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Research Note

**EFFICIENCY OF FISH MARKETING AT BHUBANESHWAR CITY OF
ORISSA (INDIA) : SOME POLICY IMPLICATIONS**

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ABSTRACT

This paper examines the efficiency of fish marketing at Bhubaneswar city. A sample of 5 wholesalers, 5 commission agents and 40 retailers were taken for primary data collection on prices of fish and marketing costs. The channel III shows that 85 percent of the demand for fish was met by fish producers of Andhra Pradesh. The producers' share in consumers rupee was highest for local producers and lowest for non local producers. The largest component of price spread and net margin was attributed to retailers followed by wholesalers and commission agents. The net income of non local producers-cum-wholesalers was found to be highest because they handle larger quantity of fish. Also, the return to one rupee investment was recorded to be more than 100 percent. There exists a scope of earning super normal profit by intermediaries because market was not perfectly competitive. It is recommended that government should formulate suitable aqua price policy for eliminating imperfection from the market.

1. PROBLEM STATEMENT

The efficient marketing system is one of the most important factor for rapid growth of the fish farming sector. Technological breakthrough in the field of Aquaculture have resulted in heavy investment by private entrepreneurs for establishing big Aqua farms. It is the beginning of story of blue revolution in India. The blue revolution differs to the green revolution in the sense that the technologies in aquaculture are highly scale specific. It is because of this reason modern fish farming could not be taken by large number of fish farmers in many of the states where the blue revolution is more pronounced. The establishment of big Aquafarms in few numbers has made fish farming sector to resemble with the Industry. But at the same time, since fish production is a biological process, it inherits many characteristics of agriculture. Therefore, the combined effect of these two phenomena might have affected structure and performance of fish markets in India. Many of the studies on agricultural product marketing observed to be perfectly competitive (Acharya *et al.*, 1978). As economic theory advocates,

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efficiency of marketing depends purely on nature of competition in the market. If a market is competitive, agencies in the channel of marketing will not gain super normal profit. It will ultimately ensure maximisation of profit of fish producers on one hand and consumer's satisfaction on the other. A very scanty literatures are available on structure and performance of fish markets. For example, study conducted by Srivastava et al., (1990) examined the marketing channels and market margins and marketing costs for different agencies operating in the market. They found that farmers' shares in consumers rupees ranged from 28 to 60 percent for non local producers and 88 percent for local. But Aquaculture development in recent years might have changed the whole of the shape of fish marketing. These changes are needed to be examined. Furthermore, the above mentioned studies do not focus in depth the causes and magnitude of inefficiencies and nature of competition in the market. These two issues are key factors, the investigation of which may prove highly useful in formulating aqua price policies for strengthening and improving the efficiency of fish marketing in India. More specifically, the present paper aims to examine marketing channels, price spread, market margins and marketing costs of different agencies, and nature of competition prevailing in the market. Analytical framework for this study is discussed in section 2. Results are presented in section 3. Concluding remarks are made in the last section.

2. ANALYTICAL FRAMEWORK

Sampling design and data

The wholesale fish market at Bhubaneswar city is one of the most leading market in Orissa. There are 40 commission agents who are the main link between wholesalers and retailers. Through personal interview, it was found that around 16 wholesalers and more than 800 retailers were operating in the market. The wholesale market is a transaction point solely for the fish production in Andhra Pradesh. The retailers were comprised of either selling the local fish or fish imported from A. P. Samples were drawn as 5 percent of the total population subject to minimum of 5. Thus, the total sample size was 50 comprising of wholesalers, commission agents and retailers as 5, 5 and 40 respectively.

The primary data on prices received and paid by sample intermediaries for different species of fish were collected with the help of well designed questionnaire on a 10 randomly selected days for the year, 1995. The data collection for each day was distribution over 10 months of the mentioned year. Following this procedure, a day for data collection in particular month was chosen on random basis. This enabled to capture the variation around the year. The information regarding mode and cost of transportation, cost of loading and unloading and other labour charges, sales tax and octroi for fish brought by wholesalers of A. P., method of storage, quality and price of ice used for storage purpose, local Rixavan charges, rate of commission charged by commission agents, quantity of fish handled each day, amount of investment on the day and wastages if any, were also recorded.

Theoretical framework and estimation techniques

The marketing channels hereby defined as the chain of intermediaries through which fish passes from producers to ultimate consumers. Using this concept different marketing channels in Bhubaneswar city were investigated.

Price spread is defined as :
$$\text{Price paid by consumers} - \text{Price received by the producers}$$

A marketing system is considered to be efficient if the price spread computed for the system is the lowest. It can happen only when market is perfectly competitive¹.

The price spread includes gross margins and marketing costs of different agencies. The gross margins and marketing costs were computed as below :

Gross margins =
$$\text{Price paid by an agency} - \text{price received by the preceeding agency}$$

Marketing costs =
$$\text{Labour cost} + \text{storage cost} + \text{transportation cost}$$

The net margin is gross margin minus marketing costs was also worked out.

In order to examine the economic performance of marketing agencies, net return to one rupee investment, price efficiency, technical efficiency and overall efficiency were estimated. These concepts as defined are :

Net income = Net margin - wastage cost

Return to one rupee investment =
$$\text{Gross margin} / \text{Investment}$$

Price inefficiency =
$$\text{Marketing cost} / \text{Gross margin}$$

Technical inefficiency =
$$\text{Wastage cost} / \text{Gross margin}$$

Overall inefficiency =
$$(\text{Marketing cost} + \text{wastage cost}) / \text{gross margin}$$

If (marketing + wastage) cost is equal to zero, inefficiency will be zero, if it is equal to gross margin, the inefficiency of operation of marketing agencies will be 1 (completely inefficient). However, the marketing costs could not be put equal to zero. It is because, for performing assembling, storage and transportation functions of marketing, a minimum expenditure has to be incurred. This is possible when a large number of agencies would be involved in performing these functions. This will ensure a perfect competition in factor market². The smooth functioning of marketing system should ensure reduction in marketing cost on one hand and provision of reasonable margin to the marketing agencies on the other.

For computation of above estimates weighted average of the prices for different fish species like Catla, Rohu, Mrigal and Grass Carp were used. The formula used is defined as :

$$WAP_i = \frac{\sum_{i=1}^n Q_i P_i}{\sum_{i=1}^n Q_i}$$

WAP_i = Weighted average price of i'th species of fishes on a particular day.

Q_i = Quantity of i'th species of fish.

P_i = Price of i'th the species of fish.

n = number of fish species.

For finding out nature of competition in the market, the correlation coefficients for retail price and wholesale price, with number of retailers, commission agents and wholesalers in the market was estimated. A market is said to be perfectly competitive if any only if the correlation coefficient are not significant. For the same purpose coefficients of variation (C. V.) for retail and whole sale prices were also worked out. For an efficient and competitive market the C. V. should lie at minimum.

3. FINDINGS

The fish marketing at Bhubaneswar city was found to be carried out via three marketing channels. In the first channel fish was sold by local producers at the retail marketing points. But their share is only 8 percent to total quantity sold in the market. Local producers were found to be sharing 7 percent of the market through selling directly to the retailer. The channel III shows that 85 percent of the demand for the fish was met by the fish producers of Andhra Pradesh. These producers also act as a wholesaler and bring their fish harvest to wholesale market at Bhubaneswar city. Here, the fishes were sold to the retailers with the help of commission agents. The commission agents were found to be charging commission at the rate of 6.25 percent of the prevailing wholesale price. The marketing channels as identified in this study are not the same as listed by Srivastava *et al.*, (1990). Tremendous increase in fish production by entrepreneurs in Andhra Pradesh have changed whole of the marketing system because they constitute maximum proportion of the sale of fish in the market. This change in structure of marketing is the change from localised market to inter state market. Appearance of surplus production of fish in Andhra Pradesh has created a series of marketing agencies performing different marketing functions like storage and transportation etc. beside the chain of agencies involved in purchase and sale of fish in the market. This structural changes made fish marketing a complex process. The marketing channels as observed are :

- I) Local producers cum retailer → 8% consumers
- II) Local producer → 7% Retailers → consumers
- III) Nonlocal producers cum wholesalers → 85% commission agent → Retailers → consumers

The weighted average of the prices in different channels and by different agencies are shown in Table 1.

Table 1. Weighted average of the prices in the market (in Rupees per kg)

Prices	Channel I	Channel II	Channel III
Producer	28	27	20
Wholesaler	—	—	28.15
Commission agents	—	—	28.15
Retailer	35.12	35	37.4

It can be observed that price received by producer in channel I was highest (Rs. 28) followed by channel II (Rs 27) and channel III (Rs. 20). It is clear that if the chain of intermediaries are long, producers price would have to be less. The retail prices of fish were slightly higher in channel III because of the higher weight of the fishes brought from Andhra Pradesh. Moreover, the demand for Rohu fish and its total contribution to sale was observed to be the highest. The most commonly sold fish species in the market were Rohu, Catla, Mrigal and Grass Carp.

On the basis of purchase price, sale price and marketing cost in different marketing channels and at the level of different intermediaries, gross and net margins were computed and shown in Table 2.

Table 2. Estimation of channelwise price spread for different agencies in the market (In rupees per kg)

Particulars	Gross margin	Marketing cost	Net margin
Channel I	7.12	0.85	6.27
Channel II	8.00	0.85	7.15
Channel III	17.40	6.70	10.70

The gross margin in the case of those producers acting as wholesaler or retailer were worked out by taking into account the actual price of the fishes at the site of production. It was estimated that the magnitude of price spread per kg of fish in channel III was highest (Rs. 17.4) and the lowest in channel I & II (Rs. 7.12 and Rs. 8.00). Since channel III is the longest, the producers share to consumers rupee was observed to be minimum (53.5 per cent). It is because of involvement of several intermediaries in the process of marketing. However, the share of local fish producers in consumers rupee was found to be maximum in channel I

(79.7 percent) and channel II (77.2 percent). The gross margins and net margins (per kg of fish) of various intermediaries like wholesalers, commission agents³, and retailers was Rs. 6.5 and Rs. 1.3, Rs 1.65 and Rs. 1; and Rs. 9.25 and Rs. 8.4 respectively. It shows that largest component of the price spread and overall net margin was attributed to retailers followed by wholesalers and commission agents in channel III. Therefore, it can be inferred that efficiency of retailers in the market is highest. Moreover, net margins per kg of fish were resembled to be almost same in case of channel I and II. Higher net margins of retailers may be on account of higher sale price and low marketing cost. The higher sale prices charged by retailers indirectly reflect imperfection in the market. The retail price is the product of interaction between number of retailers and consumers. The large number of consumers accompanied by small number of retailers might have resulted in pushing up the prices at higher level. Further, the share of non local producers cum wholesalers in consumers rupee was found to be around 71 percent. But because of the high marketing costs, their contribution to overall net margin was only 12 percent.

For examining the performance of different marketing channels and marketing agencies, net income per day, returns to investment and efficiency estimates were worked out and the estimates are given in Table 3.

Table 3. Efficiency measures for different agencies in the market.

Particulars	Net Income (Rs. per day)	Returns to one rupee investment	Price inefficiency	Technical inefficiencies	Over all efficiency
1. Channels I	250.8	8.4	.12	—	.12
Local producer/retailer	250.8	8.4	.12	—	.12
2. Channel II	357.5	0.56	.11	.01	.118
retailers	357.5	0.56	.11	.01	.118
3. Channel III	5145.0	0.84	.38	.03	.41
non local producer/whole salers	3412.5	1.25	.80	.03	.83
Commission Agents	1312.5	1.26	.39	.05	.44
Retailers	420.0	0.66	.09	.02	.11

The net income coming out of marketing activities was highest for non local producers cum wholesalers. It is because they were handling larger quantity of fish in the market.

Though the net margin and gross margin were noted to be highest for retailers, the returns to one rupee investment was lowest. It is because of lesser volume of sale of fish. Further more, wholesalers and commission agents were earning more than 100 percent revenue on their investment. This super normal profit is on account of small number of commission agents and wholesalers in the market. An efficient marketing system should ensure normal profit to the marketing agencies and reasonable price for producers and consumers. An entry of large number of commission agents and retailers can bring down retail prices and increase wholesale prices. The effect of this would raise the producers profit and consumers' satisfaction. Since, increasing the number of retailers and commission agents are not under control, the government intervention to regulate the prices of fish are essential. In other words, the government should formulate aqua price policy which can strengthen the competition in the market. Estimation of inefficiency measures showed that technical component of inefficiency were of negligible magnitude. The price and overall inefficiency for channel III were highest because of long marketing channel which caused marketing cost to be high in relation to gross margin. It is further to note that, inspite of higher value of return to one rupee investment, the inefficiency of non local producer cum wholesalers was highest because of higher marketing costs. This inefficiency of fish producers in marketing should be kept down to a minimum possible level.

The structure of market, whether it is perfectly competitive, oligopolistic, monopolistic, oligopsonistic or monopsonistic have great influence on efficiency and share of marketing agencies in total value added. In order to find out the nature of competition in the market, the correlation coefficients between wholesaler and retail prices to their numbers have been estimated.

Table 4. Correlation coefficients for buyers and sellers with the prices in the market

	Retailers	Wholesalers	Commission	C.V.
Retail price	-.42 (.32)	-.10 (.35)	.55 (.29)*	.50
Wholesale price	.35 (.33)	-.78 (.22)**	.58 (.28)*	.60

*, ** mean significant at 10 and 5% levels.

Figures in parantheses are standard error.

The significant correlation coefficients in Table 4 proves that fish marketing is not perfectly competitive.

4. POLICY ISSUES

The presence of imperfection in the fish marketing should be eliminated by formulating appropriate aqua price policies.

Government may intervene to establish direct interaction of consumers with producers through proper strategies like co-operative and regulated markets. This will remove super normal profits earned by the intermediaries thereby increasing the consumer satisfaction on one hand and producers share in consumer rupee on the other.

FOOTNOTES :

1. Perfect competition is a theoretical phenomenon which generally do not exist. It is used here as a synonym to pure competition or less than perfect competition.
2. Here the functions of marketing are considered to the factors determining market output (value added).
3. Net margins for commission agents were computed as actual commission received minus storage cost. Commission agents were found acting as a secondary wholesalers.

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Appendix 1 : Estimation of channelwise price spread for different agencies in the market (In Rupees per kg)

Particulars	Gross margin/produce price	Marketing cost	Net margin
Local producers cum Retailers			
At site	28.00 (79.7)	—	—
At market	7.12 (20.3)	.85 (100)	6.27 (100)
Consumers	35.12 (100)	—	—
Overall price spread/MC/NM	7.12	.85 (100)	6.27 (100)
Channel II			
Local producer	27 (77.2)	—	—
Retailers	8 (22.8)	.85 (100)	7.75 (100)
Consumers	35.00 (100)	—	—
Overall price spread/MC/NM	8	.85 (100)	7.15 (100)
Channel III			
Non local Producer cum Wholesalers			
At site	20.0 (53.5)	—	—
At market	6.5 (17.4)	5.20 (77.6)	1.3 (12.1)
Commission Agents	1.65 (4.4)	.65 (9.7)	1.00 (9.3)
Retailers	9.25 (24.7)	.85 (12.7)	8.4 (78.5)
Consumers	37.4 (100)	—	—
Overall price spread/MC/NM	17.4	6.7 (100)	10.7 (100)

Figures in parentheses are percentage to total.

Gross margin and net margins are applicable to marketing agencies only.

MC = Marketing Cost, NM = Net Margin.