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Economic Feasibility of Trawling Operations Off Tuticorin Coast

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The economic feasibility of medium size trawlers of 36 feet length operating at Tuticorin coast was studied. The size of sample fishermen respondents was fixed at 30. Data collection was carried out once in a fortnight and thus a total of 60 fishing trips were considered in a month. Data on auction revenue, cost of operation and total fish catch were collected for one year from July 1997 to June 1998. The economic estimates were made for an average fishing trip. The key economic indicators which would indicate the economic feasibility of trawling operations were estimated.

Key words: Trawling, Tuticorin coast, fixed cost, variable cost, economic feasibility

Tuticorin is one of the major fish landing centres of Tamilnadu and trawling is a major fishing method at the centre. Data on costs and returns of mechanized fishing boats are a prerequisite for formulating fisheries development policies. Moreover, the economic analysis of trawler operations would help the financial institutions to take a decision on providing credit to fishermen. Sathiadhas & Benjamin (1990) analysed the costs and earnings of mechanized fishing boats in six selected fish landing centres of Tamilnadu. The average annual income and expenditure of trawlers were estimated. Some of the key economic indicators like rate of return on capital, capital turn over ratio and net profit were also worked out. Sehara & Kanakkan (1992) analysed the profitability of trawlers operating from Cochin fishing harbour. Economic feasibility of trawling operations were determined based on net income, labour and fuel productivity, capital turn over ratio and cost ratio. Similar information on the economic feasibility of trawling operations off Tuticorin coast is scanty and hence this study is an attempt to create the required database in this regard.

Materials and Methods

The Tuticorin fishing harbour was selected for the present study. The study was undertaken among the owner-operators of trawlers of medium size (36 feet length). The size of sample fishermen was fixed at 30. If one trawler went for fishing in a day, it was considered as one fishing trip. Random sampling was adopted for the selection of the respondents. Data collection was carried out once in a fortnight and a total of 60 fishing trips were considered in a month. Data on auction revenue, costs of operation and total fish catch were collected for one year from July 1997 to June 1998. Thus, data on a total of 720 fishing trips were pooled for determining the economic feasibility of trawling operations.

Results and Discussion

The items of fixed cost and variable cost in the operation of trawlers are furnished in Table 1. The fixed cost per fishing trip was calculated as Rs.214.06. The expenditure towards repairs and maintenance was the single largest item of fixed cost contributing

Table 1. Components of cost of fishing (in Rs. per fishing trip)

Items of cost	Amount (Rs./fishing trip)*
Fixed cost	
Depreciation	70.49 (32.93)
Interest on capital investment	63.38 (29.61)
Repairs and maintenance	76.19 (35.59)
Licence fee	0.19 (0.09)
Berthing charges	3.81 (1.78)
Total fixed cost	214.06 (100.00)
Variable cost	
Fuel oil	1596.46 (53.14)
Lubricant oil	203.32 (6.77)
Ice	174.43 (5.80)
Crew share	817.85 (27.22)
Daily allowance for the crew	197.32 (6.56)
Miscellaneous expenses	15.04 (0.51)
Total variable cost	3004.42 (100.00)

* Figures in parentheses indicate percentages of total

to 35.6 percent of total expenditure. Depreciation on capital items and the interest on capital investment were 32.9% and 29.6% respectively. Interest on capital investment was calculated by considering the rate of interest paid by the nationalized banks on fixed deposits. Berthing charges and license fee accounted for a meagre 1.78 % and 0.09% respectively.

Mean variable cost per fishing trip was estimated as Rs.3004.42. Fuel cost was the largest component, accounting for 53.1% followed by crew share (27.2%). The cost of lubricant oil, daily allowance for the crew and the cost of ice were respectively 6.8, 6.6 and 5.8% of the total variable cost of fishing. Miscellaneous expenses formed only 0.5 percent. The total cost of fishing, which includes total fixed cost and total variable cost of fishing, was calculated as Rs.3218.48 per fishing trip. The fixed cost and variable cost represented 6.7 and 93.3% respectively of the total cost of fishing.

Mean gross returns per fishing trip was estimated as Rs. 4598.94 (Table 2). It ranged from Rs. 3045/- during January 1998 to Rs. 6681/- in July 1997. The mean variable cost per fishing trip ranged from Rs.2510/- during January 1998 to Rs. 3590/- during July 1997 corresponding with the lean and peak fish landing seasons. The net profit from fishing was Rs. 1380.46 per fishing trip on an average. The lowest net profit of Rs. 246/- was in January 1998 and the

Table 2. Gross returns and profit during trawling operations off Tuticorin coast (Rs./fishing trip/respondent)

Month	Gross returns	Total cost	Total variable cost	Net profit	Operating profit
July 1997	6681.00	3765.37	3590.65	2915.63	3090.35
August	6050.20	3418.90	3195.93	2631.30	2854.27
September	4416.48	2954.66	2767.37	1461.82	1649.11
October	3789.40	3103.80	2821.73	685.60	967.67
November	3607.75	2966.24	2722.37	641.51	885.38
December	4213.68	3055.21	2866.41	1158.47	1347.27
January 1998	3044.95	2799.20	2510.17	245.75	534.78
February	4012.05	3073.94	2866.77	938.11	1145.28
March	4081.92	3051.39	2874.04	1030.53	1207.88
April	4353.90	3298.07	3087.16	1055.83	1266.74
May	4575.10	3398.63	3196.81	1176.47	1378.29
June	5809.00	3610.52	3427.64	2198.48	2381.36
Mean	4598.94	3218.48	3004.42	1380.46	1594.52

Table 3. Measures of economic efficiency (per fishing trip per respondent)

1. Cost ratios	
Variable cost ratio	0.65
Fixed cost ratio	0.04
Total cost ratio	0.70
2. Labour efficiency	
No. of crew required for operation	6
Average catch per crew (kg)	28.72
Average revenue per crew Rs.	766.47
Average crew share (Rs.)	139.18
3. Economic efficiency per kg of fish production (Rs.)	
Total cost	18.68
Total returns	26.69
Fuel cost	9.16
Total variable cost	17.44
Income over variable cost	9.25
Net profit	8.01

highest, Rs. 2916/-, in July 1997. The output-input ratio, i.e. the net returns realised on a rupee of investment, was 1.43 on total cost basis.

The operating profit was considered as a measure of profitability i.e., the difference between gross returns and variable cost of fishing. As long as variable costs are covered, the fishing units could continue fishing operations (Panayotou, 1987). The mean operating profit was Rs. 1594/- per trip. It ranged from Rs. 534/- for January 1998 to Rs. 3090/- for July 1997 and the mean output - input ratio on the basis of variable cost was 1.53.

Table 3 presents the key economic indicators estimated on the basis of costs and returns, which would highlight the economic efficiency of the selected fishing units.

The cost ratio, useful to measure the input-output efficiency of any business, was 0.65 on variable cost basis, implying that 65% of the gross returns was spent towards the variable cost of fishing. The fixed cost ratio was 0.04. The average fish catch per crew per fishing trip came to 28.72 kg with the corresponding value of Rs. 766. The average crew share excluding daily allowance per crew was estimated as Rs. 139/- for the selected mechanized boats.

The total cost of fish production was Rs.18.68 per kg with Rs.17.44 as variable cost. The income over variable cost and the net profit were Rs.9.25 per kg and Rs.8.01 per kg respectively.

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