

POTENTIAL FOR DEVELOPMENT OF MARINE FISH MARKETING SYSTEMS IN CHITTAGONG DISTRICT OF BANGLADESH

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Abstract

Marine fishes contribute a very momentous role in the fisheries sector which is a paramount sector especially for the coastal community. The study was designed to observe the marine fish marketing system in the *fishery ghat*, Chittagong from July to December, 2013. The study was shown *H. nehereus* (7.2%) contribute highest species composition in the market whereas the highest market price was recorded for *P. chinensis*. There were three types of market (primary, secondary and retail market) which were almost entirely managed and controlled by a group of intermediaries involving sales agents, suppliers, wholesalers and retailers. Fishermen and fish assemblers sell their catch to suppliers (*baperies* or *paikers*) with the help of commission agents (*aratdars*), who got 3-5% commission through auctioning at the landing centers. Marketing cost of fish was highest in the secondary market (5.60 ± 0.383 BDT kg⁻¹) followed by the primary (4.30 ± 0.401 BDT kg⁻¹) and retail (3.20 ± 0.208 BDT kg⁻¹) market. The income of wholesaler's was highest (8000-1000BDT Day⁻¹) followed by baparies (600-900 BDT Day⁻¹), aratdars (500-800 BDT Day⁻¹) and fisherman (220-500 BDT Day⁻¹). Infrastructure of fish markets were not adequate with packaging, sanitation, water supply, drainage, cleaning, washing, maintenance and other necessary facilities.

Keywords: Marketing channel, marketing costs, marketing constraints, SWOT analysis

Introduction

The coastal water of Bangladesh encloses diverse fisheries resources, with 475 finfish species (Mazid, 2005). Of these species, only 100 fish species are commercially important including hilsa, pomfret, tuna, marine catfish, marine eel, jawfish, ribbonfish, bombay duck (Quader, 2010). The marine fisheries play significant role in the economy of Bangladesh. More than 11% of the total population of the country is directly or indirectly involved in this sector for their livelihoods (Fisheries Statistical Yearbook of Bangladesh, 2013). The total fish production in Bangladesh was 3.26 million MT in 2012 of which 17.74% production came from marine sources (DoF, 2013). The marine fish marketing system is traditional and complex but significantly connecting with the fishermen and consumers, thus contributing in the earnings of fisher folk (Chowdhury, 2004). In Bangladesh, the fish market is associated with strong demand, driven by continued increases in rural and urban populations. However, fish consumption appears to have fallen marginally because fish prices have been increasing faster (Fisheries Sector Review, 2003). Fish prices have increased due to the involvement of middlemen in the marketing chain, as they have established a new marketing chain based on the exploitation of the fishing communities by setting up an artificial pricing chain through intermediaries at different levels (Kleih *et al.* 2001). The most serious marketing difficulties materialize are irregular ice supply, poor transport facilities and poor infrastructure etc which leads qualitative and quantitative loss of fish (Kleih *et al.* 2003). The present study was designed to establish the scrupulous story of marketing systems including commercially important marine fishes, marketing costs, prices of fish, incomes of different intermediary groups, constraints of fish marketing and also provides some recommendations for further development of marine fish marketing systems in Chittagong district, Bangladesh.

Materials and Methods

This study sought after too broadly understands marine fish marketing systems of *fishery ghat* in Chittagong district, Bangladesh. Primary data were collected from July to December 2013 through a field survey employing questionnaire interviews, rapid market assessment and crosscheck interviews with key information and participatory rural appraisal tools e.g. focus group discussion following the approaches of (Monwar *et al.* 2014; Hossain, 2013 and

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Rahman et al. 2010) and SWOT analysis (Strengths, Weakness Opportunities and Threats). Sixty questionnaire interviews were carried out randomly from different intermediaries, who included 20 assemblers, 20 wholesalers and 20 retailers, because these three groups are the main stakeholders in marketing chain and they control the total marketing system. After collection the primary data and secondary data were reviewed, stored and coded and then input in to computer for further analysis. At each stage of survey data sheets were compared with original data sheets to ensure the accuracy of data entered. All the collected data were compiled and analyzed by MS-Excel and then presented in textual, tabular and graphical forms.

Results and Discussion

Catch composition of marine fish

Commercially available fishes recorded in the study area were *H. nehereus*(7.2%) followed by *P. microdon* (6.9%), *L. calcarifer* (6.0%), *T. ilisha*(6.0%), *J. argentatus* (5.7%), *P. pangasius* (5.5%), *L. savala* (5.0%). Barman (2013) found that *H. nehereus* contribute the highest percent of species composition from the Karnafully river, Chittagong which is similar with the findings of the present study. According to the survey, 85% of the marine catch is marketed for domestic consumption while 15% is exported to the international market (e.g. UK, USA, Middle East, India etc). Nesar and Helen (2006) found that 12% of marine catch used for international market which is dissimilar with present findings, this is may be due to increasing demand of fish export from Bangladesh to abroad. List of commercially important fish species and their composition shown in Table 1.

Fish marketing systems

Many people are engaged in coastal fish marketing including women and children. There are mainly three types of market; primary, secondary and retail markets; almost entirely managed, financed and controlled by the sales agents, suppliers, wholesalers and retailers. Fishermen was the primary producer in the marketing chain, who sell their catches to suppliers (*baperies* or *paikers*) with the help of commission agents (*aratdars*) at the landing center (primary markets). The *aratdar* take care of landing, handling, sorting and auctioning by species and size-groups after landing of fish. *Aratdars* helps in auctioning and get 3 to 5% commission of the auction price. Nesar and Helen (2006) found similar auctioning system in the fish market of Patuakhali area, Bangladesh. *Baperies* or *Paikers* acts as intermediary traders and they supply fish from primary market to wholesale market. Communication between *aratdars* and *baperies* generally takes place by mobile phones. A few labors including women and children work with the *aratdars* and *baperies* for cleaning, sorting, grading and transportation of landed fish. *Baperies* commonly use boats, trawlers, pickups, trucks, tampoo and trains to transport fish from coastal areas to the wholesalers and then wholesaler sell fish to retailers. Retail sales are made at door-to-door to household customers. Rokeya et al. (1997) were found identical transportation system for fish in Rajshahi division, Bangladesh. The marketing channel of marine fish is depicted in Fig. 1.

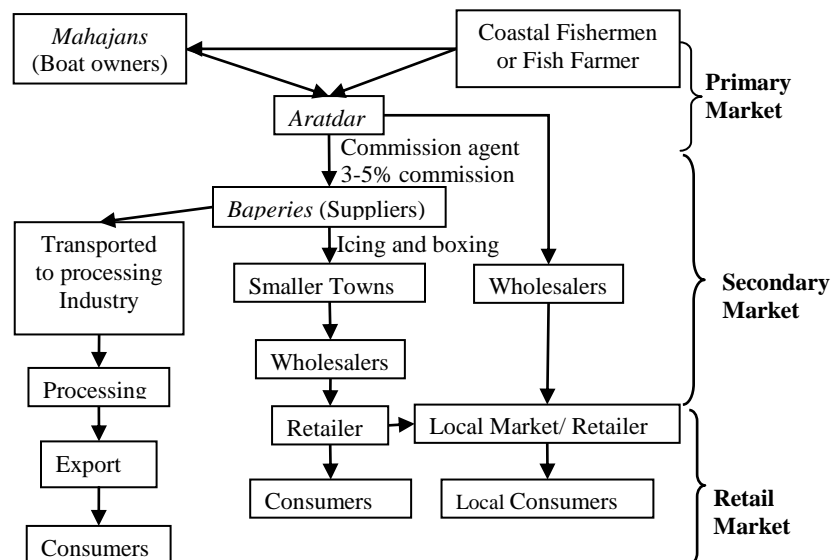


Fig. 1. Flow diagram of marketing system of marine fresh fish in Chittagong region

Marketing costs and price of fish

The marketing costs of marine fish depends on the species, amount of fish, market distance, market infrastructure, mode of transportation, form of marketed fish (i.e. fresh or iced) and labor required. The average marketing costs for marine fish are shown in Table 2. The highest average marketing cost of fish was observed in the secondary market (5.60 BDT kg⁻¹) followed by 4.30 BDT kg⁻¹ in primary market and 3.20 BDT kg⁻¹ in retail market. The price of fish depends on market structure, species, quality, size and weight, season, supply and demand. Table 1 shows the average market prices of commercially important marine fishes. *P. chinensis* showed the highest market price (1300-2100 BDT kg⁻¹) and lowest market price observed for *D. acuta* (60-120 BDT kg⁻¹). Briones *et al.* (2004) findings are more or less similar with the present findings about marketing cost, however price of fish is dissimilar with the findings of them, this variation of price may be price changes with the changes of time.

Table 1. Market prices and species composition of commercial fishes in Chittagong region

Scientific Name	Local Name	Price (BDT kg ⁻¹)	Species composition (%)
<i>Apocryptes bato</i>	Baila	200-300	0.40
<i>Chelonodon patoca</i>	Potka	130-300	0.70
<i>Coilia dussumieri</i>	Olua	300-450	4.00
<i>Cyanoglossus cyanoglossus</i>	Kukur jeeb	180-200	2.10
<i>Cybiium guttatum</i>	Maittya	150-300	3.70
<i>Dasyatis zugei</i>	Sapla pata	250-400	0.60
<i>Dussumieria acuta</i>	Goru mash	60-120	2.50
<i>Sphyrna blochii</i>	Haturi hangur	600-850	0.80
<i>Gudusia chapra</i>	Chapila	120-250	4.50
<i>Harpodon nehereus</i>	Loittyia	120-300	7.20
<i>Johnius argentatus</i>	Lal poa	300-400	5.70
<i>Lates calcarifer</i>	Coral	300-450	6.00
<i>Lepturacanthus savala</i>	Churi	300-600	5.00
<i>Rhinomugil corsula</i>	Karsula	180-300	2.00
<i>Mystes gulio</i>	Nuna-tengra	300-400	2.30
<i>Pampus argenteus</i>	Tack chanda	1000-1400	4.40
<i>Pampus chinensis</i>	Rup chanda	1300-2100	4.00
<i>Pangasius pangasius</i>	Pungus	150-200	5.50
<i>Panna microdon</i>	Poa	300-400	6.90
<i>Polynemus indicus</i>	Lakkha	300-500	1.70
<i>Rita rita</i>	Rita	370-1200	2.90
<i>Setipinna phasa</i>	Phasa	130-250	4.50
<i>Sillaginopsis panijus</i>	Tular danti	400-750	1.00
<i>Stolephorus indicus</i>	Sea mola	150-200	2.50
<i>Tenualosa ilisha</i>	Ilish	400-750	6.00
Other species			13.10

Source: Survey data (2013)

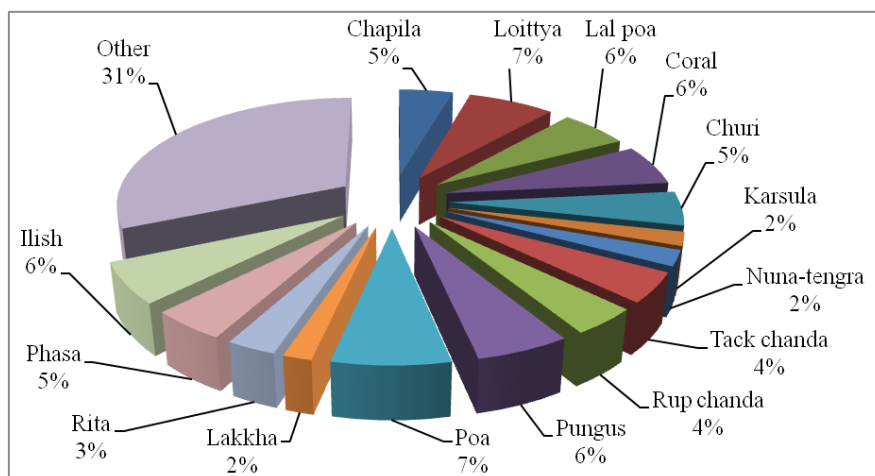


Fig. 2. Commercially available fish species composition in Chittagong region

Table 2. Average marketing cost (BDT kg⁻¹) of marine fish during the study period

Marketing cost component	Primary market	Secondary market	Retail market
Market place rent	0.40 ±0.054	0.40 ±0.049	0.60 ±0.029
Electricity bill	0.40 ±0.041	0.40 ±0.044	0.60 ±0.034
Transportation, loading, unloading	0.30 ±0.013	0.60 ±0.027	0.35 ±0.026
Wage and salaries of workers	0.60 ±0.032	1.00 ±0.064	0.50 ±0.009
Commission for auctioneers	1.70 ±0.086	1.80 ±0.053	-----
Icing	0.20 ±0.009	0.30 ±0.013	0.30 ±0.033
Weight loss or damage	0.50 ±0.101	0.60 ±0.042	0.45 ±0.040
Other (market toll, water for washing)	0.20 ±0.065	0.50 ±0.091	0.40 ±0.037
Total=	4.30±0.401	5.60±0.383	3.20±0.208

Source: Survey data (2013)

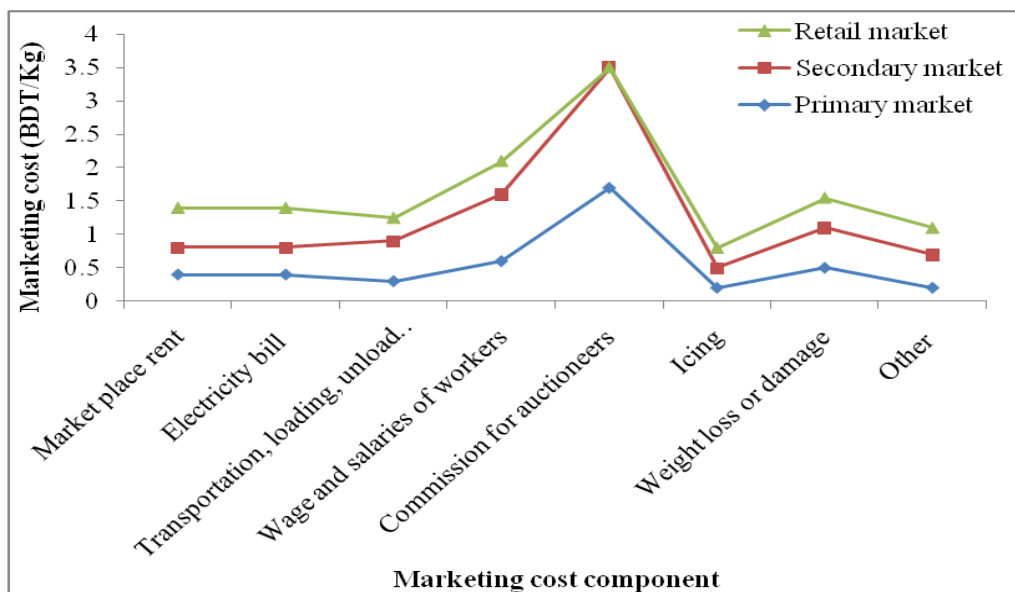


Fig. 3. Average marketing cost of commercial marine fish species sold

Income of traders and associated groups

Fish trading is a profitable business and almost all traders reported that they had made profits and increased income. According to the survey, the average daily income of a fish trader (retailer) was calculated at BDT 400-650 which is higher than fishermen and day laborers, but lower than wholesalers, *aratdars* and *baperies* (Table 3). The present study showed that a wholesaler makes an average net profit of BDT 800-1000 day⁻¹ which was higher than any other marketing people due to access to capital, higher education levels, greater experience of fish trading, and control of fish marketing systems. Fishermen stated that their average daily income was BDT 200-500 and varies with fishing rate, weather conditions and the market price of fish.

Table 3. The average daily income of fish marketing actors

Market actors	Daily Income (BDT day ⁻¹)
Fishermen	220-500
Aratdars (commission agents)	500-800
Baperies (suppliers)	600-900
Wholesalers	800-1000
Retailers	400-650
Women traders	200-300
Day labors	200-250
Children labors	100-150

Source: Survey data (2013)

Marketing constraints

In general, facilities at fish markets are minimal, with poor hygiene and sanitation. There are currently no standard practices for handling, washing, sorting, grading, cleaning and icing of fish. Most of the landing centers are set up

by fish traders' associations or the fishermen's cooperative societies, thus most of the fish landing sites have a limited support infrastructure, and are perceived by some to be ill-managed and unhygienic. There are no facilities such as sheds in some landing centers for auctioning and preserving the fish. At the primary market level, the main constraints for fishermen are a lack of bargaining power and market information. The marketing infrastructure, including cold storage, ice and transport facilities is generally inadequate, unhygienic and in disrepair. Political disturbances (i.e. strikes, road blocks, etc.) also affect fish transportation as well as marketing. During survey visits in the study area, it was found that the damage of fish occurs mainly in the process of transportation from the landing centre to the retail points. Wholesale markets have better facilities, but in general conditions in primary and retail markets are far from satisfactory with regards to stalls, parking, spacing, sanitation, drainage and management. Quality control at landing, handling, distribution and marketing places is only periodically carried out. This is largely because of a shortage of Quality Inspectors and the absence of emphasis on quality control for domestic markets. Ahmad (2005) reported that there were no standard practices for handling, washing, sorting, grading, cleaning and icing of fish in the fish market due to lack of consciousness about health infection and illiteracy which is akin with the present findings.

Table 4. SWOT Analysis for the Development of Coastal Fish Market

<p>Strength</p> <ul style="list-style-type: none"> ➤ Many people engaged in fish marketing ➤ Strong contact among marketing people ➤ Large coastal and marine area ➤ People prefer fish as food ➤ Huge fisheries diversity 	<p>Weakness</p> <ul style="list-style-type: none"> ➤ Poor socio-economic condition of stakeholder ➤ Scarce supervision from Government & NGOs ➤ Lack of ice facilities or poor quality ice ➤ Unhygienic condition ➤ Poor infrastructure
<p>SWOT Analysis for the Development of Coastal Fish Market</p>	
<p>Opportunities</p> <ul style="list-style-type: none"> ➤ High interest in education ➤ Good demand of marine fish ➤ Employment opportunity for people ➤ Increasing income due to increase fish price ➤ Have export potential to earn foreign currency 	<p>Threats</p> <ul style="list-style-type: none"> ➤ Insufficient fish supply ➤ Lack of credit facilities ➤ Political interfere in to control market ➤ Scarce skill manpower and high labor cost ➤ High marketing cost and low marketing profits

Development of marketing systems

SWOT analysis was carried out for the development of marine fish marketing systems in coastal Bangladesh (Table 4). A number of issues are important for the development and sustainability of marine fish marketing, including:

- Ice is fundamental requirement for good quality fish storage and preservation. Insufficient supply of ice in markets is one of the most serious problems for fish preservation. Therefore it is necessary to establish quality ice factories near the market for marketing quality fish.
- Improvements of infrastructure for fish landing, transport, handling, and preservation facilities are essential to supply quality products.
- Fishermen, traders and associated groups do not have easy access to bank and NGO credits. A positive policy at government level should be considered to obtain cheaper adequate bank credit of fisheries stakeholders for sustainable marine fish marketing systems.
- It is also crucial that fish markets should keep clean. The fishermen and traders have limited knowledge about hygiene standards and fish quality. For the improvement of hygienic conditions of fish landing centers and markets it is essential to train up the fish market operators in terms of handling, icing, preservation and curing.

Marine fish marketing plays an important role in the economy of Bangladesh, including increased food production and employment opportunities. *H. nehereus* was the most dominant species in the study area, but *P. chinensis*

showed highest market price (1300-2100 BDT kg⁻¹). Many intermediaries were involved with marine fish marketing system, which leads to increase the marketing cost of fish, ultimately increase the fish price, but fishermen got less benefit than other intermediaries. Wholesaler has elevated daily income than other in marketing personal. Highest marketing cost was observed in secondary market than primary and retail market. Poor road and transport facilities, poor supplies of ice political crisis are major constrains for marine fish marketing. However, establishment of marine fish market with modern processing and preservation facilities in coastal areas and establishment of well functioning congregation markets at important fish landing sites will help the development of marine fish marketing systems.

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