

Costs and Earnings of Trawlers operating at Tuticorin, Tamilnadu

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The aspects of profitability and economic efficiency of mechanised boats fitted with 106 HP marine diesel engine were studied at Tuticorin, Tamilnadu. Random sampling was followed to select 10 respondents from among the owner-operators of the above said boats. Data collection was carried out once a week for a time span of 53 weeks from July 1992 to June 1993. Thus a total of 530 fishing trips were considered for data processing and the economic estimates are for an average fishing trip. The fixed cost and variable cost per trip were estimated as Rs. 320.24 and Rs. 4016.20 respectively. The mean gross returns was Rs. 6738.57 and the mean net profit came to Rs. 2402. Important indicators of economic efficiency were also estimated and discussed. The predominant item of cost was fuel. The earnings were influenced by fish landings as well as fish prices prevailing in different seasons.

Key words: Marine fishing, economic efficiency, Economics of trawling.

Introduction of mechanised fishing boats has been accorded high priority for the development of marine fishery sector in the coastal districts of India. Mechanisation led to intensification of fishing and also paved the way for the growth of seafood industry. The present study deals with the economics of trawlers operating at Tuticorin fishing harbour. Tuticorin is one of the important trawling centres in Tamilnadu. This study would provide entrepreneurs necessary information to invest in trawl fishing. The economic analysis of trawlers would help financial institutions in extending credit to the entrepreneurs. It would also help the planners to formulate fishery development programmes for the region.

Materials and Methods

The total number of mechanised boats operated from Tuticorin fishing

harbour during 1992-93 were 155 of which, mechanised boats fitted with 106 HP engine, the target of the present study, formed the major category contributing 37.42 percent. Collection of data on total returns, total costs and total catch was followed at weekly intervals. The size of sample of fisherman respondents was fixed as 10. Random sampling method was followed for the selection of the respondents. The sample size was kept small because of in depth data collection every week with regard to the items of cost, catch composition, auction revenue and net returns. Data collection was carried out every Wednesday for a period of 53 weeks from the first week of July 1992 to the last week of June 1993. Thus a total of 530 fishing trips were considered for data processing. The economic estimates are for an average fishing trip in the present study.

Results and Discussion

Items of mean fixed cost per fishing trip are furnished in Table 1. The items of fixed cost were depreciation, opportunity cost of capital, repairs and maintenance, licence fee and berthing charges, which were estimated per annum and then apportioned to the selected fishing trips.

Table 1. Items of mean fixed cost

Items of fixed cost	Rs. per fishing trip
Depreciation	109.80 (34.29)
Opportunity cost of capital	101.75 (31.77)
Repairs & maintenance	104.75 (32.71)
Licence fee	0.18 (0.06)
Berthing charges	3.75 (1.17)
Total	320.24 (100.00)

Value in the parenthesis shows % to total

The apportioned fixed cost per fishing trip came to Rs. 320.24, of which the expenditure towards depreciation, repairs and maintenance and opportunity cost of capital contributed to Rs. 109/80, Rs. 104/75 and Rs. 101.75 respectively. The expenditure towards berthing charges and licence fee were respectively Rs. 3.75/- and Rs. 0.18.

The variable cost items per fishing trip was estimated as Rs. 4016/20. (Table 2). The fuel cost is the single largest item of cost (46.95%) followed by crew share (37.11%). The cost contribution of lubricant, ice and daily allowance for the crew came to 5.20%, 4.68% and 4.57% respectively. The expenses towards watchman allowances, barber expenses and miscellaneous expenses were very

meagre amounting to only 0.30%, 0.07%, and 1.12% respectively.

Table 2. Mean variable costs per fishing trip

Item	(in Rs. per trip) Mean Value
Fuel	1885.48 (46.95)
Lubricant	208.87 (5.20)
Ice	187.89 (4.68)
Daily allowance for the crew	183.32 (4.57)
Crew share	1490.56 (37.11)
Watchman allowance	12.17 (0.30)
Barber expenses	2.81 (0.07)
Miscellaneous expenses	45.10 (1.12)
Total	4016.20 (100.00)

Figures in parentheses indicate percentages to total

The components of total cost of fishing per trip are presented in Table 3.

Table 3. Total cost of fishing per trip

Month	Total fixed cost	Total variable cost	Total cost
July 1992	265.21	4530.49	4795.70
August	336.84	5348.71	5685.55
September	292.49	3724.99	4017.48
October	420.57	3498.86	3919.43
November	347.11	3092.66	3466.77
December	301.17	3006.02	3307.19
January 1993	399.30	4149.62	4548.92
February	315.88	4816.94	5132.82
March	269.20	4405.43	4674.63
April	301.16	3751.63	4052.79
May	303.73	3290.16	3593.89
June	263.23	4545.89	4801.12
Mean	320.4 (7.38)	4016.20 (92.62)	4336.44 (100.00)

The mean total cost was Rs. 4336/44. The corresponding amounts for the fixed and variable cost were Rs. 320/24 and Rs. 4016/20 representing, 7.38% and 92.62% respectively. In a study on the economics of mechanised units at Tuticorin, Samuel (1986) found that the percentage of total variable cost was 87.42, which could be compared with the estimate in the present investigation. The variable cost worked out to 81.44% for the study conducted by Mathiarjunan (1989) on costs and returns of mechanised boats at Tuticorin during 1984-85.

The fish catch and the gross returns per fishing trip are presented in Table 4. The mean landings worked out to 204.45 Kg. It was highest during August 1992. The lowest landings were recorded during April 1993 amounting to 141.62 kg. The quantity of fish caught was above mean of 204.45 kg from June 1992 to October 1991 and below mean during November 1992 and also from January to May 1993.

Table 4. Fish catch and gross returns per trip

Month	Fish landings in kg	Gross returns in Rs.
July 1992	282.64	8534.88
August	282.85	9982.28
September	217.26	5961.40
October	219.07	5083.28
November	189.57	4221.18
December	200.08	3866.04
January 1993	177.15	7151.13
February	199.83	8985.53
March	176.08	7848.32
April	141.62	5738.10
May	147.18	5104.50
June	205.30	8205.38
Mean	204.45	6738.57

The mean gross returns was Rs. 6738/57. The lowest returns was Rs. 3866 during December 1992. The highest returns of Rs. 9982 was obtained in the month of August 1992.

The net profit and operating profit obtained per fishing trip are given in Table 5. The difference between the gross returns and the total variable cost of fishing per trip gives the operating profit per fishing trip.

Table 5. Net profit and operating profit per trip

Month	Net profit in Rs.	Operating profit in Rs.
July 1992	3739.18	4004.39
August	4296.73	4633.57
September	1943.92	2236.41
October	1163.85	1584.42
November	754.41	1128.52
December	558.85	860.02
January 1993	2602.21	3001.51
February	3852.71	4168.59
March	3173.69	3442.89
April	1685.31	1986.47
May	1510.61	1814.73
June	3396.26	3659.49
Mean	2402.13	2722.37
Output-input ratio	1.55	1.68

The mean net profit worked out to Rs. 2402. The lowest mean net profit of Rs. 558 was realised in the month of December 1992 and the highest mean net profit of Rs. 4296 during August 1992.

The output-input ratio indicates the net returns realised on a rupee of investment. The mean ratio worked out to 1.55. It would mean that for every rupee of total cost incurred a net profit of 55 paise was realised. The mean operating profit was found to be Rs. 2722. The lowest operating profit was

Rs. 860 during December 1992 and the highest of Rs. 4633 in August 1992.

The mean output - input ratio was 1.68. It would mean that for every rupee of variable cost incurred, about 68 paise of operating profit was earned. Some of the key economic indicators which would highlight the economic efficiency of the mechanised boat operations are presented in Table 6.

Table 6. Measures of economic efficiency of the 106 HP mechanised boats

I Cost Ratios	
Variable cost ratio	0.60
Fixed cost ratio	0.50
Total cost ratio	0.64
II Labour efficiency	
Average catch per crew (kg)	34.08
Average revenue per crew (Rs.)	1123.09
Average crew share per head (Rs.)	249.09
III Economic efficiency - per trip	
Catch per fishing trip (kg)	204.45
Gross returns per fishing trip (Rs.)	6738.57
Total variable cost (Rs.)	4016.20
Total cost (Rs.)	4336.44
Fuel cost (Rs.)	1882.72
Income over variable cost (Rs.)	2722.36
Net profit (Rs.)	2402.13
Output-Input ratio	1:1.55
IV Economic efficiency - per kg of fish production	
Total cost (Rs.)	21.21
Total returns (Rs.)	32.96
Fuel cost (Rs.)	9.20
Total variable cost (Rs.)	19.64
Income over variable cost (Rs.)	13.32
Net profit (Rs.)	11.75
V Other measures	
Litres of fuel used per fishing trip	278.00
Fish catch per litre of fuel (kg)	0.73
Returns per litre of fuel (Rs.)	24.22

The variable cost ratio came to 0.60 indicating that 60% of the gross revenue was spent towards variable cost. The fixed cost ratio of 0.05 showed that out of every rupee earned, 5% was spent on fixed cost.

The average catch per crew member was 34.08 kg with the corresponding

value of Rs. 1123. The average crew share excluding daily allowance per crew member was estimated as Rs. 249.

The average fish catch was 204.45 kg with the corresponding gross returns of Rs. 6738.57. The total variable cost and total cost were Rs. 4016.20 and Rs. 4336.44, respectively. The share of fuel cost in total variable cost came to 46.9%. The income over variable cost per trip was Rs. 2722.36 and the net profit per fishing trip Rs. 2402.13.

The total cost of fish production was Rs. 21.21 per kg with Rs. 19.64 as variable cost. The income over variable cost and the net profit worked out to Rs. 13.32 per kg and Rs. 11.75 per kg respectively.

The average litres of fuel used per fishing trip came to 278. The fish catch per litre of fuel was found to be 0.73 kg and the corresponding returns per litre of fuel was Rs. 24.22 and it was Rs. 15. higher than the fuel price.

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