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Marketing and Statistical Assessment of Income of Fish Retailers in Jammu Region of Jammu & Kashmir State, India

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Abstract

The primary data have been collected from Jammu and Kathua markets to estimate the price for fish through marketing cost, margins, and net price received by the retailers, wholesalers, and fisherman. There were two marketing channels found in Jammu and Kathua districts. Channel I: Wholesaler-Retailer-Consumers & Channel II: Fishermen-Retailers-Consumers. As per the study both the marketing channel existed in Jammu district whereas in Kathua district only channel II was found. The channel I of Jammu district was for arrival of Rohu and Singhara fish whereas the channel II of Jammu and Kathua district was for local fish. Marketing channel I of the Jammu district for Singhara fish was the most efficient followed by Rohu fish and local fish. Further while comparing the marketing efficiency through Shepherd Index, the marketing channel of Kathua district was found better than the Jammu district for local fish. The annual income of retailers of Jammu district was significantly more as compared to retailers of Kathua district. The average annual income of fish retailers of Jammu was ₹ 72666.67 and of Kathua districts was ₹ 63000/- which is ₹ 11666.67 less than of Jammu retailers may be due to lack of adequate storage facilities, high transport cost, good quality of variety of fishes, educational status of retailers etc. The Garret ranking technique was used to study marketing constraints and found that first constraints was given to spoilage of fish in transport followed by marketing cost and high cost of transportation.

Keywords: Marketing, Rohu fish, income, retailer, fisherman, Shepherd Index

1. Introduction

Fish has been widely accepted worldwide as a good source of protein as it plays a vital role in the human diet and other elements for the maintenance of healthy body (Ravichandran et al., 2012).Fisheries and aquaculture provide direct and indirect employment to over 500 million people. The J&K state is blessed with plenty of aquatic resources in the form of rivers, ponds, reservoirs and wetlands. Since last few decades, fish has been an important food item for the inhabitants of the state. The state has 27,781 km length of river/streams which facilitates fish farming of more than 40 mt of fish. During the year 2012-13, 2 mt fish production was recorded and revenue receipts from fisheries were Rs. 520.33 lakh. According to Food and Agriculture organization (FAO) of the United Nations, the total number of commercial fishermen and fish farmer is estimated to be 38 million. Fishing in India is a major industry in its coastal states, employing over 14 million people. Fish production in

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India has increased more than tenfold since its independence in 1947. According to the Food and Agriculture organization (FAO) of the United Nations, fish output in India doubled between 1990 and 2010. India is a major supplier of fish in the world and account for 4.4% of global fish production. Prasad (1985) undertook a study on the role and working of selected regulated markets in Andhra Pradesh. Murthy (1988) evaluated the performance of selected regulated markets in the backward region of Warangal district of Andhra Pradesh. According to Sharma (1991), horticultural crops are mostly labour intensive in India and provide substantial employment - not only in production but also transportation, processing and marketing. Singh (1985) found that farmers' share in consumer's rupee is comparatively lower for perishable crops which may be due to a variety of factors such as number of intermediaries, cost of various market functions rendered by intermediaries, spread of location of the producers and consumers.Chowdhury (2004) studied fish market and marketing issues in Bangladesh and suggested that by developing modern marketing facilities at fish assembly centers and retail fish markets, increasing cold storage facilities, refrigerated transport vehicles, and adequate supply of ice, increasing competition and providing stability to wholesale and retail markets etc. both the primary producer and consumer interest might be protected. Kumar et al. (2008) conducted a study in order to understand the domestic marketing of fish in all the major coastal states in India. The environment, topography, climate etc. of the state is well suitable for breeding, rearing, production and marketing of fish. As per livestock census 2003 of J&K state, the total fishermen population was around 31,000. It is presently estimated at 91,984. The fish catch which was 1, 84,667 quintals in 2000-01, has reached to 1, 99,500 quintals in 2012-13. During the year 2012-13, 2 lakh quintals fish production was recorded and revenue receipts from fisheries were Rs. 520.33 lakh as per economic survey of J&K 2013-14. A time series is a sequential set of data points, measured typically over successive times. According to Ayyappan et al. (2011) Jammu and Kashmir State is major contributor in trout which was successfully introduced in the state during 1990. Sayin et al. (2011) worked on determining the prices and margins that occur in the fish marketing channel that will contribute to the determination of policies that will prevent the decrease in the producer income that should be applied in the sector. Davidson et al. (2012) found that Hawaii consumers were willing to pay more for wild-caught fish than farm raised and more for fresh fish than previously frozen fish with the degree of preference changeable across species. Das et al. (2013) reported 87.5% of the consumers in Tripura prefer locally produced fresh fish. Qayoom et al. (2015) made a comparative study on Change in Fishing Patterns in Jammu & Kashmir Provinces of J&K and shown that that Kashmir province shows overall compound growth of 4.2% against 7.9% of increased compound growth rate of fish production of Jammu province since 1956-57. Farooqi et al. (2018) studied fisherwomen of the Kashmir Valley to highlight their social, economic, personal and health related issues and suggested that women entrepreneurs need to be encouraged in the fisheries sector. The various issues challenging empowerment of fisherwomen have to be seriously taken into consideration by the State Government while chalking out new development strategies. Bhat et al. (2018) Studied the consumption pattern, constraints and marketing problems of fish in district Srinagar of Kashmir valley and shown that people involved in Fish marketing face a number of problems in fish marketing like Storage problem, Lack of Marketing Facility, High Transportation Cost, Unavailability of Ice and Packaging Problem. The people involved in this business also told that they were over exploited by the middlemen involved in this business. By keeping all the above into consideration, the study has been conducted with the following objectives to estimate the price spread and analyze the marketing efficiency for fish in Jammu and Kathua districts and to do the statistical assessment of fish marketing of study area.

2. Materials and Methods

2.1. Sampling plan

The primary data have been collected from Jammu and Kathua markets through a pre-structured schedule, of Jammu region, selected purposively, keeping in view the maximum area under the farm for fish production in Jammu and Kathua districts as per the information of Fisheries department of J&K government, India. Five markets, each from Jammu and Kathua districts have been selected randomly and from each market six intermediaries, dealing with fish marketing have been selected by employing convenient sampling method. To study the constraints faced by the fish retailers, garret ranking technique was adopted (Garret and Woodworth, 1969). The index of marketing efficiency is worked out using the Shepherd's (Shepherd, 1965) formula:

Marketing effeiceincy index(MEI)=(Values of goods sold÷ Total marketing costs and margins)

The comparison of Annual average income of the Fishermen w.r.t. districts has been done by using the T-test as $t=(\bar{X}_1-\bar{X}_2)/(s\sqrt{(1\div n_1+1\div n_2)})$ in case of equal variances. The equality of variances is tested through F test with $H_0:\sigma_1^2=\sigma_2^2$ vs . Where, $F=(s_1^2)/(s_2^2)$ $(S_1>S_2)$.

3. Results and Discussion

The socio-economic status of retailers of Jammu and Kathua districts of Jammu region of Jammu and Kashmir State has been presented in Table 1. The results shows that that fish trading was generally carried out only by men in both the districts, whereas women do not take part in fish trading. Age group plays an important role for participation in various activities. The result of study revealed that the 60% of respondents in Jammu district were in the age group of 40-

Table 1: Socio Economic characteristics of the fish retailers of fish markets in Jammu and Kathua districts of Jammu region

Variable	Type	Frequency	
		Jammu	Kathua
Gender	Male	30 (100)	30 (100)
Age group (Year)	25-40	12 (40)	16 (53.33)
	40-60	18 (60)	14 (46.66)
	Above 60	Nil	-
Family size (No. of member)	<5	19 (63.33)	7 (23.33)
	5-7	11 (36.66)	23 (76.66)
Educational status	Below Matric	8 (26.66)	17 (56.66)
	Matric	22 (93.33)	13 (43.33)
Marital status	Married	30 (100)	30 (100)
Occupation	Fish marketing only	30 (100)	30 (100)
	Fish processing and marketing	Nil	Nil
	Other business	06 (20)	04 (10)
Caste	Hindu	30 (100)	26 (86.66)
	Non-Hindu	-	4 (13.33)

*Parentheses indicate figures given in the percentage of the data

60 years and 40% in the age group of 25-40 years whereas in Kathua district it has been observed that 53.33% of people lies in 25-40 years of age group and 46.66% in 40-60 years of age group who were involved in fish trading. Distribution of respondents according to family size revealed that 63.33% respondents belongs to less than five members and 36.66% belongs to 5-7 members in family of Jammu districts whereas in Kathua district it was found that 23% of respondents belongs to less than five members and rest 76.66% belongs to family which have 5-7 members. It means that joint families were found to be engaged more in fish trading in number than single families in Kathua district. The majority of the respondents would have accessed to people, who can assist in carrying out their marketing activities, thereby increasing their opportunity of having improved revenue. The distribution of respondents according to educational level revealed that 93.33% of respondents were matriculate and the remaining were below matric which was 26.66% in Jammu district and 56.66% of people were below matric and 43.33% of people matric in case of Kathua district. The result of marital status of retailers engaged in fish trading showed that 100% of respondents were married in both the districts.

Table 1 also depicts that in occupational pattern, the 80% of the respondents had fish marketing and remaining 20% were engaged in other work also and in case of Kathua 80% do fish marketing and 13.33% do other business too. The market facilities considered essential for fish handling include transportation, packing materials, storage facilities, parking space, drinking water, electricity and mobiles. The marketing activities begin at 9 A.M. and ends at 8 P.M in summer and in winter season it starts at 10 A.M. and end at 7 P.M. The duration can be changed depending upon selling and supply of fish as well as consumer's demand as per the views of wholesalers and retailers. The wholesalers and retailers were having small space with temporary shelters. The facilities of storage for fish were very bad and evenly they were using ground itself for selling. The lack of parking space for vehicles has been observed in all the markets of Jammu and Kathua districts. There are two marketing channels in Jammu and Kathua districts as Wholesaler to Retailer to Consumer & Fisherman to Retailer to Consumer. It has been observed that in Jammu district both the marketing channels lies, first channel start with a wholesaler and ends with consumers involving retailer in between consumers and wholesaler and second channel start with fisherman end with consumer and retailer was present in between them. But in Kathua district only one Channel was found which was Fisherman to retailer to consumer. The channel I of Jammu district was for arrival of Rohu and Singhara fish whereas the channel II of Jammu and Kathua district is for Local fish. Fish passes through several intermediaries from the fisherman consumer as discussed in above table. The intermediaries were involved in providing services of loading, processing, preservation, packing and transportation and these activities result in cost-addition at every stage of marketing (Bishnoi and Kumar, 2005). The key intermediaries in fish marketing were fisherman, wholesaler and retailer. There was no strict boundary between intermediaries and they perform several functions while marketing fish. The wholesalers of Jammu district has to depend upon the arrival of fish from other states whereas in case of Kathua the fisherman was able to cater the requirements. Further, it was observed that the total fish arrival per day on average basis in the Jammu fish market of Jammu district was 310 kg. The generally major fish species sold in the markets were Rohu, followed by Singhara and local fish. From above result, it can be observed that Rohu fish has highest arrival was mainly due to the transportation from the outside of the state mainly from Punjab as it is nearby to J&K state. The decomposition of marketing cost components for

Fish in Jammu and Kathua district is given Table 2. The table revealed that the total marketing cost was maximum for retailers which were ₹ 11.84 kg^{-1} followed by wholesaler (₹ 10.50 kg^{-1}) and then fisherman (₹ 5.79 kg^{-1}) in case of Jammu district whereas in case of Kathua district retailers have highest marketing cost as compared to fishermen which were ₹ 6.12 kg^{-1} and ₹ 5.21 kg^{-1} respectively. The cost of retailers in supply chain of Jammu district was high specifically 25.33% due to transportation, 13.65% due to icing, 12.66% due to rent of shop and other item also hiked the price by 28.80% whereas in case of Kathua district it is high in case of transportation and electricity which is 43.30% and 16.33% respectively.

Table 2: Marketing Cost of intermediaries in supply chain of fish (₹ kg^{-1} of fish)

Activity/ Function	Fisherman		Wholesaler	Retailer	
	Jammu	Kathua		Jammu	Kathua
Transportation	2.12 (36.61)	2.89 (55.47)	2.00 (19.04)	3.00 (25.33)	2.65 (43.30)
Ice	-		1.44 (13.71)	1.62 (13.68)	0.98 (16.01)
Mobile phone	1.56 (26.94)	2.32 (44.52)	0.52 (4.95)	1.24 (10.47)	0.65 (10.62)
Electricity	-	-	1.50 (14.28)	0.53 (4.47)	1.00 (16.33)
Packing	-	-	0.66 (6.28)	0.54 (4.56)	-
Rent for shop	-	-	3.50 (33.33)	1.50 (12.66)	-
Other items	2.11 (36.44)	-	0.88 (8.38)	3.41 (28.80)	0.84 (13.27)
Total	5.79 (100)	5.21 (100)	10.50 (100)	11.84 (100)	6.12 (100)

Note: Figures within the parentheses are percentage to total; 1 US$= Rs. (INR) 71.23 as on 11th February, 2020.

In case of wholesaler for Jammu district, marketing cost was maximum due to labour i.e., 33.33% followed by transportation 19.04%. In case of Fishermen, it was maximum due to transportation which is 36.61% and 55.47% in both the districts followed by mobile phone 26.94 and 44.52% respectively.

The price spread of Rohu, Singhara and Local fish were calculated for different markets and for different marketing channels in Jammu and Kathua districts is given in Table 3 which revealed that the price received by fishermen in channel II of Jammu district is ₹ 105.45 kg^{-1} and of Kathua district was ₹ 98.81 kg^{-1}. The price paid per kg by wholesalers of the markets of Jammu district of Channel I is ₹ 130 for the Rohu fish and ₹ 250 for the Singhara fish whereas for retailers in the markets of both the districts were ₹ 145 for Rohu, ₹ 265 for Singhara of the Channel I and ₹ 115 and ₹ 110 for the channel II. Consumer price were Rs. 160 per Kg for Rohu, ₹ 280 kg^{-1} for Singhara, ₹ 130 kg^{-1} for Local fish and ₹120 kg^{-1} for local fish of Channel I and Channel II of both the districts. The results are conformatory to Singh et al (2013). Marketing efficiency according to Shepherd index was 9.30 for Singhara fish and 5.30 for Rohu fish of Channel I in Jammu district and for other channel the Kathua market was more efficient as compared to Jammu market. There were number of constraints faced by retailers like spoilage of fish in transport and markets, high cost of transportation, low level of social economic and educational status, high marketing cost, inadequate storage facilities and lack of good quality and variety of fish species.

In the markets of both the districts six constrains have been identified and they have been ranked by using Garret ranking technique as suggested by Garret and Woodworth (1969). From the Table 4 it has been seen that spoilage of fish in transport and market was ranked I followed by high marketing cost rank II, high cost of transportation was rank III, Inadequate storage facilities IV, lack of good quality and variety of fish species V and low level of social economic and education status VI.

From the Table 5, it has been concluded that the income from fish among the Jammu and Kathua retailers were statistically significant. The average annual income of Jammu retailers from fish was more than the retailers of Kathua district. The F value was found 2.19, and non-significant so t-test with equal variance has been applied. The t- value was 2.78 which indicated that the average annual income of retailers from fish Jammu and Kathua districts were significantly different. The annual income of fish retailers of Jammu is 72666.67 which is

Table 3: Price spread and Marketing efficiency for fishes in different marketing channel of Jammu and Kathua districts (₹ kg^{-1} of fish)

Particulars	Marketing channels for various types of fishes in Jammu district			Marketing channel for Kathua District
	Channel I		Channel II	Channel II
	Rohu	Singhara	Local fish	Local fish
Price received by Fisherman	-	-	105.45 (81.11)	98.81 (82.34)
Marketing cost	-	-	5.79 (4.45)	5.21 (4.34)
Marketing margin	-	-	3.76 (2.89)	5.98 (4.98)
Price paid by wholesalers	130 (81.25)	250 (89.29)	-	-
Marketing cost	10.5 (6.56)	10.5 (3.75)	-	-
Marketing margin	4.5 (2.81)	4.5 (1.60)	-	-
Price paid by retailer	145.00 (90.62)	265.00 (94.64)	115.00 (88.46)	110.00 (91.66)
Marketing cost	11.84 (7.4)	11.84 (4.22)	11.84 (9.10)	6.12 (5.1)
Marketing margin	3.16 (1.95)	3.16 (1.95)	3.15 (2.42)	3.79 (3.15)
Consumer price	160.00 (100)	280.00 (100)	130 (100)	120.00 (100)
Marketing efficiency (Shepherd index)	5.30	9.30	5.20	5.60

Table 4: Marketing constraints of the retailers by garret ranking method

Marketing constraints	Average value by	Rank
Spoilage of fish in transport and markets	68.10	I
High marketing cost	67.58	II
High cost of transportation	67.36	III
Inadequate storage facilities	63.93	IV
Lack of good quality and variety of fish species	61.26	V
Low level of social economic and educational status	58.46	VI

Table 5: Statistical assessment of annual incomes of retailers of Jammu and Kathua districts through fish

District	No. of retailers	Mean income	Standard deviation	Standard error	F- value	t-value with equal variance
Jammu	30	72666.67	16647.11	3039.33	2.19**	2.78**
Kathua	30	63000.00	9153.85	1671.25		

*: significant at (p=0.05)

₹ 11666.67 more than Kathua districts which may be due to lack of adequate storage facilities, high transport cost, good quality of variety of fishes, educational status of retailers etc.

4. Conclusion

There were two marketing channels found in Jammu district and one in Kathua district. Among the channels, the marketing efficiency of Channel I for Rohu fish was more efficient than the marketing channel of Singhara fish. Whereas, in case of local fish marketing channel of Jammu district was more efficient than the Kathua district.Through Garret ranking technique, it was observed that first constraints is spoilage of fish during transport, second was marketing cost. The average annual income of Jammu retailers was more as compared thanKathuaretailers.

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