

Economics of Fishing Units in the Backwaters of Kerala

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The cost benefit analysis of crafts and gears used for stake net, cast net, gill net, bag net and ring net operations in Vembanad lake, Kerala are presented. The rates of returns for capital employed were 67.94% for stake net, 83.17% for cast net, 64.34% for gill net, 5.32% for bag net and 20.78% for ring net. In spite of high rate of return, net income of fishing units were low.

The backwaters of Kerala have an area of 1179 km² in which Vembanad lake is the biggest covering 256 km². Vembanad lake accounts for 50% of crafts and gears operated in the backwaters. The major fishing gears are chinese dipnet, stake nets, cast nets, gill nets and bag nets. The traditional crafts used in backwater fishing are not mechanised. No systematic study has been carried out on the economics of backwater fishing except a few in the marine side (Yahaye & Wells, 1980; Kurian & William, 1982; Sathiadas & Paniker, 1988; Datta *et al.*, 1989; Annamalai & Kandoran, 1990). Therefore the present study was undertaken to assess the economic viability of traditional fishing operations in the backwaters.

Materials and Methods

The study was carried out in Vembanad lake during the period from May 1989 to April 1990. Five major types of fishing gears namely, stake net, gill net, cast net, bag net and ring net were selected for the studies. From each type of fishing gear, 25 units were selected and data regarding cost of craft and gear, number of fishing days, catch sharing ratio between the owner and crew were collected from them. The data were analysed statistically.

Results and Discussion

Operation of fishing in backwaters is characterised by low investment and less man power. The investment profiles for dif-

Table 1. Average investment on fishing units

Type of Gear	Investment on craft Rs.	Investment on gear Rs.	Investment on other auxiliary Rs.	Average investment per unit Rs.
Stake net	8000 (67%) σ : 1067.7	3000 (25%) σ : 273.86	970 (8%) σ : 13.77	11970 (100%) σ : 1569.26
Cast net	2500 (64%) σ : 126.49	1250 (32%) σ : 150.73	165 (4%) σ : 12.68	3915 (100%) σ : 272.49
Gill net	2500 (56%) σ : 388.68	1725 (39%) σ : 92.19	215 (5%) σ : 19.23	4440 (100%) σ : 701.42
Bag net	5800 (76.12%) σ : 636.28	1425 (18.7%) σ : 135.16	395 (5.18%) σ : 19.23	7620 (100%) σ : 701.42
Ring net	2500 (81.78%) σ : 415.69	460 (15.05%) σ : 28.49	97 (3.17%) σ : 12.9	3057 (100%) σ : 292.99

ferent types of fishing units are given in Table 1. The average investment of stake net fishing was highest on account of high cost of craft, net and additional investment of stakes. Two types of fishing craft namely, Thara vanchi and Kattu vanchi were used by the stake net operators. The average investment of ring net fishing was lowest because of low cost of craft and gear. Thara vanchi, made of ayini or jungle jack or mango wood planks seamed together with copper nails, is 7-8 m long, 0.9-1.2 m wide and 0.45-0.6 m deep. The size of plank built boat chiefly used for gill net, cast net and ring net operations ranges 5-6 m in length, 0.65-0.75 in width and 0.28-0.35 m in depth. The craft used for bag net operation is about 6-7 m long, 0.7-0.9 m wide and 0.40 to 0.45 m deep. The average investment for fishing crafts were Rs.8000/- for stake net, Rs.2500/- for gill net, cast net and ring net and Rs.5800/- for bag net. It was noticed that the variability of investment was highest for stake net ie., 1067.7. This was mainly due to the cost variation between the two type of craft used in stake net fishing. Thara vanchi was 53.84% costlier than Kattu vanchi. The variability in cost of various craft was due to the cost of boat building, wooden planks and size of the craft.

Table 2. *Crew size and sharing ratio*

Type of gear	No. of crew	Sharing ratio to crew %
Stake net	2	50
Cast net	2	65
Gill net	2	65
Bag net	3	75
Ring net	2	65

Investment was highest for stake net and lowest for ring net. The variability in cost of gear was due to the difference in the size of the gear, materials used for fabrication, and cost of net making. For. e.g. 73% of the stake nets were made of nylon and the remaining with nylon-cotton mixed material. The total investment and the variability was the highest for stake net.

The earnings were distributed between owners and workers on pre-determined percentage of gross returns (Table 2). In bag net operation three crew were engaged while in all others only two. The workers share was 50% in stake net, 65% in cast net, gill net and ring net and 75% in bag net operations. The sharing for crew in bag

Table 3. *Economics of operation*

Type of gear	No. of fishing days	Gross returns Rs.	Operational cost Rs.	Operational return Rs.
Stake net	250 σ 4.45	24750 σ 442.97	(12375 (50%)) σ 583.15	12375 (50%) σ 490.31
Cast net	260 σ 11.02	14040 σ 767.44	9126 (65%) σ 402	4914 (35%) σ 1133.3
Gill net	230 σ 10.95	14490 σ 258.2	9419 (65%) σ 841.3	5071 (35%) σ 578
Bag net	87 σ 11.22	10179 σ 374.61	7634 (75%) σ 666.35	2545 (25%) σ 726
Ring net	268 σ 6.78	20984 σ 2068.26	13640 (65%) σ 1306.43	7344 (35%) σ 702.23

Table 4. *Income of the fishing units*

Type of gear	Average investment on fishing unit	Operational profit	Repair and maintenance charge	Interest charge	Depreciation	Net income	Rate of return to investment
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	%
Stake net	11970	12375	500	1197	2545	8133	67.94
Cast net	3915	4914	200	391.5	1067	3256	83.17
Gill net	4440	5071	400	444	1370	2857	64.34
Bag net	7620	2545	215	762	1162	406	5.32
Ring net	3057	7344	100	305.7	800	6138	200.78

net operation was high due to more crew required for operation and limited fishing days. The number of fishing days varied from 230-270 for all types of gears except for bag net (87 days).

The cost of fish production may be divided into fixed and operational cost. The operational cost of fishing units depended on the gross income and the sharing system (Table 3).

The profits from different fishing units are given in Table 4. The profit was computed by deducting the rate of interest, depreciation, repair and maintenance charges from operational return. The net return was highest for stake net (Rs.8133) while the percentage of net return to investment was highest in ring net (200.78). On comparing the economic efficiency of five gears it was found that the operation of all gears except bag net was viable. The percentage of net return to investment in bag net was only 5.32. In backwater fisheries about 74% of the owners of fishing crafts and gears were also workers.

The capital turn over ratio i.e. the income generated for each rupee invested was Rs.2.06 for stake net, Rs.3.58 for cast net, Rs.3.26 for gill net, Rs.1.33 for bag net and Rs.6.86 for ring net. The pay back period (capital cost by operational profit) was 0.9, 0.77, 0.87, 2.99 and 0.41 years for stake net,

cast net, gill net, bag net and ring net respectively.

The average catches per man days on operational days were 2.5 kg for stake net, 1.5 kg for cast net, 1.75 kg for gill net, 2.16 kg for bag net and 2.17 kg for ring net. Though the average wage per man day was highest for bag net it was not economic for the crew because of the limited operational days.

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