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A study on price spread and marketing efficiency of inland fish marketing in Northern dry zone of Karnataka

B Mohan Uday Raj, Teggi MY and Mukartal SY

Abstract
India contributes about 7.7% to the global fish production and country ranks 4th in global exports of fish products. Fisheries sector has contributed about 1.24% to the national gross value added (GVA) and about 7.28% of the agricultural GVA in 2018-19. The sector envisioned to increase the farmers' income through enhancement of production and productivity. The present study was undertaken to analyse the price spread and marketing efficiency in marketing of inland fish in Vijayapura and Bagalkote districts of Northern Dry Zone of Karnataka. The study was based on primary data and the simple random sampling procedure was adopted to choose the inland fish farmers and market intermediaries. Three marketing channels were identified in the study area. Among the three marketing channels, channel-I (producer-retailer-consumer) showed lower price spread (Rs.38.5/kg) and the highest marketing efficiency index (1.85).

Keywords: Inland fish marketing, global fish production, global exports

1. Introduction
Fish and fish products are one of the most traded food items in the world today. In 2018, about 37.60 per cent of world fish production entered into the International market in different forms for consumption by human or for the non-edible purposes. In 2018, about 67 million tonnes of total fish and fish products was exported and it represents a 245 per cent increase over 1976 and also there was significant increase in value terms, with exports increasing from eight billion US dollars in 1976 to 164 billion US dollars in 2018.

From 2014-15 to 2018-19, India's fisheries sector had exceptional growth, with an average annual growth rate of 10.88 percent. From 2014-15 to 2018-19, India's fish output increased by 7.53 percent on a yearly basis, reaching an all-time high of 137.58 lakh metric tonnes in 2018-19 (NFDB, 2020) [5].

The Karnataka State is divided into the 10 various agro-climatic zones. Northern Dry agro climatic zone of Karnataka is one of main drought prone agro climatic zone of in the state is located in the Northern part Karnataka State comprises of 9 districts of Vijayapur, Bellary, Dharwad, parts of Belgaum, Gadag, Bagalkote, Koppal and some parts of Raichur districts comprises of 35 Taluks (Nandeesha, 2018) [4].

Fish is one of the very important commodities have to be transported and marketing either live or fresh. The price of fish is generally many folds higher than the average price of many other food products. To prevent wastage, even distribution by transportation and marketing becomes very essential. In recent years much attention has been given to fish culture and as a result the inland fish production of our country has gone up considerably. However, there is very less literature available on production and marketing of inland fish in this area. Hence, present study is an attempt to analyse marketing efficiency of inland fish in Vijayapura and Bagalkote districts in NDZ of Karnataka.

2. Materials and Methods
This study was conducted in the Northern Dry Zone of Karnataka. The Northern Dry Zone consists of nine districts *viz*., Bellary, Raichur, Vijayapura, Davangere, Belagavi, Koppal, Bagalkote, Dharwad, and Gadag districts. Vijayapura and Bagalkote districts were purposefully chosen based on researcher convenience and by looking at the third highest and third lowest fish production districts for the year 2018-19. The list of inland fish farmers was collected from Fisheries Research and Information Center, Bhutnal, Vijayapura and Fishery

Department office in the respective districts. From selected districts, sixty fish growers 30 each were selected randomly. From each district one fish market was selected and from each market 30 market functionaries were selected randomly. Thus sample size consists of 120 respondents. The data were collected by the survey method with the help of well-structured and pre tested schedule.

2.1 Price spread
The difference between the price paid by consumer and price received by the producers is the price spread. Lesser the price spread more efficient is the marketing channel.

2.2 Marketing efficiency
Marketing efficiency is defined as the effectiveness or competence with which a market structure performs its designated function. According to Acharya and Agarwal (2001) the formula for computing marketing efficiency is as follows:
Acharya's Modified Marketing Efficiency:

MME = FP/ (MC+MM)

Where,
MME is modified measure of marketing efficiency
FP is price received by farmers
MC is marketing cost
MM is marketing margin

3. Results and Discussion
3.1 Price spread of different channels in inland fish marketing
There are three different marketing channels for inland fish in both (Vijayapura and Bagalkote) districts:
Channel-I: Fish farmer-Retailer-Consumer
Channel-II: Fish farmer-Wholesaler-Retailer-Consumer
Channel-III: Fish farmer-Trader-Wholesaler-Retailer–consumer

3.1.1 Marketing costs, margin and price spread of inland fish in Vijayapura district
The results on costs and margin of different intermediaries involved in the marketing of inland fish in Vijayapura district are presented in Table 1.
The fish marketed through channel-I fetched Rs.73/kg for the farmer and final price paid by consumer was Rs.115/kg with a total price spread of Rs.42/Kg.
Where as in channel-II, farmer received price of Rs.67/Kg and consumer price was Rs.148/Kg. Price spread was found Rs.81/Kg, the magnitude of price spread was more in case of retailer Rs.40/Kg compared to wholesaler Rs.35/Kg.
In channel-III, consumer price was Rs.158/Kg of fish with a very wide price spread of Rs.93/Kg, the share of price spread was more in case of retailer Rs.40/Kg compared to wholesaler Rs.35/Kg.
The price paid per kg by the consumer in the Channel-I, Channel-II and Channel-III, was Rs.115, Rs.148 and Rs.158 respectively. The producer share in consumer rupee was found to be the highest in channel-I (63.47 per cent) followed by in channel-II (45.27 per cent) and lowest was in the channel-III (41.13 per cent).

3.1.2 Marketing costs, margin and price spread of inland fish in Bagalkote district
The results of marketing costs and margin of intermediaries involved in the marketing of inland fish in Bagalkote district was presented in Table 2.
The fish marketed through channel-I fetched Rs.70/kg for the farmer but final price for consumer was Rs.105/kg. The price spread was Rs.35/Kg.
Where as in channel-II, farmer receives price of Rs.65/Kg and consumer price was Rs.125/Kg. Price spread was found Rs.60/Kg, the share of price spread was more in case of retailer Rs.30/Kg compared to wholesaler Rs.25/Kg.
In channel-III, Consumer price was Rs.134/Kg. Price spread was found Rs.69/Kg, the share of price spread was more in case of retailer Rs.30/Kg compared to wholesaler Rs.25/Kg.
The fish marketed per 1kg, price paid by the consumer in the channels -I, II and III, was worked out to be Rs.105, Rs.125 and Rs.134 respectively. In this share of producer was highest in channel-I (66.67 per cent) followed by in channel-II (52 per cent) and lowest was in the channel-III (48.50 per cent).
As of the pooled data of both the districts is concerned, price spread in different channels is as follows:
The fish marketed per 1kg, price paid by the consumer in the channels -I, II and III, was worked out to be Rs.110, Rs.136 and Rs.146 respectively. In this share of producer was highest in channel-I (65 per cent) followed by in channel-II (48.35 per cent) and lowest was in the channel-III (44.52 per cent).

3.2 Marketing efficiency
Marketing efficiency is the measure that indicates how efficiently the produce is marketed in a given channel.

3.2.1 Marketing efficiency of different channels in Vijayapura district
Marketing efficiency of different channels in Vijayapura district was measured and presented in Table.4
The results revealed that the total marketing costs involved in inland fish marketing in channel-I, channel-II and channel-III were Rs.17, Rs.33.50 and Rs.35.50 respectively. The total marketing margins in channel-I, channel-II and channel-III were Rs.25, Rs.47.50 and Rs.57.50. The price received by the farmer in channel-I, channel-II and channel-III were Rs.73, Rs.67 and Rs.65 respectively. The marketing efficiency is highest in channel-I (1.74) followed by channel-II (0.82) and the lowest efficiency in channel-III (0.71).

3.2.2 Marketing efficiency of different channels in Bagalkote district
Marketing efficiency of different channels in Bagalkote district was measured and presented in Table.5
The results revealed that the total marketing costs involved in inland fish marketing in channel-I, channel-II and channel-III were Rs.15, Rs.25 and Rs.25 respectively. The total marketing margins in channel-I, channel-II and channel-III were Rs.20, Rs.35 and Rs.44. The price received by the farmer in channel-I, channel-II and channel-III were Rs.70, Rs.65 and Rs.65 respectively. The marketing efficiency is highest in channel-I (2.00) followed by channel-II (1.08) and the lowest efficiency in channel-III (0.94).

3.2.3 Marketing efficiency of different channels in selected districts of Northern Dry Zone of Karnataka
Marketing efficiency of different channels in selected districts of Northern Dry Zone of Karnataka was measured and presented in Table.6 The results revealed that the total marketing costs involved in inland fish marketing in channel-I, channel-II and channel-III were Rs.16, Rs.29.25 and

Rs.30.75 respectively. The total marketing margins in channel-I, channel-II and channel-III were Rs.22.50, Rs.41.25 and Rs.50.75. The price received by the farmer in channel-I, channel-II and channel-III were Rs.71.50, Rs.66 and Rs.65 respectively. The marketing efficiency is highest in channel-I (1.85) followed by channel-II (0.93) and the lowest efficiency in channel-III (0.80).

Fish moves in three different marketing channels in the study area namely Channel-I (Fish farmer -Retailer- consumer), Channel-II (Fish farmer-Wholesaler-Retailer-Consumer) and Channel-III (Fish farmer-Trader-Wholesaler-Retailer Consumer). Here Traders purchase fish from the farmers by contract method. Hence, farmers did not incur any marketing cost because of harvesting and transportation costs were incurred by the traders. Price spread was noticed to be high in channel-III (Rs.81/kg) than channel-II (70.50/kg) and channel-I (38.50/kg), this is mainly because of more number of market intermediaries involved in channel-I.

The result revealed that the higher producer share in consumer price for channel-I was ascribed to the shortest channel, which minimised the cost of marketing and the margin of marketing intermediaries. This enabled to increase the share of original producer in consumer rupee. As against this, in channel-III the commodity followed longer route to reach the final consumer. This lead to increase in the cost of marketing at each stage and margins of marketing intermediaries involved between the producer and ultimate consumer which narrowed down the share of producer in channel-III.

The study revealed that, in marketing of fish the market intermediaries operating in different channels, marketing margin of retailer was higher in all the channels as compared to rest of the intermediaries. This was due to his business skill.

The foregoing analysis revealed that, producer share in consumer rupee and the number of marketing intermediaries involved in the channels of sale was inversely related. In other words producer share in consumer price decreased with an increase in the number of marketing intermediaries. This implies that, so as to raise the share of producer in consumer rupee, there is need to curtail down number of marketing intermediaries through vertical integration of marketing function and thereby reduction in the cost of marketing and marketing margin. Similar results were observed by Vinay *et al.* (2015) [8] in his study efficiency and performance of inland fish markets in Nanded district of Maharashtra: "a supply chain approach".

Table 1: Marketing costs, margin and price spread in different marketing channels of inland fishes in Vijayapura district (Rs./Kg)

Particulars	Channel-I	Channel-II	Channel -III
Price received by fish farmer	78.00	72.00	65.00
Cost incurred by fish farmer	5.00	5.00	-
Net price of fish farmer	73.00	67.00	65.00
Price paid by trader	-	-	65.00
Cost incurred by trader	-	-	8.00
Trader's margin	-	-	10.00
Price received by trader	-	-	83.00
Price paid by wholesaler	-	72.00	83.00
Cost incurred by wholesaler	-	13.50	12.50
Wholesaler's margin	-	22.50	22.50
Price received by wholesaler	-	108.00	118.00
Price paid by retailer	78.00	108.00	118.00
Cost incurred by retailer	12.00	15.00	15.00
Retailer's margin	25.00	25.00	25.00
Price received by retailer	115.00	148.00	158.00
Price paid by consumer	115.00	148.00	158.00
Total marketing cost	17.00	33.50	35.50
Total marketing margin	25.00	47.50	57.50
Price spread (Rs.)	42.00	81.00	93.00
Net producer's share in consumer's price	63.47	45.27	41.13

Table 2: Marketing costs, margin and price spread in different marketing channels of inland fish in Bagalkote district. (Rs./Kg)

Particulars	Channel-I	Channel-II	Channel -III
Price received by fish farmer	75.00	70.00	65.00
Cost incurred by fish farmer	5.00	5.00	-
Net price of fish farmer	70.00	65.00	65.00
Price paid by trader	-	-	65.00
Cost incurred by trader	-	-	5.00
Trader's margin	-	-	9.00
Price received by trader	-	-	79.00
Price paid by wholesaler	-	70.00	79.00
Cost incurred by wholesaler	-	10.00	10.00
Wholesaler's margin	-	15.00	15.00
Price received by wholesaler	-	95.00	104.00
Price paid by retailer	75.00	95.00	104.00
Cost incurred by retailer	10.00	10.00	10.00
Retailer's margin	20.00	20.00	20.50
Price received by retailer	105.00	125.00	134.00
Price paid by consumer	105.00	125.00	134.00

Total marketing cost	15.00	25.00	25.00
Total marketing margin	20.00	35.00	44.00
Price spread (Rs.)	35.00	60.00	69.00
Net producer's share in consumer's price	66.67	52.00	48.50

Table 3: Marketing costs, margin and price spread in different marketing channels inland fish in selected districts (pooled data) of Northern Dry Zone of Karnataka (Rs./Kg)

Particulars	Channel-I	Channel-II	Channel -III
Price received by fish farmer	76.50	71.00	65.00
Cost incurred by fish farmer	5.00	5.00	-
Net price received by fish farmer	71.50	66.00	65.00
Price paid by trader	-	-	65.00
Cost incurred by trader	-	-	6.50
Trader's margin	-	-	9.50
Price received by trader	-	-	81.00
Price paid by wholesaler	-	71.00	81.00
Cost incurred by wholesaler	-	11.75	11.25
Wholesaler's margin	-	18.75	18.75
Price received by wholesaler	-	101.50	111.00
Price paid by retailer	76.50	101.50	111.00
Cost incurred by retailer	11.00	12.50	12.50
Retailer's margin	22.50	22.50	22.50
Price received by retailer	110.00	136.50	146.00
Price paid by consumer	110.00	136.50	146.00
Total marketing cost	16.00	29.25	30.25
Total marketing margin	22.50	41.25	50.75
Price spread (Rs.)	38.50	70.50	81.00
Net producer's share in consumer's price	65.00	48.35	44.52

Table 4: Marketing efficiency of different channels in Vijayapura district

Sl. No	Particulars	Channel-I	Channel-II	Channel-III
1	Marketing cost	17.00	33.50	35.50
2	Marketing margin	25.00	47.50	57.5
3	Price received by farmer	73.00	67.00	65.00
4	Marketing efficiency	1.74	0.82	0.71
5	Rank	I	II	III

Table 5: Marketing efficiency of different channels in Bagalkote district

Sl. No	Particulars	Channel-I	Channel-II	Channel-III
1	Marketing cost	15.00	25.00	25.00
2	Marketing margin	20.00	35.00	44.00
3	Price received by farmer	70.00	65.00	65.00
4	Marketing efficiency	2.00	1.08	0.94
5	Rank	I	II	III

Table 6: Marketing efficiency of different channels in selected districts (pooled data) of Northern Dry Zone of Karnataka

Sl. No	Particulars	Channel-I	Channel-II	Channel-III
1	Marketing cost	16.00	29.25	30.75
2	Marketing margin	22.50	41.25	50.75
3	Price received by farmer	71.50	66.00	65.00
4	Marketing efficiency	1.85	0.93	0.80
5	Rank	I	II	III

4. Conclusion

The study identified three different marketing channels for inland fish in selected districts of Northern Dry Zone of Karnataka, namely:

Channel-I: Fish farmer-Retailer-Consumer

Channel-II: Fish farmer-Wholesaler-Retailer-Consumer

Channel-III: Fish farmer-Trader-Wholesaler-Retailer – consumer

The marketing efficiency is highest in Channel-I (1.85) followed by Channel-II (0.93) and the lowest efficiency in Channel-III (0.80) and price spread was more in Channel-III (Rs.81.00/kg) than Channel-II (Rs.70.50/kg) and Channel-I (38.50/kg). The highest marketing efficiency of Channel-I is due to the shortest channel between the producers and consumers, hence the farmers can form into groups such as Fish Producer Organizations or Cooperatives so that they can earn more share in the consumer rupee.

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