



Marine Fish Marketing and Prices Changes in Different Levels of Market in Bangladesh: An Empirical Study Using Primary Data

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Abstract

Contribution of fisheries in the national economy of Bangladesh is substantial, particularly with reference to food consumption, nutrition, employment and export. The present study was designed to determine the changes of prices of marine fish at different levels of market and to determine various problems relating to marine fish marketing system in Bangladesh. This study used purposive sampling and data were collected from 168 stakeholders using interview schedule considering 10 major species of marine fish during 2014. Primary, secondary and consumer market were considered in the study. The study revealed that both marketing margins as well as marketing profit are relatively higher in consumer market followed by primary and secondary markets, where *baparis* and *aratders* are involved. Marketing costs for per kg of marine fish were estimated to be Tk 8.55, 1.10 and 4.50 for *beparis*, *aratders* and retailers, respectively. Average marketing cost was lower in primary market (Tk 8.86/kg) compared to secondary market (Tk 9.99/kg) and consumer market (Tk 12.29/kg). The marketing system of marine fish in Bangladesh is yet to be developed and since this is facing a lot of problems including post-harvest losses, poor physical facilities, etc. Government and department of fisheries should take necessary action for development of marketing system of marine fishes.

Keywords: Marine fish, marketing cost, marketing margin, Bangladesh.

1. Introduction

Fish is the most important animal source of food in Bangladesh, accounting for more than 60% of total animal protein intake (DoF, 2014). Households Income and Expenditure Survey (HIES, 2010) found that in two-weeks period more than 98% of respondents consumed fish at least once per week, and 60% at least every alternate day. The marine fisheries sector has been recognized as an important part of the economy of Bangladesh. Fish production from

the Bay of Bengal (BoB) has increased marginally over the last 10 years but its relative share in total fish production has declined (Hossain *et al.*, 2010). Bangladesh's coastal waters contain diverse fisheries resources, with 475 species of finfish including the cartilaginous fishes - sharks, skates and rays (Mazid, 2005). Fishing, in the absence of proper information on the status of stock, is leading to over-exploitation of inshore and under exploitation of offshore fishery resources and micronutrients for the poor (Minkin *et al.*, 1997; Kawarazuka and Béné

2010, 2011; Roos *et al.*, 2007). If the growth of this sector is hindered, it is not only going to affect the livelihoods of a large number of rural populations but it also affects the nutrition of many poor households.

The fishery market is one of the world's fastest growing international commodity markets. For developing countries, fishery products export generates more revenue than the combined earnings from other agricultural exports such as coffee, bananas, rice and tea. But fisheries production and yield are constrained by various factors. Without research on these constraints, any decision could generate inefficiency. Various control measures (like, input control and output control) have been considered in fisheries management to maintain the target species at or above levels necessary to ensure their continued productivity (Chowduary, 2010).

Again in terms of volume, the marine fish market in Bangladesh is large (Ahmed *et al.*, 1993). The fish marketing system is traditional, complex and less competitive but plays a vital role in connecting the fishermen and consumers, thus contributing significantly in the "value adding" process which otherwise would have been unused or underused and consequently in the earning of the fisher folk (Chowduary, 2004). In Bangladesh the market for fish is associated with strong demand driven by continued increase in rural and urban population (Chowduary, 2010). Fish play an important role for the population of Bangladesh as indicated by the proverb "Mache Bhate Bangali" (fish and rice make a Bengali). However, fish consumption appears to have fallen marginally because fish prices have been increasing faster than prices of other commodities (Islam and Elahi, 1994).

Bangladesh is endowed with vast marine, brackish and inland waters having great fisheries potentials. It has 720 km in coastal line along southern part of the country facing Bay of Bengal. The total marine water area of country is 1,66,000 square kilometer of which continental shelf area is 66,440 square kilometer (BBS,

2015). The marine waters are rich in nutrient creating suitable habitat of fish production. Fishing communities face multiple problems involving social, economic, institutional, technical, infrastructural and even ethnic factors. Many of NGOs are already active supporting groups of fishermen and fish farmers to solve some of these problems in different parts of the country. Encouraging effects can be seen in the performance of NGOs such as BRAC (Bangladesh Rural advancement Committee), BRDB (Bangladesh Rural Development Board), PROSHIKA and CARITAS in forming functional groups in fishing communities.

The present study was therefore designed to examine the changes of prices of marine fish at different levels of market and various problems relating to marine fish marketing system in Bangladesh.

2. Materials and Methods

2.1 Area selection, data source and collection

The study was based on both primary and secondary data. Primary data on marine fish marketing were collected through questionnaire survey. A total of 8 FGDs were also conducted to have detailed information about marketing system of marine fish during the year 2014. A purposive sampling technique was used for sample selection. For marketing and distribution of marine fish, 168 traders (42 aratdars, 56 beparies and 70 retailers) were selected from the primary, secondary and consumer market at different location of Bangladesh.¹

2.2 Analytical technique

The collected data and information were coded, tabulated, compiled and analyzed considering the

¹The primary markets were Cox's Bazar, Chittagong and Khulna. Secondary markets were; Cox's Bazar, Chittagong, Khulna, Dhaka and Rangpur, and the consumer markets were Cox's Bazar, Chittagong, Khulna, Dhaka Rangpur and Mymensingh.

objectives of the study. Tables were prepared using arithmetic mean, percentage and ratio.

2.2.1 Marketing cost

Marketing cost is the sum of transport cost, storage cost, labour cost and other costs associated with moving the commodity from the point of purchase to the customer or final consumer. The total marketing cost was determined by the following formula:

$$Tc = Cp + \sum Mci$$

Where,

i=1, 2, 3---n, Tc= Total cost of marketing, Cp= Producer cost of marketing, Mci= Marketing cost by the ith trader

2.2.2 Marketing margin

According to Kohls and Uhl (2005), marketing margin in a sense is the price of all utility adding activities and functions that are performed by the intermediaries. Marketing margin at a particular stage of transaction is the difference between sales price and purchase price. A marketing margin is the percentage of the final weighted average selling price taken by each stage of the marketing chain. The margin must cover the costs involved in transferring produce from one stage to the next and provide a reasonable return to those doing the marketing activities (Crawford, 1997).

However, marketing cost and marketing margin of respective categories of intermediaries are the main determinants of the profitability in marketing of marine fish. Secondly, marketing margin of a particular level of market is greatly influenced by the supply of and demand for fish marketed. At each level of market, most of the intermediaries act as buyers and as well as sellers. Accordingly, their market margins depend on market condition in the time of buying and selling.

The absolute margin of the middleman, wholesaler, trader and retailers were determined as follows:

$$Mm = Psa - (Pba + Mc)$$

Where,

Mm= Marketing margin, Psa= Selling price,

Pba= Buying price, Mc= Marketing cost

3. Results and Discussion

3.1 Marketing cost and margin

As shown in Table 1 that mainly three types of intermediaries viz., *beparis*, *aratdars* and retailers were found to be involved in marine fish marketing. These three categories of intermediaries perform different marketing operations and functions; however, there is a large variation in marketing cost incurred by the intermediaries. Among all cost items incurred by different stakeholders, transportation cost was the highest (36.33%) followed by *aratdars* commissions (30.13%). After purchasing fish from landing station, *beparis* carry it by trucks to inter-district markets and they perform the marketing functions of assembling, icing and loading and unloading. They also pay *aratdar's* commission, electricity and rent for *arat* houses. *Beparis* sell their fish to the retailers through *aratdars* and they have to pay 3 to 4% commission to *aratdar* from their sales revenue.

It may be noted here that payment of commission makes the marketing cost higher for *beparis* than for retailers. However, marketing costs for each kg of marine fish were estimated to be Tk 8.55, Tk 1.10 and Tk 4.50 for *beparis*, *aratdars* and retailers, respectively (Table 1). In lieu for taking commission, *aratdars* simply help *beparis* to sell their products and collect buyers (retailers) to purchase it without taking any risk of loss or damage of fish. Accordingly, *aratdar's* marketing cost was lower (Tk 1.10/kg) compared to that of *beparis* and retailers. It may be noted that *faria* and inter-district *aratdar* agents are associated with *beparis* and perform the marketing function.

Species-wise average marketing costs of marine fish marketing in different locations are shown in Table2. Table reveals that there is small variation in marketing cost at different locations of primary market. Considering all selected species,

cost of marketing was almost similar in all the locations for each level of market but there was small variation of marketing cost among the species studied. However, average marketing cost was lower in primary market (Tk 8.86/kg) compared to secondary market (Tk 9.99/kg) and consumer market (Tk 12.29/kg) (Table 2). Again, considering the involvement of stakeholders, fishermen and *faria* are involved in primary market; *aratdar* and *bepari* in secondary market; and those of inter-district *aratdar* agent and retailers are involved in consumer market and they shared about 30%, 31% and 39% of total marketing cost, respectively (Table 1). Even

in case of individual species, small variation was observed for marketing cost and as well as sales price both in secondary market and consumer market. However, for marine fish, consumer market and secondary market were competitive compared to primary market (Islam et al 2001).

Marketing margins and profitability of different intermediaries were estimated separately and are shown in Tables 3. Results are presented for individual species and average of all selected species. Total marketing margin and marketing profit are also estimated for easy understanding and presentation.

Table 1. Total marketing cost of stakeholders and intermediaries involved in major species of marine fish (Tk/kg)

Cost items	Fisherman/ boatman	Faria	Aratdar	Bepari	Inter- district <i>aratdar</i> /agent	Retailer	Total	% of total
Transportation, loading/unloading	1.27	1.63	0.00	3.01	3.30	1.56	10.77	36.33
Landing station tolls	0.25	0.25	0.00	0.25	0.00	0.00	0.75	2.53
Baskets	0.00	0.13	0.05	1.01	0.00	0.41	1.59	5.37
Icing	0.00	0.00	0.00	1.26	0.00	0.81	2.07	6.97
Wage and salaries	0.00	0.17	0.57	0.17	0.39	0.00	1.30	4.37
<i>Aratdar's</i> commission	2.39	2.13	0.00	2.36	2.06	0.00	8.93	30.13
House rent	0.00	0.00	0.14	0.03	0.01	0.56	0.74	2.48
Security	0.00	0.00	0.01	0.00	0.00	0.05	0.06	0.20
Electricity	0.00	0.00	0.01	0.00	0.01	0.13	0.15	0.52
Telephone bill	0.11	0.10	0.13	0.16	0.08	0.31	0.88	2.97
Personal expenses	0.08	0.11	0.17	0.20	0.16	0.47	1.19	4.02
Tips and donation	0.13	0.11	0.02	0.12	0.03	0.05	0.45	1.50
Wastage	0.00	0.00	0.00	0.00	0.52	0.00	0.52	1.75
Others	0.00	0.00	0.01	0.00	0.09	0.16	0.26	0.86
Total	4.23	4.63	1.10	8.55	6.63	4.50	29.64	100.00
	(14)	(16)	(3)	(28)	(22)	(17)	(100)	

Source: Field survey 2014, Note: Figures within parenthesis indicate percent of total marketing cost.

Tables 3 show that like individual species, marketing margin were relatively higher in consumer market (Tk. 40/kg) followed by secondary (Tk. 28/kg) and primary markets (Tk. 32/kg) where *beparies* and *aratdars* are involved and marketing profit were higher in secondary market followed by consumer market and primary market. It is evident from the above mentioned tables that high priced fish demanded high marketing cost resulting higher marketing margin and profit compared to low priced fish. It was reported that processing and transportation costs were higher for high valued species compared to the low valued ones.

Considering all major species in marine fish market the average marketing margins for each kg of fish were Tk 31.68, Tk 38.44 and Tk 40.10 in primary, secondary and consumer markets, respectively and the corresponding values for profits for three different markets were Tk 22.82, Tk 28.45 and Tk 27.81, respectively. Adding up the average values of marketing margin and profits at different levels of market, total marketing margin and profit were Tk 110.22 and 79.08 per kg, respectively (Table 3).

3.2. Marketing problems and constraint

Marine fishing communities face multiple problems involving social, economic, institutional, technical, infrastructural and even ethnic factors (Table 4). Many NGOs are already actively supporting groups of fishermen and fish traders to solve some of these problems in coastal areas and various parts of the country. However, broadly the problems of marine fish marketing were as follows:

3.2.1 Post-harvest losses

In Bangladesh, the fisheries sector suffers from serious post-harvest losses every year due to ignorance and negligence in handling and processing at different stages of the supply chain from the harvest to retail distribution. It is believed that about 30 - 33% of all fish caught becomes unfit for human consumption. Improper handling and processing reduce the quality of the products. Eighty four percent

respondents reported that post-harvest loss is a serious problem in the marine fish supply chain (Table 4).

3.2.2 Poor physical facilities

The Bangladesh Fisheries Development Corporation (BFDC) operates six fish landing centers in the coastal districts namely, Chittagong, Cox's Bazar, Khulna, Barisal, Patherghata and Khepupara. All these centers are provided with landing platforms, auction halls, ice plants, cold storage, drinking water and accommodation for fish traders. The only fish harbor in the country developed by BFDC is located at Chittagong, near to Chittagong port, on the north side of the Karnaphuli River. The fish landing centers is very limited in respect to coastal areas. Fishermen operating small traditional craft usually land their catch on the coast. Seventy three percent respondents feel the shortages of fish landing centers and it's a major problem in marine fish distribution system.

3.2.3 Poor transport system

Most of the marine catches are marketed fresh. Some are frozen for export, some are dried and a small portion is salted. The transport facilities are very poor and remarkable portions of the catch are spoiled due to lack of quick and better transport facilities as fish is the most perishable product. Within very short time fish are spoiled and its quality also deteriorated. Low quality fish is of great concern to food security and public health. It also results in serious economic loss for the fish traders and processors. Sixty eight percent respondents claim that a poor transportation system is another major problem for marine fish marketing.

3.2.4 Inadequate facilities of wholesale and retail market

Wholesale fish markets are not well developed. Wholesale fish market run by the fish traders are of very poor standard and need improvement. In most cases there are no auction sheds, no packing sheds, no landing terminals, no gangways, no pontoons and no proper drainage or hygienic facilities.

Table 3. Marketing margin and profitability of different major species of marine fish in different locations (Tk./Kg.)

Particulars of marketing	Major Species (Tk/Kg)										
	Hilsa	Pomfret	Cat fish	Bombay duck	Ribbon fish	Coral	Paisa	Surma	Captured shrimp	Bomb maitta	All species
Primary market											
Purchase price (PP)	524.58	610.00	208.75	106.00	129.07	410.94	97.08	246.67	180.83	126.25	264.02
Marketing cost (MC)	9.15	8.94	8.83	8.75	8.82	8.77	8.79	8.90	8.84	8.79	8.86
Sales price (SP)	587.53	683.20	233.80	118.72	144.55	460.26	108.73	276.27	202.53	141.40	295.70
Marketing margin (MM=SP-PP)	62.95	73.20	25.05	12.72	15.49	49.31	11.65	29.60	21.70	15.15	31.68
Marketing profit (MP=MM-MC)	53.80	64.26	16.22	3.97	6.67	40.54	2.86	20.70	12.86	6.36	22.82
Secondary market											
Purchase price(PP)	587.53	683.20	233.80	118.72	144.55	460.26	108.73	276.27	202.53	141.40	295.70
Marketing cost (MC)	10.22	10.04	9.97	9.96	9.92	10.00	9.90	9.95	9.97	10.00	9.99
Sales price (SP)	663.91	772.02	264.19	134.15	163.35	520.09	122.87	312.18	228.86	159.78	334.14
Marketing margin (MM=SP-PP)	76.38	88.82	30.39	15.43	18.79	59.83	14.14	35.91	26.33	18.38	38.44
Marketing profit (MP=MM-MC)	66.16	78.78	20.42	5.47	8.87	49.83	4.24	25.97	16.36	8.39	28.45
Consumer market											
Purchase price (PP)	663.91	772.02	264.19	134.15	163.35	520.09	122.87	312.18	228.86	159.78	334.14
Marketing cost (MC)	12.52	12.39	12.29	12.19	12.17	12.32	12.20	12.28	12.27	12.26	12.29
Sales price (SP)	743.58	864.66	295.90	150.25	182.95	582.50	137.61	349.64	256.33	178.96	374.24
Marketing margin (MM=SP-PP)	79.67	92.64	31.70	16.10	19.60	62.41	14.74	37.46	27.46	19.17	40.10
Marketing profit (MP=MM-MC)	67.15	80.25	19.42	3.91	7.43	50.09	2.54	25.18	15.19	6.91	27.81
Total marketing margin and profit											
Total marketing margin	219.00	254.66	87.15	44.25	53.88	171.56	40.53	102.98	75.49	52.71	110.22
Total marketing profit	187.11	223.29	56.05	13.35	22.97	140.46	9.64	71.85	44.41	21.66	79.08

Source: Field survey 2014

Wholesale fish markets in almost all cities and towns are operated by the municipalities concerned under the Ministry of Local Government. The wholesaling facilities in the municipal markets are generally inadequate for handling a highly perishable commodity like fish. In major cities like Dhaka, Chittagong, Khulna and Rangpur as well as district towns, the retail markets are managed by the municipalities. Conditions in these markets are also not adequate in respect to sales areas, parking, sanitation, water supply, drainage, cleaning and washing, maintenance and repairs. Sixty two percent of fish traders claimed this as a great problem for marine fish marketing.

3.2.5 Lack of ice factories

There is no recent information on the supply of ice. In 1992-93, there were 217 ice plants (block and flake) with a combined daily capacity of 4405 ton, located in the coastal districts of Chittagong, Barisal, Cox's Bazar, Patuakhali, Pirojpur, Khulna, Bagerhat and Noakhali. The supply of ice is limited, particularly during the peak fishing season. Shortage of ice during the peak season is reflected by the price charged. Most places do not have facilities for ice. These traders bring collected fish to landing centers in large cities. Most of the traditional boats fish inshore and stay out for one or two days and do not use ice to preserve the fish. The fish traders usually transport ice from distant places and often the use of ice is not adequate. A large number of fish traders own motorized fish transportation boats wherein they carry ice and collect catches from the fishers operating in coastal areas. Fifty four percent respondent claims that they are in trouble for shortage of ice.

3.2.6 Lack of specialized cold storage

There is also a lack of specialized cold storage at the marine fish landing centers. As fish is a very perishable product its need specialized cold storage to preserve. In peak season a large amount of marine fish are caught in the coastal belt of Bangladesh but for shortage of specialized cold storage it is not possible to

preserve properly. Thirty nine percent respondents claimed that it's a problem in marine fish marketing system.

3.2.7 Lack of credit facilities

Financial help is required to run any business. But there is a little scope of institutional credit in fishing business. Lack of credit was reported as one of the problem by 38% respondent. They reported that when they were in need of fisheries loan, they did not get any major help from institutional sources. They also reported that bank credit process was very much complicated to get it in time.

3.2.8 Lack of refrigerated vans

There is a very limited facilities have been developed to transport marine fish by refrigerated vans to markets although it's a very effective to keep good quality of fish. In most cases marine fishes are transported by truck from landing centers to wholesale market. Twenty seven percent of respondents claimed that it's a problem of marine fish marketing chain.

3.2.9 Lack of qualified staff for quality control and inspection

To ensure better quality of marine fish, it is an urgent need of inspection at all stages from harvesting to final consumer by DoF's efficient and specialized quality control officers. But in practical, there is a great shortage of quality control officers of DoFs as well as inspection office. For these reason it is not possible to ensure quality fish in marine fish marketing channels. Twenty one percent respondents claimed it's a problem in marine fish marketing chain.

3.2.10 Limited market information

Market information plays an important role for efficient marketing system. Timely and adequate market information is required for efficient operating system. Fifteen percent traders of marine fish claimed that they do not get the correct market information in time.

Table 4. Problems and constraints of Marine fish marketing in Bangladesh

Problems and constraints	Percentage of respondent reported
Post-harvest loss	84
Poor physical facilities for marketing of fish landing centers	73
Poor transport system	68
Inadequate facilities of wholesale and retail market	62
lack of ice factories	54
Lack of specialized cold storage	39
Lack of credit facilities	38
Lack of refrigerated vans	27
lack of qualified staff at DoF's quality control and inspection office	21
Limited market information	15

Source: Field survey 2014

4. Conclusions

This study explored marketing margin, profit and problems of marine fish marketing in Bangladesh and revealed that there is variation in profit earned by different intermediaries in the primary and secondary markets. In this regard primary and secondary markets should be free from control of *beparies* and *aratders* to make market competitive so that marine fishermen receive reasonable price to increase their sales revenue. The marketing system of marine fish in Bangladesh is yet not developed and it usually organized and managed by the private sector and face a lot of problems. Among the problems of marine fish marketing post-harvest loss, physical facilities of landing center and transport system are the major problems. It is therefore, necessary to provide institutional and organizational support, government support, extensions support, services, and more research and knowledge of fish marketing. In addition, the establishment of modern wholesale markets in large urban areas, and establishment of well-functioning assembly markets at important fish landing sites may help sustainable fish marketing systems in coastal Bangladesh.

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