. They leave the shore between 5 to 7 P. M. and return with their catch in the next day between 6 to 9 A. M. With regard to wages the net income over operating expenses is divided into three shares - one for the craft and gear and the other two for the labourers two be equally divided among themselves.

Table—8

Seasonwise operational costs and earnings of a catamaran with hooks and lines in Poonthura (1985-86)

Items		Post monsoon (Sept.-Jun.)		Pre-monsoon (Feb.-May)		Monsoon (June-Aug.)		Annual (Sept.-Aug.)	
		Total	Average per day	Total	Average per day	Total	Average per day	Total	Average per day
I. Operational costs (Rs)									
1. Repair & maintenance		648	6	402	4	491	8	1541	6
2. Bata for crew		555	5	445	5	601	9	1607	6
3. Wages to crew		6010	54	5161	58	11575	181	22746	86
4. Auction charges		246	2	223	3	521	8	990	6
5 Other expenses		357	3	335	4	589	9	1281	5
Total		7816	70	6566	74	13783	215	28165	107
II. Catch (Q-kg) and Revenue (V-Rs)									
1. Mackerel	Q	203	2	157	2	92	1	452	2
	V	987	9	845	9	460	7	2292	9
2. Carangids	Q	1113	10	176	2	803	13	2092	8
	V	5093	46	2142	24	2617	41	9851	37
3. Cuttlefish	Q	166	2	—	—	46	1	212	1
	V	1036	9	—	—	253	4	1289	5
4. Tuna	Q	154	1	89	1	160	3	403	2
	V	1036	10	1195	13	1300	21	3531	13
5. Prawn	Q	62	0.5	89	1	225	4	376	1
	V	476	4	852	10	3855	60	5183	20
6. Half beaks	Q	45	0.4	23	0.3	330	5	398	21
	V	158	1	138	2	3420	53	3716	14
7. Others	Q	308	3	469	5	3493	54	4270	16
	V	1454	13	3556	40	7164	112	12174	46
Total catch & returns	Q	2051	19	1003	11	5149	81	8203	31
	V	10240	92	8727	98	19069	298	36036	144

1. *Operational costs and earnings*

The catamarans operating hooks and lines incur comparatively less operational and fixed costs. The break up of season wise operotional costs, species-wise catch and earnings of a catamaran with hooks and lines in Poonthura is given in Table 9. The number of fishing days during Sept. 1985 to August 1986 for these units comes about 264. The average operational expenditure per day was Rs. 70/-

in post-monsoon, Rs. 74/- in pre-monsoon and Rs. 215/- in monsoon seasons respectively. The remuneration to crew or labour expenses alone accounts 77 to 84 per cent of the operational costs for different seasons. For an year as a whole the average variable cost per day or operation works out at Rs. 107. The average catch per day is 19 kg in post-monsoon, 11 kg during pre-monsoon and 81 kg during monsoon seasons. Mackerel, carangids, cuttlefish, tuna, prawns and half beaks are the major species caught in these units. The gross returns per day during the year works out at Rs. 144/- ranging from Rs. 92/- per day during post-monsoon to Rs. 298/- per day during monsoon. The net operating income per day works out at Rs. 37/- which is Rs. 22/- in post-monsoon, Rs. 24/- in pre-monsoon and Rs. 83/- in monsoon seasons.

Table—9

Seasonwise operational costs and earnings of a catamaran with gillnets in Poonthura (1985-86)

Items		Post monsoon (Sep-Jan)		Pre-monsoon (Feb-may)		Monsoon (June-Aug)		Annual (Sept-Aug)	
		Total	ave. per day	Total	ave. per day	Total	ave. per day	Total	ave per day
I. Operational costs (Rs)									
1. Repair and maintenance		811	8	622	7	1087	16	2520	10
2. Bata for crew		1092	10	800	9	968	14	2860	11
3. Wages to crew		8741	82	6024	68	18979	275	33544	127
4. Auction charges		351	3	290	3	695	10	1336	5
5. Other expenses		440	4	401	5	834	12	1675	6
Total		11235	107	8137	92	22563	327	41935	159
II. Catch (Q-kg) & Revenue (V-Rs)									
1. Mackerel	Q	161	2	311	4	88	1	560	2
	V	690	7	1950	22	330	5	2970	11
2. Tuna	Q	101	1	260	3	368	5	729	3
	V	675	6	2766	31	4121	60	7562	29
3. Carangids	Q	154	2	67	1	22	0.3	243	1
	V	1115	11	598	7	176	3	1889	7
4. Prawns	Q	—	—	23	0.3	2.12	3	235	1
	V	—	—	276	3	2235	32	2511	10
5. Cuttle fish	Q	312	3	—	—	660	10	972	4
	V	1240	12	—	—	1980	29	3220	12
6. Half beaks	Q	139	1	142	2	1008	15	1287	5
	V	662	6	1350	15	2574	37	4586	17
7. Eels	Q	526	5	115	1	8064	117	8705	33
	V	2406	23	899	10	16123	234	19428	74
8. White baits	Q	239	2	40	0.5	66	1	345	1
	V	735	7	160	2	198	3	1093	4
9. Others	Q	1338	13	751	8	367	5	2456	9
	V	7171	68	2573	29	3240	47	12984	49
III. Gross returns	Q	2970	29	1709	20	10853	157	15532	59
	V	14694	140	10572	119	30977	449	56243	213

The plank built canoes fitted with outboard motors (OBM) in Poonthura operated on an average 260 fishing days during September 1985 to August 1986. The seasonwise costs and earnings of OBM gillnetters have been given in Table 11. The average variable cost per day of operation works out at Rs. 291/-. The operating expenditure per day ranges from Rs. 172/- during the pre-monsoon season to Rs. 364/- during the monsoon season. The labour cost alone accounts for 47 to 69 per cent of the variable costs for different seasons. The wage share of 5 crew members ranges from Rs. 82/- per day during pre-monsoon season to Rs. 253/- per day during monsoon season. The fuel expenses per day ranges from Rs. 60/- during pre-monsoon season to Rs. 70/- during post-monsoon season, constituting 35 per cent and 21 per cent of the operating expenses in these seasons respectively. Mackerel, carangids, tuna, seer fish and eels are the major varieties caught in these units. The average catch per day during the year (Sept. '85 to Aug. '86) works out at 65 kg, which is 85 kg per day during post-monsoon, 31 kg for pre-monsoon and 74 kg for monsoon seasons. The gross returns per day during the year worked out at Rs. 385/- ranging from Rs. 202/- per day during pre-monsoon to Rs. 476/- per day during monsoon seasons. The net operating income per day works out at Rs. 94/-; ranging from Rs. 30/- to Rs. 133 for different seasans.

Table—11

Annual income and expenditure statement of traditional fishing units in Poonthura (Sept. 1986-Aug. 1987)

Item	Catamaran with hooks & lines	Catamaran with gillnets	Canoe fitted with OBM
1. Initial investment (Rs)			
a) Craft	3000	3000	8000
b) Gear (s)	350	5500	20000
c) O. B. M.	—	—	12800
Total	3350	8500	40800
2. Annual fixed cost (Rs.)			
a) Interest for investment (15%)	503	1275	6120
b) Depreciation			
i) craft	600	600	1600
ii) gear	175	1100	2500
iii) OBM	—	—	2560
Total	1278	2775	12780
3. Operational costs (Rs)	28165	41935	75503
4. Total costs (Rs) (2+3)	29443	44910	88283
5. Gross revenue (Rs)	38036	56243	100117
6. Net operating income (Rs)	9871	14308	24614
7. Net profit (5-3) (6-2)	8593	11333	11834

Comparative economics - Annual income and expenditure

The annual income and expenditure statement of the three types of craft and gear combinations is given in Table 12. The annual fixed cost includes the interest for initial investment and depreciation of the fishing units. The interest for the initial investment is worked out at the rate of 15 per cent per annum. The depreciation of the fishing equipments is worked out under straight line method on the basis of the expected life. The average annual depreciation is worked out at Rs. 775/- for catamarans operating hooks and lines, Rs. 1700/- for catamarans operating gillnets and Rs. 6660/- for canoes fitted with outboard motors. The average annual fixed cost comes about Rs. 1278/-, for catamarans operating hooks and lines, Rs. 2975/- for catamarans operating gillnets and Rs. 12780/- for canoe fitted with OBM operating gill/drift nets. The depreciation of fishing equipments alone accounts about 61 per cent of the annual fixed cost of catamarans with hooks and lines, 57 per cent for catamarans operating gillnets and 52 per cent for canoes fitted with OBM.

Table—12

Key economic indicators of traditional fishing units Poonthura

Item	Catamaran with hooks & lines	Catamaran with gillnets	Canoe fitted with OBM
I. Input-output efficiency			
1) Fixed ratio	0.03	0.05	0.13
2) Operating ratio	0.74	0.75	0.75
3) Gross ratio	0.77	0.80	0.88
II. Capital efficiency			
1) Capital turnover ratio	11.3	6.8	2.45
2) Rate of return to capital (%)	271	148	44
3) Pay back period (years)	0.36	0.65	2.2
III. Labour efficiency			
1) Average production per manday (kg)	15	15	13
2) Average value of production per manday (Rs)	72	53	77
3) Average wages received by a labour	43	32	37
IV. Break even point			
1) Actual production (kg)	8.2	15.5	16.8
2) Break even point of production	6.3	12.4	14.9
3) Break even cost	3.59	2.89	5.24
Average selling price (kg)	4.64	3.62	5.94
V. Actual number of fishing days	264	263	260

The annual total cost works out at Rs. 29443/- for catamarans operating hooks and lines, Rs. 44910/- for catamarans operating gillnets and Rs. 88283/- for canoes fitted with OBMS. The annual average catch of a catamaran unit operating hooks and lines comes about 8.2 tonnes realising a gross revenue of Rs. 38036. The net profit of a single unit works out at Rs. 8593/- per annum. For catamarans operating gillnets, the annual average catch per unit comes about 15.5 tonnes, amounting to a gross revenue of Rs. 56243 and the net profit of Rs. 11333/-. A canoe fitted with OBM gets a catch of 16.8 tonnes and realize Rs. 100117 as gross revenue and Rs. 11834/- as net profit.

Economic efficiency

The input-output relationship, capital and labour efficiencies and break even points for the three types of craft-gear combinations were worked out and given Table 3.

Three types of input-output efficiency measures like fixed cost ratio, operating cost ratio and gross cost ratio to the gross income have been worked out. For each one rupee earned the amount going towards fixed expenses was 3 paise for catamarans with hooks and lines, 5 paise for catamarans with gillnets and 13 paise for canoes with OBMS and for operating expenses 74 paise for hooks and lines, 75 paise each for gillnets and OBM units. The gross expenses constitute 77%, 80% and 88% of the gross income of these three types of units respectively.

The capital turn over ratio explains the rate at which income is generated per rupee of capital invested. The ratio worked out at 11.3 for catamarans with hooks and lines, 6.6 for catamarans with gillnets and 2.45 for OBM units. The rate of return to capital was found to be at 271%, 148% and 44% for these three types of units respectively. As the aquisition cost of capital was taken at 15%, the investment on all the three type of units was found to be profitable. The time likely to take to recover the initial investment is known as pay back period and derived out on dividing the initial investment by net profit without considering the depreciation. The pay back period is about 5 months for catamarans with hooks and lines, 8 months for catamarans with gillnets and 2.2 years for OBM units.

The average catch per man day works out at 15 Kg each for catamarans operating hooks & lines and gillnets and 13 kg for OBM units. The fishermen received maximum wages of Rs. 43/- per operating day for operating hooks and lines in catamarans followed by Rs. 37/- for those in OBM units and Rs. 32/- for those in catamarans with gillnets.

The break even production on the basis of catch composition and selling price of different varieties of fish caught in each unit works out at 6.3 tonnes for catamarans with hooks and lines 12.4 tonnes for catamarans with gillnets and 14.9 tonnes for OBM units; the actual catch for these three type of units being 8.2 tonnes, 15.5 tonnes and 16.8 tonnes respectively. The break even price per kg of fish works out at Rs. 3.59 for catamarans with hooks and lines, Rs. 2.89 for catamarans with gillnets and Rs. 5.24 for OBM units, the actual price realised being Rs. 4.64, Rs. 3.63 and 5.94 respectively.

CONCLUSION

The socio-economic survey indicate that about 69 per cent of the fishermen families in Poonthura live in huts. The

fishermen households having ownership on means of production constitute 66 per cent of the total families and 70 per cent of them have invested less than Rs. 10000/- for fishing equipments. The average annual income of a family works out at Rs. 11063/- with a per capita income of Rs. 1756/-. For 97 per cent of the fishermen households, active fishing is the major occupation and 25 per cent of them are wage earners who do not possess any fishing equipments. The average annual income of the owner operators is found to be Rs. 12185/-, wage earners Rs. 9130/- and those in fishery related activities Rs. 8200/-. About 50 per cent of fishermen families are in debt and the average outstanding debt per indebted household works at Rs. 9022/-. Money lenders fullfill about 65 per cent of the credit needs of fishermen. About 62 per cent of the loan amount is utilized for investment purposes. In the lower income group (less than Rs. 5000/-) the diversion of credit is mainly for household expenditure and for higher income groups (above Rs. 12000/-) it is mainly towards social functions especially marriages. The average annual household expenditure per fisherman family works out at Rs. 10598/- and 78.5 per cent of the expenses are incurred for food items.

With regard to the costs and returns of traditional fishing units, the average initial investment of a catamaran unit operating hooks and lines comes about Rs. 3350/- a catamaran with gillnets comes about Rs. 8500/- and plank built canoe fitted with OBM operating gill/ draft nets comes about Rs. 40800/-. The average number of fishing days comes about 264 for catamarans with hooks and lines, 263 for catamarans with gillnets and 260 for OBM units. The average operational expenditure per day works out at Rs. 107/-, Rs. 159/- and Rs. 291/- for the three type of units respectively during Spt. 1985—August 1986.

For catamaran units with hooks and lines, the average gross returns per day during the year works out at Rs. 144/-. The gross returns are ranging from Rs. 83/- during post-monsoon to Rs. 286/- for monsoon seasons. The net operating income per day works out at Rs. 37/- with the range of Rs. 22/-. In post-monsoon to Rs. 83/- in monsoon seasons. The net profit of the unit works out at Rs. 8593/- per annum.

The annual gross returns for catamarans with gillnets comes about Rs. 56243/- and per day at Rs. 213/-. The net operating income per day of operation works out at Rs. 54/-, which is Rs. 33/- in post-monsoon, Rs. 27/- in pre-monsoon and Rs. 122/- in monsoon seasons. The annual net profit of this unit works out at Rs. 11333/-.

The OBM units earns a gross income of Rs. 100117/- per annum. The gross income per day works out at Rs. 385/- which is ranging from Rs. 202/- during pre-monsoon to Rs. 476/- during monsoon season. The net operating income per day works out at Rs. 94/- the range being Rs. 30/- in pre monsoon to Rs. 133/- for monsoon seasons. The annual net profit of this unit works out at Rs. 11834/-.

Considering the catch and revenue in different seasons for these units, monsoon period (June-August) is found to be more productive and profitable. Although catamarans with hooks and lines earn better prices during the pre-monsoon season, next to monsoon season, post monsoon period accounts for more catch and revenue.

Since the initial investment is comparatively less the catamaran units show better input-output and capital efficiencies as compared to OBM units. This may be the main reason that still considerable number of traditional units in Trivandrum coast is not motorised inspite of its fast expansion in other coastal districts of the state. Catamarans with hooks and lines are highly suitable as a family enterprise for the small investers who are capable to go for fishing in their own units. However in terms of higher productivity, gross and net income and employment potential the canoe fitted with OBM is more efficient.

ACKNOWLEDGEMENTS

We are grateful to Dr. P. S. B. R. James, Director, Central Marine Fisheries Research Institute for his keen interest and encouragement in carrying out this work. We are thankful to Shri D. B. S. Sehara, Head, F. E. E. Division for critically going through the manuscript. Thanks are also due to Shri. J. J. Joel, Senior Technical Assistant Vizhinjam Research Centre of CMFRI, for his help in collection of supplementary data and to Shri. K. Anandan and Smt. K. P. Salini, Technical Assistants of the Institute for tabulation of data.

REFERENCES

1. Jacob T, S. K. Dharmaja and K. K. P. Panikkar, 1979.
Socio-economic implications of purse-seine operations in Karnataka. Mar. Fish. Infor. Serv. T & E Ser. 12. 1-18.

2. Panikkar K. K, P, 1980.
Coastal rural indebtedness - a case study.
Mar. Fish. Infor. Serv. T & E Ser. 18 : 8-12.

3. Panikkar, K. K. P. and K. Alagaraja 1981.
Socio-economic status of fishermen community of Calicut area, Mar. Fish. Infor. Serv. T & E Ser. 33 : 1-12.

4. Sathiadhas, R and G. Venkataraman 1981.
Impact of mechanised fishing on the socio-economic conditions of the fishermen of Sakthikulangara-Neendakara, Kerala.
Mar. Fish. Infor. Serv. T & E Ser., 29 : 1-18.

5. Sathiadhas, R. 1982.
Mechanisation of indigenous crafts with outboard motors in Tamil Nadu-an impact study.
Mar. Fish. Infor. Serv. T & E Ser., 38 : 17-19.

6. Sathiadhas, R and G. Venkataraman 1983.
Indebtedness and utilization of fisheries credit in Sakthikulangara-Neendakara, Kerala. - A case study.
Mar. Fish. Infor. Serv. T & E Ser., 54 : 1-6.

7. Sehara, D. B. S., J. P. Karbhari and R. Sathiadhas, 1986.
A study on the socio-economic conditions of fishermen in some selected villages of Maharashtra and Gujarat coasts.
Mar. Fish. Infor. Ser. T & E Ser., 69 : 1-18.

8. Sehara, D. B. S., R. Sathiadhas and J. P. Karbhari. 1988.
An evaluation of fishermen economy in Maharashtra and Gujarat - A case study.
CMFRI Special publication, No. 44. 1-80.