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## Marketing costs, margins and efficiency of domestic marine fish marketing in Kerala

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### ABSTRACT

Kerala is one of the important marine fish producing and consuming state in India. The total quantity of marine fish produced in the state increased from 6.04 lakh t in 2000 to 8.69 lakh t in 2012. The increase in the catches were mainly contributed by oilsardine and other low value pelagics while there was a decline in the catches of high value fishes. The reduction in the catches of high value fishes, rising costs of fishing and increased demand for marine fish in the domestic and export markets pushed up the prices. The prices of seer fishes, pomfrets and mackerels increased considerably at the retail markets in the state. This has promoted the increased transport of fish from other coastal states which involves more intermediaries in the marketing activity. The present paper discusses the structure of marine fish marketing in the state as well as the efficiency in different marketing channels. The analysis revealed that the marketing efficiency was high for commercial species like seerfishes and intermediaries were grabbing a significant share of the consumer's rupee.

Keywords: Fishermen's share in consumer's rupee, Marketing costs, Marketing efficiency, Marketing margins, Price spread

### Introduction

The marine fish production in Kerala increased from 3.25 lakh t in 1985 to 6.04 lakh t in 2000 and further to 8.69 lakh t in 2012. The value of marine fish at landing centre level (first sales) in Kerala increased from ₹2,400 crores in 2000 to 4,000 crores in 2011. There are about 248 fishing villages and 223 fish landing centres in the state (CMFRI, 2012). All the fish landing centres are primary fish markets from where fishes are transported to the wholesale or retail markets. The retail markets are located in major towns and cities in the state. There was a sharp increase in the prices of many of the highly preferred species in the state in recent years owing to the increased demand from both domestic as well as export sectors and this has necessitated the transport of fish from neighbouring states.

The technological improvements in the transport and processing of marine fish facilitated fish from distant harbours to reach wholesale and retail markets in the state. However the perishable nature of fish compelled its quick disposal at each point of transaction and has resulted in the involvement of more intermediaries in the marketing channel leading to high marketing costs

and margins. Even though the marine fish production has increased over the years in the state, the increase in domestic and export demand necessitated the supply of fish from other states. The prices of many of the marine fish varieties (*viz.*, seerfishes, mackerels, oilsardines and threadfin breams) showed consistent increase during the last few years in the retail markets and many groups (shrimps, pomfrets and ribbonfishes) became scarce and dearer to the consumers in the state. The price increase was more in the urban markets than the rural markets. Ernakulam District is a major fish trading hub. There are 20 fish landing centres, 40 peeling sheds, 9 freezing plants and 5 fish processing plants in the district (CMFRI, 2012). The district is a major supplier of fresh fish to the neighbouring non-maritime districts like Kottayam and Idukki. The marine fish prices in the retail markets in the district showed very high increase in recent years. In this context, this study presents an analysis of the structure of marine fish marketing in Ernakulam District in Kerala. The different marketing channels were identified, price behaviour of preferred species of marine fishes as well as data on marketing costs and margins were collected from selected channels in the district. The marketing efficiency was assessed using suitable indicators. The cash flow

analysis of different intermediaries was also done for assessing the income earned by the intermediaries in the marketing process.

Sathiadhas (1997) reported that marketing cost including handling and transportation of big sized fishes like seerfish, giant sea-perch, sharks and barracudas was comparatively higher than that of small sized fishes such as sardines, lizardfish and threadfin breams. Sathiadhas and Kanagam (2000) observed that at all India level, fishermen received an average of 30% (silverbellies) to 60% (seerfish) of consumers' rupee for different varieties of fish. A study conducted by Narayankumar and Sathiadhas (2006) in the East Godavari District of Andhra Pradesh revealed that the percentage share of fishermen in the consumer rupee (PSFCR) was maximum for varieties like penaeid prawns at 76.87% followed by sharks (69.57%), pomfrets (68.89%), rock cods (68.57%), threadfin breams (67.21 %) and seerfish (68.53%).

A macro level analysis of the efficiency of marine fish marketing in India for the period 2000 to 2008 indicated that lobsters (80.37%), sharks (77.12%), seerfish (75.22%) and mackerel (71.29%) earned comparatively higher share of the consumer rupee for fishermen than the other varieties (Sathiadhas *et al.*, 2011). The study also showed that even though market expansion ensured better share for the producers in the consumer's rupee in most of the varieties, producers and consumers still bear the brunt of monopoly of big traders dominating at the point of first sales. Aparna and Hanumanthaiah (2012) analysed the comparative efficiency of different marketing channels for vegetables in Maharashtra using marketing efficiency index as the ratio of net price received by the farmer to the total marketing cost plus total margin (Acharya and Agarwal, 1999). The analysis revealed that the supermarket channels were more efficient than the traditional channels.

## Materials and methods

The data on marine fish prices, marketing channels, intermediaries, marketing costs and margins were collected from different landing centres, wholesale and retail markets in Ernakulam District in Kerala during the year 2011. The landing centres selected were Cochin and Munambam fisheries harbours. The wholesale price details were collected from wholesale markets in Aluva and Champakara. The retail price details were collected from Champakara market, Ernakulam market and Matsyafed retail outlet. The marketing efficiency in different local channels and the interstate marketing channel originating from Karwar Fishing Harbour (Karnataka) were analysed. The marine fish varieties which had high consumer preference in the state were selected for the analysis. The

marketing efficiency was analysed using fishermen's share in the consumer's rupee and marketing efficiency index (Shepherd's index). (Shepherd Geoffrey, 1972)

$$\text{The fishermen share in consumer's rupee (\%)} = \frac{\text{Net price received by the fishermen} \times 100}{\text{Price paid by consumers}}$$

$$\text{Price spread} = \text{Retail price} - \text{Net price received by the fishermen per kg of fish}$$

The index of marketing efficiency is worked out using the Shepherd's formula:

$$\text{Marketing efficiency index (MEI)} = \frac{\text{Value of goods sold}}{\text{Total marketing costs and margins}}$$

## Results and discussion

### *Marine fish marketing channels in Ernakulam District, Kerala*

The major fishing harbours in the district are important primary trading centres also. The agents of exporters also operated in these centres as the major export oriented items like shrimps, cephalopods, threadfin breams and high value finfishes were landed at these centres. These centres had the maximum number of intermediaries like auctioneers, commission agents, retail traders and agents of exporters. Insulated and ordinary trucks, mini-lorries, petty autos and two wheelers were used by wholesale and retail traders or agents involved in fish trade for transporting fish to distant markets, retail outlets, supermarkets and restaurants.

In the wholesale markets in Ernakulam, fishes reach from other states like Tamil Nadu, Karnataka, Andhra Pradesh, Goa, Maharashtra and Odisha in addition to the various landing centres in the state. Rameswaram, Tuticorin and Kanyakumari are the major centres in Tamil Nadu from where fishes reached the wholesale markets in Kerala and moved to the southern districts of Thiruvananthapuram, Kollam, Alapuzha and central districts like Ernakulam, Idukki and Kottayam. Fish from Karnataka reach Kozhikkode, Kannur, Palakkad, Shornore, Ernakulam and Alapuzha districts. Oilsardines, Mackerels, flatfishes and crabs were mainly coming from Karnataka. In addition, fishes were also coming from Vijayawada in Andhra Pradesh, Ratnagiri in Maharashtra and from Odisha by trains in insulated thermocol boxes. The supermarkets and retail outlets of the Kerala State Co-operative Federation for Fisheries Development Limited (MATSYAFED) also supplied fresh fish to consumers.

The main marketing channels in Kerala comprises Local marketing channels and Interstate channels

Table 1. Fish marketing channels in Kerala

<i>Local marketing channels</i>
<b>For all types of fishes other than high value fishes :</b> Fishermen – auctioneer – retailers – consumers, Fishermen-auctioneer-commission agents (wholesale market)- (wholesaler)-retailer-consumer;
<b>For high value fishes like seerfishes, pomfrets and shrimps:</b> Fishermen- auctioneer- commission agents (restaurants/ hotels) – consumer, Fishermen- auctioneer- retailers- consumers, Fishermen- auctioneer- commission agents- supermarkets/ matsyafed outlets- consumers
<i>Interstate channels</i>
<b>For oilsardines, mackerels, flatfishes, threadfin breams and other low value fishes:</b> Fishermen (Karnataka/Tamil Nadu, Puducherry, Goa) -auctioneer-commission agents (WS)-commission agent (retailer) - retailers- consumer (Kerala)
<b>For sailfish, tunnies, seerfish, perches:</b> Fishermen (Tamil Nadu)-auctioneer-commission agents (whole sale market)- Wholesaler-retailers- consumer (Kerala)
<b>For sharks, rays, flatfishes :</b> Fishermen-auctioneer-processor (dryfish)-commission agents (wholesale market) -wholesaler-retailer-consumers (central Kerala)
<b>Marketing channel for export oriented items (shrimps, cephalopods, threadfin breams, perches, mackerels, ribbonfishes) :</b> Fishermen (Kerala/Karnataka/Tamil Nadu)-auctioneer-Commission agents (exporters)-agents of freezing plants/ pre-processors (Alappuzha/Kochi/Kollam/ Kozhikkode)-exporters- consumers (export destinations)

### *Marketing costs, margins and efficiency*

The gross marketing margin (GMM) included both marketing costs and margins. The marketing margin consists of the profit realised by each intermediary in each marketing channel. The net price received by the fishermen consisted of the price at which fish is auctioned at the landing centre after deducting the trader's discount and auction charges. The auction charges varied from 1 to 5% depending on whether the fishermen availed loan from the money lenders. The fishermen availed finance from money lenders (locally known as *Tharakans*) either for purchase of boat or for fishing operations or both. The money lenders had the right to auction the fish if the fishermen availed credit or else the auction charges were only 1%. The traders or commission agents received a discount ranging from 10-15% of the actual auction rate in many of the harbours. The agents charged 10% of the value of fish as commission. The fishes sold to the wholesalers are again auctioned at different wholesale markets in the state and the wholesalers charged 8-10% of the value of fish as their margin.

Marketing costs consisted of loading and unloading charges, sorting, weighing, icing, packing and loading on trucks or petty autos. The marketing channel involving wholesalers required loading and icing charges at the wholesale market, market fee and commission charges for the wholesaler, commission agents and auctioneers at the wholesale market. The workers involved in washing, weighing, icing, packing and loading into trucks received ₹8-10 per basket of fish which is paid by the agent or trader who purchased fish from the harbour. Insulated trucks with capacities of 120-150 boxes of fish were used for transport. The transport cost varied with the distance of transit from the landing centre. Each box weighed on an average 50-60 kg with 30 kg fish and 15- 30 kg ice depending on the type of fish. Nearly one block ice per box was put for shrimps and cuttlefishes at the landing centres which were going to the export marketing channel. The petty autos carried nearly 1,000-1,400 kg fish. The drivers of the trucks received either monthly salary or an extra amount depending on the value of fish transported.

Marketing costs and margins in the local marketing channel (Channel I) were analysed for the fishes which were transported from the fishing harbours in Kerala to the retail markets in Kerala. It was one of the main marketing channels where the retailers directly purchased fish from the commission agents who took part in the auctioning at the landings centres. The fishermen's share in the consumer's rupee and the marketing efficiency index were highest for seerfishes followed by pomfrets and mackerels. Seer fish is a highly preferred fish both in the domestic and export markets and the supply-demand gap created marked increase in prices in recent years. In the case of mackerels, even though the catches had increased, the huge demand from the export sector might have created scarcity in the domestic market and escalation of prices. The average retail price of mackerels reached ₹100 per kg in 2011. In 2010, the export of mackerel from India was 69,355 t which formed 26% of the total landings in the country. Oilsardines showed the lowest marketing efficiency index. The marketing margin per kg of fish was highest for seer fishes (₹118 kg<sup>-1</sup>) and lowest for oilsardine (₹16 kg<sup>-1</sup>). Marketing costs varied from 2-12% of consumer's rupee for different species (Table 2).

The women vendors in Kerala occupied a significant role in the marine fish marketing in the state. They either directly participated in the auctioning or purchased from the agents. They sold nearly 50 kg of fish per day. The fishes they sold includes oilsardines, mackerels, pomfrets, mullets, white fish and shrimps. The marketing efficiency was highest for oilsardines followed by pomfrets. They received the highest margins for pomfrets (Table 3).

Table 2. Marketing costs and margins of marine fish in marketing channel I (₹ kg<sup>-1</sup>)  
Fishermen (Cochin/Munambam) -Auctioneer-Commission agent - Retailer-Consumer (Kerala)

Particulars	Seerfish	Tunnies	Pomfrets	Mulletts	Mackerels	Oilsardines
Landing centre price	350.00	60.00	225.00	100.00	78.00	35.00
Traders discount	35.00	6.00	22.50	10.00	7.80	3.50
Auction charges	17.50	3.00	11.25	5.00	3.90	1.75
Actual price received by the fishermen	297.50	51.00	191.25	85.00	66.30	29.75
Loading/unloading charges	0.15	0.15	0.15	0.15	0.40	0.40
Ice cost and icing charges	0.50	0.50	0.50	0.50	0.50	0.50
Weighing and packing charges	0.40	0.40	0.40	0.40	0.30	0.30
Costs of transport	1.50	1.50	1.50	1.50	1.50	1.50
Commission agent's margin	29.75	5.10	19.13	8.50	6.63	2.98
Purchase price of retailer	329.80	58.65	212.93	96.05	75.63	35.43
Ice cost	0.40	0.40	0.40	0.40	0.40	0.40
Stall rent	0.25	0.25	0.25	0.25	0.25	0.25
Labour cost (cutting, weighing and packing)	6.00	6.00	6.00	6.00	0.00	0.00
Other costs	0.50	0.50	0.50	0.50	0.50	0.50
Retail price	425.00	80.00	285.00	129.00	100.00	50.00
Price spread (GMM)	128.00	29.00	94.00	44.00	34.00	20.00
Marketing costs	10.00	10.00	10.00	10.00	4.00	4.00
Marketing margins	118.00	19.00	84.00	34.00	30.00	16.00
Fishermen's share in consumer's rupee	70.00	63.75	67.11	65.89	66.30	59.50
Marketing margin as % of consumer's rupee	27.72	24.13	29.49	26.59	29.85	32.80
Marketing efficiency index	3.33	2.76	3.04	2.93	2.97	2.47

Table 3. Marketing costs and margins of fish in Channel II (₹ kg<sup>-1</sup>) (Fishermen (Kerala)-Auctioneer- Women vendors-Consumer)

Particulars	Oilsardine	Mackerel	Pomfrets	Mulletts
Actual price received by the fishermen	30	66	200	85
Ice cost and icing charges	0.75	1	1	1
Costs of transport	1	1	1	1
Retail price	40	100	285	129
Price spread (GMM)	10	34	85	44
Marketing costs	1.75	2	2	2
Marketing margins	8.25	32	83	42
Fishermen's share in consumer's rupee (%)	75.00	66.00	70.18	65.89
Marketing margin as % of consumer's rupee	20.63	32.00	29.12	32.56
Marketing efficiency index	4.00	2.94	3.35	2.93

The third marketing channel analysed was originating from Karwar Fishing Harbour. There were 8 wholesale commission agents in Karwar Fishing Harbour mainly from Aluva, Kondotti, Thirur, Thrissur and Kunnankulam wholesale markets. On an average ₹17 per box (boxes having holding capacity of 50-60 kg) was incurred towards washing, weighing, packing and loading charges in the harbour. The agents charged a commission of 10% and the wholesalers charged a margin of 8% of the value of fish. Insulated trucks with capacities ranging from 120-200 plastic boxes per truck are used for transport. The transport cost was ₹12 per km. Usually one block of ice (50 kg) was used per box of fish. At the wholesale markets, the fish was again auctioned and sold to the retailers. The retailers using twowheelers or petty autos collected the fish and sold in interior markets or directly to consumer households. The landing centre prices in Karwar Fishing

Harbour were lower than the price received at fishing harbours in Kochi for most of the varieties of fishes. The marketing efficiency was highest for pomfrets followed by seerfishes in this channel. The marketing cost per kg of fish was higher than that of the local marketing channel with added costs on transportation and ice. The fishermen's share in the consumer's rupee was highest for pomfrets (72%) and lowest for oilsardines (35%) (Table 4).

Comparative analysis of marketing efficiency in different channels showed that the intermediaries received the highest margins per kg of fish for high value fishes like seerfishes (₹118 to ₹157 per kg) and pomfrets (₹53 to ₹84 per kg). For seerfishes, the marketing efficiency was highest in the local marketing channel (MEI - 3.33). For oilsardines, the highest efficiency was in the local marketing channel involving women vendors (MEI - 4.0).



Table 4. Marketing costs and margins of marine fish in marketing channel III

Fishermen (Karwar)-Auctioneer-Commission agent (Wholesaler) - Wholesaler- Auctioneer- Retailer-Consumer (Kerala)

Particulars	Seerfishes	Pomfrets	Mulletts	Mackerels	Oilsardine
Landing centre price	225.00	180.00	64.00	48.00	14.00
Ice cost	3.33	3.33	3.33	3.33	2.86
Loading charges	0.57	0.57	0.57	0.57	1.00
Transport cost	1.67	1.67	1.67	1.67	1.43
Loading /unloading at wholesale market	1.00	1.00	1.00	1.00	1.00
Margin for commission agent	22.50	18.00	6.40	4.80	1.40
Price at wholesale market	254.07	204.57	76.97	59.37	21.69
Auction charges	6.95	5.60	2.12	1.64	0.59
Wholesalers purchase price	261.02	210.17	79.09	61.00	22.28
Wholesalers' margin	20.88	16.81	6.33	4.88	1.78
Price at WS market/Net purchase price	281.90	226.98	85.41	65.88	24.06
<b>Retail market</b>					
Ice cost	1.17	1.17	1.17	1.17	1.00
Transport cost	3.50	3.50	3.50	3.50	3.50
Total cost of retailer	286.57	231.65	90.08	70.55	28.56
Retailer's margin	113.43	18.35	29.92	19.45	11.44
Retail price	400.00	250.00	120.00	90.00	40.00
Price spread (GMM)	175.00	70.00	56.00	42.00	26.00
Fishermen's share in consumer's rupee (%)	156.82	53.17	42.65	29.13	15.14
Marketing costs	56.25	72.00	53.33	53.33	35.00
Marketing margins	18.18	16.83	13.35	12.87	10.86
Marketing margins as % of consumer's rupee	39.20	21.27	35.54	32.37	37.84
Marketing efficiency index	2.29	3.57	2.14	2.14	1.54

For pomfrets, the marketing efficiency was highest in the interstate channel (MEI - 3.57). The marketing efficiency was lowest for oilsardines in the interstate marketing channel from Karwar. The risk of spoilage during transit was high for oilsardines and hence the traders or agents had a low preference for transport of oilsardines to distant places, even though the purchase price was low in Karwar. In addition, the oilsardines are immediately sold to fish meal plants in Karnataka as there is high demand.

The cash flow analysis of different intermediaries in various channels was also analysed. Usually mixed lots of fishes were transported for the domestic channel by the traders. The commission agents operated in different harbours in the country handled atleast one truck load (100-200 boxes) once in three days depending on the availability of fish. The wholesalers dealt with at least

three commission agents and sold 3,000-5,000 kg of fish per day. Cash flow analysis of intermediaries in the interstate trade showed that the wholesalers received an annual income of ₹45.93 lakhs when they traded a mix of high value fishes like seerfishes and pomfrets along with low value fishes like oilsardines and mackerels. Trading of low value fishes alone resulted in an average net profit of ₹31.34 lakhs. The commission agents received a profit of ₹16.85 lakhs by trading high value fishes and ₹9.80 lakhs by trading low value fishes. The retailers received ₹3.28 - ₹6.97 lakhs per annum depending on the type of fish (Table 5).

In the local marketing channel, the commission agents, retailers and the women vendors received a profit margin of ₹26.50 lakhs, ₹8.81 lakhs and ₹3.15 lakhs per annum respectively (Table 6). A study by Srivastava

Table 5. Cash flow statement of different intermediaries in interstate channel (2011-12)

Particulars	Mix of seerfishes, pomfrets, oilsardines and mackerels			Mix of flatfishes and mackerels		
	Wholesalers	Commission agents	Retailers	Wholesalers	Commission agents	Retailers
Profit per day (₹)	15312	16850	2,324	10,448	9,800	1,094
Quantity handled per day (kg)	3,000	3,000	80	3000	3,000	80
No of days	300	100	300	300	100	300
Net profit annum (₹)	45,93,710	16,85,000	6,97,388	31,34,454	9,80,000	3,28,394

Table 6. Cash flow statement of different intermediaries in local marketing channel (2011-12) (Handling mix of seerfish, pomfrets, mullets, mackerels and oilsardines)

Particulars	Commission agents	Retailers	Women vendors
Profit per day (₹)	10,604	2,939	1,052
Quantity sold per day (kg)	1,500	80	30
No. of days	250	300	300
Annual income (₹)	26,50,938	8,81,715	3,15,750

(1985) for inland fish trade in Delhi retail fish markets during the period 1981-82 showed that the net profit earned by commission agents was ₹81,980 during 1981-82 and the net profit realised per day by retailers and vendors were ₹72.03 and ₹29.22 respectively.

The demand for fish in both domestic and export markets resulted in substantial increase in marine fish prices in the domestic markets in Kerala. The prices of oilsardines and mackerels which were once considered as poor man's fish in the domestic market increased considerably making them dearer to the domestic consumers. Even though the landing centre prices were low at the neighbouring states, huge margins (21 to 39% of the consumers' rupee) grabbed by the intermediaries resulted in low marketing efficiency. The analysis revealed that even though the harvest and post-harvest sectors of marine fishes witnessed tremendous changes over the years, the marine fish trade is still in the hands of few money lenders, commission agents and wholesalers who gained substantial profit in the marketing process. In addition, the unscrupulous practice of deducting 10-15% of the actual auction amount at the landing centres as discounts to traders adds to the woes of the fishermen.

The absence of institutional finance available to the fishermen, the risks involved in handling the perishable commodity and the huge amount of money required for immediate payments after disposal made the system under the control of the cartels formed by the traders. Institutional finance for production and marketing will protect the fishermen from the clutches of money lenders and other intermediaries. In addition, immediate measures are necessary for revamping the marine fish marketing in the state through regulatory measures on trade and promotion of institutional sales channels for protecting the interests of both fishermen and domestic consumers.

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## References

- Acharya, S. S. and Agarwal, N. I. 1999. *Agricultural Marketing in India*. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi, 311 pp.
- Aparna, B. and Hanumanthaiah, C. V. 2012. Are supermarket supply channels more efficient than traditional market channels? *Agri. Econ. Res. Rev.*, 25 (2): 309-316.
- CMFRI 2012. *Marine fisheries census 2010 Part II, 6 Kerala*. Ministry of Agriculture, Krishi Bhavan, New Delhi and Central Marine Fisheries Research Institute, Kochi, 201 pp.
- Narayanakumar, R. and Sathiadhas, R. 2006. Domestic fish marketing opportunities for marine fisheries sector in India. *Proceedings of the National workshop on post-harvest methods and domestic fish marketing opportunities*, p. 59-67.
- Sathiadhas, R. 1997. *Production and marketing management of marine fisheries in India*, Daya Publishing House, New Delhi, 193 pp.
- Sathiadhas, R. and Kanagam, A. 2000. *Distribution problems and marketing management of marine fisheries in India*. In: Pillai, V. N. and Menon, N. G. (Eds.), *Marine fisheries research and management*, Central Marine Fisheries Research Institute, Kochi, p. 858-875.
- Sathiadhas, R., Narayanakumar, R. and Aswathy, N. 2011. *Efficiency of domestic marine fish marketing in India - a macro analysis*. *Ind. J Fish.*, 58 (4): 125-131.
- Shepherd Geoffrey 1972. *Marketing of farm products*, Iowa State University Press, Ames, Iowa, USA, p. 246-247
- Srivastava, U. K. 1985. *Inland fish marketing in India: Markets, cooperatives and corporations*. Concept Publishing Co., New Delhi, India, 119 pp.