A STUDY ON COMMERCIALLY IMPORTANT MARINE FISH MARKETING SYSTEMS IN SOUTHERN BANGLADESH

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ABSTRACT

A study was conducted to understand current practices of commercially important marine fish marketing systems in the Patuakhali area of southern Bangladesh. A total of ten commercially important marine fish were identified such as: 1) hilsa, 2) pomfret, 3) marine catfish, 4) tuna, 5) coral fish, 6) marine eel, 7) jawfish, 8) ribbonfish, 9) bombay duck and 10) shark. About 88% of marine fish is marketed internally for domestic consumption while the remaining (12%) is exported to the international market. A large number of rural poor are involved in the domestic fish marketing chain as fishermen, processors, traders, intermediaries, day laborers and transporters. The market chain from fishermen to consumers encompasses mainly primary, secondary and retail markets, involving sales agents, suppliers, wholesalers and retailers. Fish are traded whole, un-gutted, and fresh without processing apart from sorting and icing. The price of fish depends on species, quality, size and weight, seasonality, market structure, supply and demand, consumption behavior, etc. 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. Concerns arise about the long-term sustainable fish marketing systems due to poor road and transport facilities, lack of credit facilities, insufficient supply of ice, poor institutional support and inadequate training facilities. It is therefore necessary to provide institutional and organizational support, government support, extension service and training facilities to the market operators for sustainable fish marketing systems.

Keywords: marine fish, market, marketing systems, Bangladesh.

INTRODUCTION

Bangladesh has a land area of 144,000 km^2 and a population of about 130 million, making it the mostly densely populated country in the world. The Bangladesh coastline (including estuaries) stretches for 710 km of the Bay of Bengal, with an Exclusive Economic Zone of 164,000 km^2, of which 44% is continental shelf. The coastal area of Bangladesh, covering 36,000 km^2 is broadly divided into three regions: the Eastern region, the Central region and the Western region (DOF, 2005). About 30 million people (23% of total population) live in the coastal area of Bangladesh depend on fishing, fish marketing, and associated activities.

Bangladesh's coastal waters are rich in diverse fisheries resources, with 475 recorded species of finfish including the cartilaginous fishes like sharks, skates and rays. However, only 90 fish species are commercially important. These fall under the common groups of hilsa (herring), pomfret, marine catfish, tuna, coral fish, marine eel, jawfish, ribbonfish, bombay duck, shark, etc (Fisheries Sector Review, 2003). The majority of the commercially targeted stocks are reported to be over-exploited and there were significant declines in catches after around 1997 (Kleih *et al*., 2002). The total fish production in Bangladesh was estimated at 2.1 million tons in 2004, of which 0.45 million tons were obtained from marine fisheries, contribution about 22% of the total fish production (DOF, 2005). Marine fisheries

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production has marginally increased over the last 10 years but its relative share in fisheries production has declined from 31% in 1991 to 22% in 2004.

In terms of volume, value and employment, the marine fish market in Bangladesh is large. The marine 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 (Chowdhury, 2004). In Bangladesh, the market for fish is associated with strong demand, driven by continued increases in rural and urban populations, real term growth in income amongst key consuming sector, and a traditional and continuing preference for fish in the diet. However, fish consumption appears to have fallen marginally because fish prices have been increasing faster than prices of other commodities (Fisheries Sector Review, 2003). In addition, fish prices increase due to the middlemen in the marketing sector, as they have established 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).

In marine fish marketing systems, the most serious marketing difficulties seem to occur in remote fishing communities, which lack regular supplies of ice, poor transport facilities and where the fishermen are in a weak position in relation to intermediaries (Kleih *et al.*, 2003). In such locations, many fish are processed into lower valued cured products and the process of curing often involves considerable losses due to spoilage. Post-harvest losses also occur in all fish distribution and marketing systems.

This study sought to broadly understand marine fish marketing systems in the Patuakhali area of southern Bangladesh. This paper provides information on commercially important marine fish distribution and marketing systems, marketing costs, prices of fish, marketing margin and profit, value chain analysis, incomes of traders and associated groups, constraints of fish marketing, and development opportunities. It also provides strengths, weaknesses, opportunities and threats (SWOT) of marine fish marketing systems in coastal Bangladesh.

Study Area

The study was conducted in Patuakhali district, a coastal area of the Bay of Bengal, situated in the southern part of Bangladesh (Fig. 1). Geographically Patuakhali has been identified as the most important and promising area for marine fish marketing systems, because of the availability of fish, favorable resources and climatic conditions, and favorable socio-economic conditions for fish marketing. Three types of fish market such as primary, secondary and consumer markets were selected for this study. In addition, Dhaka city retail markets were selected to examine the price variation.

Data Collection Methods

Primary data were gathered by field survey. This survey involved the inspection of the study area in terms of commercially important marine fish marketing systems. Data were collected for six months from July to December 2005. A combination of participatory, qualitative and quantitative methods were used for data collection.

1) Rapid Market Appraisal (RMA)
The origins of RMA are similar to those of rapid rural appraisal, in the sense that formal surveys are often seen as lengthy, costly and management intensive (Chambers, 1994). RMA is an efficient way to obtain policy-relevant and intervention-focused information about any commodity sub-sector (Holtzman, 2003). RMA techniques mostly rely on semi-structured interviews with key informants, knowledgeable observers of a sub-sector, and a minimum number of participants at different stages of the commodity system. This study was designed to apply RMA to include the following elements: i) identification of the marine fish marketing channel, ii) visits to physical facilities such as landing sites, processing sheds,

markets etc, iii) direct observations of marketing operations and facilities, iv) identification and interviews of knowledgeable observers such as *Upazila* (sub-district) and District Fisheries Officers, relevant non-government organization (NGO) workers, Bangladesh Fisheries Development Cooperation (BFDC) officials, etc. using semi-structured checklists and guidelines.

2) Questionnaire Survey
For questionnaire interviews, fish traders and market intermediaries were selected through simple random sampling. A total of 100 fish market operators (25 fishermen, 25 assemblers, 25 wholesalers and 25 retailers) were interviewed. Interviews were conducted at a time convenient to the traders at the market centre. The interviews focused on marine fish distribution and marketing systems, marketing costs, marketing profit and margin, value chain analysis, marketing constraints, etc. Collected data were analyzed using Microsoft Excel software, producing descriptive statistics.

3) Participatory Rural Appraisal (PRA)
PRA is a group of methods to collect information in a participatory basis from rural communities. The advantage of PRA over other methods is that it allows a wider participation of the community, the information collected is likely to be more accurate (Chambers, 1992; Nabasa *et al.*, 1995). This study used PRA tool: focus group discussion (FGD) with fishermen, fish traders and associated groups. FGD was used to get an overview of particular issues such as existing fish distribution and marketing systems, constraints of fish marketing, etc. A total of 20 FGD sessions were conducted in the study area where each group had 6 to 12 persons (total 162) and duration was approximately two hours.
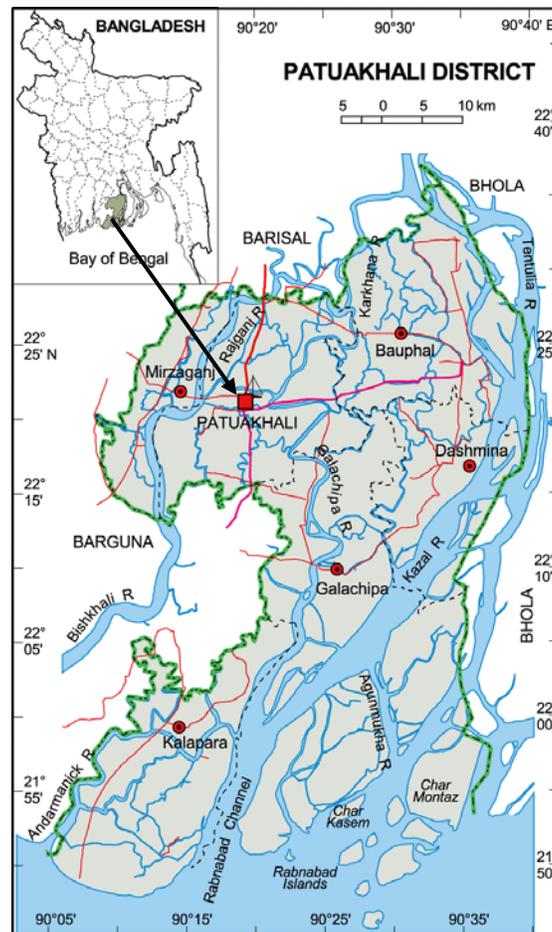

Figure 1. Map of Bangladesh Showing the Study Area

FISH MARKETING SYSTEMS

A large number of people, many of whom live below the poverty line, find employment in the coastal fish marketing chain as fishermen, assemblers, processors, traders, intermediaries, transporters and day laborers, including women and children. In the study area, fish marketing is almost entirely managed, financed and controlled by a group of powerful intermediaries. The market chain from fishermen to consumers encompasses mainly primary, secondary and retail markets, involving boat owners, sales agents, suppliers, wholesalers and retailers (Fig. 2).

Fishermen are the primary producers in the fish marketing chain. Fishermen work on their own boat or other people's (locally known as *mahajans*) boats. Fishermen who work on *mahajans'* boats tend to have an arrangement with the boat owner regarding the share of the catch. Usually the owner of the boat retains about 50-60% of the catch and the fisherman keeps the remainder. The boat owner, who may not necessarily join the fishing at sea, sells the entire catch himself and keeps the sales proceeds. The owners have got full control over the fishermen as they have extended credit for the purchase of their nets and other fishing equipment. Fishermen often feel exploited by the *mahajans* – believing that the prices they receive for their catch do not adequately reflect the prices paid for fish in the wholesale or retail markets where they are subsequently sold.

With a few exceptions, fishermen never directly communicate with wholesalers, retailers and consumers. Fishermen tend to sell their catch at the landing centers (primary markets) to suppliers (locally known as *baperies* or *paikers*) with the help of commission-based sales agents. Sales agents (locally known as *aratdars*) play a leading role in the fish marketing systems. As soon as the fishermen land the fish in the primary market, the sales agent takes care of landing, handling, sorting and auctioning by species and size-groups. Normally, the auction sale is made by heaps. In general, sales agents follow the incremental price system. It is the most competitive form of auctioning and ensures better prices for fishermen. Auctioneers call out the bid by the bidders loudly in the presence of the buyers. Sales agents get commission at different rates of the sale proceeds, normally 2 to 5% of the auction price, for their services and costs involved.

In the present fish marketing system, the auctioneers and suppliers play a crucial role in determining prices for marine fish at the landing centre. Communication between the sales agents and suppliers is generally strong and takes place by mobile phones. Suppliers are a form of intermediary traders who supply fish from primary markets to wholesale markets. In general, suppliers are tied to a limited number of sales agents. A number of laborers work with the sales agents and suppliers. They perform post-harvest tasks that include cleaning, sorting, grading, icing and transportation. Suppliers commonly use boats, trawlers, micro-buses, buses and trains to transport fish from coastal areas to the wholesalers at urban fish markets who then sell to retailers.

Two main categories of fish retailers have been encountered: market-based retailers and itinerant retailers (fish vendors, hawkers, etc). Retail sales are made at stalls in fish markets and to door-to-door to household customers. Fish are traded whole, un-gutted, and fresh without processing apart from sorting and icing. More than 75% of the total marine catch is actually consumed at distant places, so it requires processing, icing and transportation. A large number of day laborers including women and children are involved in the process. The travel duration between primary markets and retail for urban markets is usually less than 12 hours. People in Bangladesh generally prefer fresh fish without icing. The next preference is for iced fish. Fish is iced with consideration of transportation, space and time. If the transportation time is less than six hours from primary market to retail point the fish is not iced, or if iced, it is not done properly. Other forms of fish products are frozen, salted and dried (Chowdhury, 2004). According to the survey, the percentages of fish product forms were 35% fresh, 45% iced, 12% frozen, and 8% dried. As there is a large gap between supply and demand, thus fish marketing is very easy in

primary, secondary and retail markets. The demand for fish is high in markets but supply is limited, and a strong network has developed with intermediaries and traders intervening between fishermen at one end and the consumers at the other end.
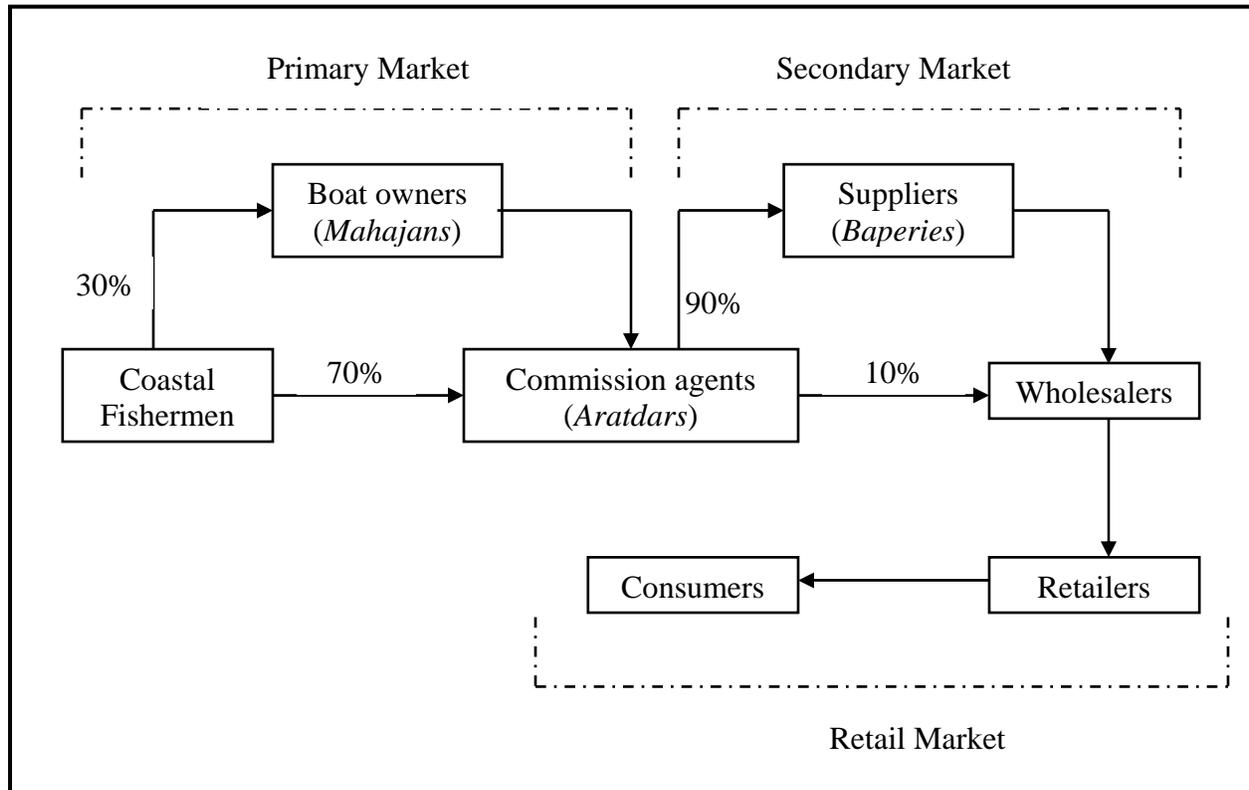
Figure 2. Commercially Important Marine Fish Marketing Systems (Based on Survey)

Market Share of Fish

According to the survey, 88% of the marine catch in the study area is marketed internally for domestic consumption while the remaining (12%) is exported to the international market. Bangladesh exports frozen fish primarily for overseas ethnic markets. There is a demand for fish by Bangladeshis living outside the country (e.g. Middle East, UK, USA, etc). They demand good quality hilsa, pomfret and other fish. Export of hilsa also takes place to India (Kleih *et al*., 2003). Hilsa (*Tenualosa ilisha* – national fish of Bangladesh) is the only species which was found to be marketed and consumed all over Bangladesh. Hilsa is an important single species of the country, which is a highly demanded fish in the local market and accounts 30% of national fisheries production of Bangladesh (DOF, 2005). According to the survey, hilsa is the main species in domestic marine fish market which contributes 61% of total market share. A breakdown of domestic market share of commercially important marine fish is presented in Fig. 3. Although shark was identified commercially important marine fish, it was only exported to the international market as Bangladeshi people do not eat sharks due to religious point of view, except few tribal people.
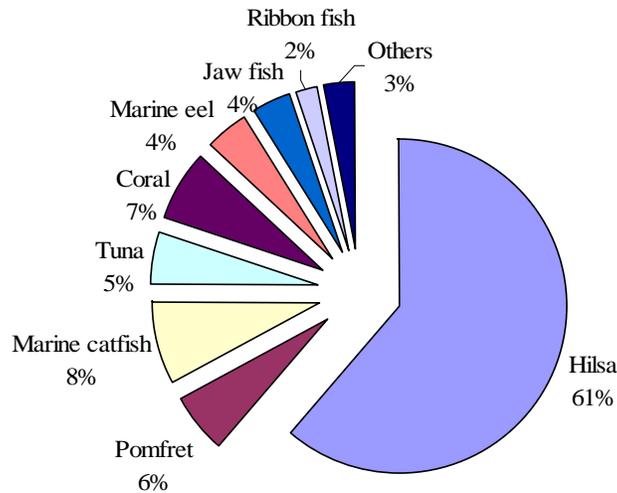
Figure 3. Market Share of Commercially Important Marine Fish in the Study Area

Marketing Costs

Marketing costs represent the cost of performing various marketing function which are needed to transfer a commodity from the place of production to the ultimate consumers (Kohls and Uhl, 1998). Fish marketing costs include expenses such as rental of the market place, ice, electricity, transport, labor, etc. Moreover, the costs of fish marketing depend on the species, volume of fish, market distance, market infrastructure, mode of transportation, and form of marketed fish (i.e. fresh or iced). In marine fish marketing systems, marketing costs are not identical due to dissimilarities of marketing functions at various stages. There are variations of marketing costs in different markets. The highest average marketing costs per kilogram of fish was found in secondary markets (US$ 0.07 per kg) followed by the primary (US$ 0.05 per kg) and consumer markets (US$ 0.04 per kg).

Price of Fish

The price of fish depends on species, quality, size and weight, season, market structure, supply and demand, and consumption behavior of consumers (i.e. taste). Fish prices are known to follow a seasonal pattern. When supplies are scarce fish prices increase. Demand behavior may also contribute to inter-seasonal price fluctuations (Delgado *et al.,* 2003). There are many factors affecting the price of fish through demand and supply. On the supply side, fish prices are affected by the seasonality of production, and weather conditions which cause the seasonality of the market supply, i.e. the quantity of the product available on the market (Briones *et al*., 2004).

Prices also vary from market to market. Prices in town markets tend to be higher than in coastal markets due to a larger concentration of consumers and superior family incomes. Moreover, market prices differ according to species and size. For the same species, price depends closely on the size of the fish, with larger fish fetching significantly higher prices per kilogram. The present study found that higher value fish such as hilsa, pomfret, tuna and coral fish can only be afforded by wealthier consumers. On the other hand, lower income groups depend on cheaper fish such as bombay duck, marine eel, jawfish, and marine catfish, etc. In the study area, prices are generally lower between August and December, rising during the following four to five months. Table I shows the average prices of commercially important marine fish

from landing site to retail level. Over the last ten years, fish prices have increased dramatically, at a rate of 2.3% annually (Fisheries Sector Review, 2003).

Table I: The Average Sale Prices of Commercially Important Marine Fish in Different Markets

Fish	Primary market (US$/kg)	Secondary market (US$/kg)	Retail market (US$/kg)
1. Hilsa	1.02	1.39	1.61
2. Pomfret	1.76	2.20	2.57
3. Marine catfish	0.58	0.80	0.95
4. Tuna	1.10	1.54	1.76
5. Coral fish	1.02	1.39	1.54
6. Marine eel	0.51	0.73	0.88
7. Jawfish	0.73	0.88	1.02
8. Ribbonfish	0.58	0.80	0.95
9. Bombay duck	0.36	0.58	0.73

Source: Survey data (2005)

Marketing Margin and Profit

Marketing margin and marketing cost are usually used to estimate the profitability of traders and intermediaries involved in marketing systems. Marketing margin at a particular stage of transaction is the difference between sales price and purchase price while marketing profit is the difference between the marketing margin and marketing cost (Kohls and Uhl, 1998). Total marketing margin is the difference between the price received by the fishermen and the price paid by the consumers. Marketing margin is the price for adding activities and functions performed by the intermediaries.

There exists a wide variation in the price received by fishermen for various marine fish in different marketing channels over distance and time. The factors influencing such variation include marketing costs, marketing margins, numbers of intermediaries in the marketing channel, distances between the landing points and consumers' locations and prices. The margins received by intermediaries involved in the process of marine fish trade significantly discriminate against the fishermen on price. Table II shows the percentage of value accruing to fishermen, suppliers, wholesalers and retailers. In almost all cases, fishermen received the majority share of the market value (40-57%). Fishermen received over 50% of total value for hilsa, pomfret, tuna, coral fish and jawfish. However, fishermen received less than 50% of total value for marine catfish, marine eel, ribbonfish and bombay duck. Amongst the intermediaries, the highest margins were received by wholesalers. These margins ranged from a low of 14% for marine catfish to a high of 30% for bombay duck.

Table II: Percentage Shares to Market Actors for Commercially Important Marine Fish

Fish	Fishermen share	Suppliers Share	Wholesalers Share	Retailers Share
1. Hilsa	55%	9%	22%	14%
2. Pomfret	57%	10%	19%	14%
3. Marine catfish	46%	16%	14%	15%
4. Tuna	54%	9%	25%	15%
5. Coral fish	57%	10%	23%	10%
6. Marine eel	42%	16%	25%	17%
7. Jawfish	57%	14%	15%	14%
8. Ribbonfish	49%	13%	23%	15%
9. Bombay duck	40%	10%	30%	20%

Source: Survey data (2005)

Marketing margins and profits vary for different groups of fish. Table III provides an overview of hilsa traded between Patuakhali and Dhaka as hilsa is a national fish of Bangladesh which accounts 61% of market share in the study area. The price received by the fishermen is very less as compared to the price paid by the consumers. The net share of the fishermen and the price paid by the consumers vary from US$ 0.88 to US$ 1.61 per kg of hilsa. The highest average marketing margin per kilogram of hilsa was found in secondary market (US$ 0.36 per kg) followed by retail (US$ 0.22 per kg) and primary market (US$ 0.14 per kg). Similarly, the highest average marketing profit was found in secondary market (US$ 0.29 per kg) followed by retail (US$ 0.17 per kg) and primary market (US$ 0.08 per kg).

Table III: Calculation of Marketing Margin and Profit for Hilsa in Different Markets

Markets	Particulars of marketing	US$/kg	% of consumer purchase price	Marketing margin (%)
Primary Market	Purchase Price (PP)	0.88	55%	64 -55 = 9%
	Marketing Costs (MC)	0.05		
	Sales Price (SP)	1.02		
	Marketing Margin (MM=SP-PP)	0.14		
	Marketing Profit (MP=MM-MC)	0.08		
Secondary Market	Purchase Price (PP)	1.02	64%	86 - 64 = 22%
	Marketing Costs (MC)	0.07		
	Sales Price (SP)	1.39		
	Marketing Margin (MM=SP-PP)	0.36		
	Marketing Profit (MP=MM-MC)	0.29		
Retail Market	Purchase Price (PP)	1.39	86%	100 - 86 = 14%
	Marketing Costs (MC)	0.04		
	Sales Price (SP)	1.61		
	Marketing Margin (MM=SP-PP)	0.22		
	Marketing Profit (MP=MM-MC)	0.17		
Consumers Purchase Price		1.61	100%	

Source: Survey data (2005)

Value Chain Analysis

The value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production, delivery to final consumers (Porter, 1980; Kaplinsky and Morris, 2000). In reality, value chain tends to be extended with a whole range of activities within each link and links between different value chains (Jacinto, 2004). Value chain analysis can be a useful analytical tool in understanding the policy environment in terms of efficiency in allocation of resources within the domestic economy while at the same time understanding the manner in which marketing people are participating in the national economy (Kanji and Barrientos, 2002). Analyzing value chains can bridge the gap between the focus of mainstream economics on aggregate measures of poverty such as income and the stress of livelihoods perspectives on micro-level complexity.

For value chain analysis, variables like marketing costs, marketing margins, number of middlemen in the marketing channel, distance between primary and retail markets, and consumers' behaviors on price are considered. A large number of intermediaries are involved in the process of marine fish marketing from the Patuakhali coast to Dhaka retail markets. The fishermen's net share get reduce with the rise in middlemen in the market channel. It is mainly due to lack of government control over the trade. The intermediaries avail the opportunity and exploit both the fishermen at the landing centre and consumers at the retail point. The intermediaries dictate the price for fish in the absence of intervention of the government in the trade and they appropriate a margin which is unduly high. This situation makes the

fishermen vulnerable in bargaining with other market actors such as commission agents, suppliers, wholesalers and retailers who have better capital endowments. This situation is further aggravated by the lack of transparency in the price formation process and asymmetric information flow, lack of capital for investment, and inadequate post-harvest infrastructure especially the lake of proper fish landing sites, poor road and transport facilities, inadequate ice supply, etc. that is vital for quality market product.

For hilsa marketing, it was calculated that fishermen receive 55% of the final retail price. The total marketing margin is 45%, which is sub-divided into: 1) Primary market: 9%, 2) Secondary market: 22%, and 3) Retail market: 14% (Table III). It should be mentioned that in this case the marketing margin is relatively high due to the long distance between Patuakhali and Dhaka, which involves several transport stages and trader categories. Compared to the above figure, Kleih *et al.* (2003) identified a fisherman share of 60-65% and a middleman share of 25-40% for hilsa sold in Chittagong and Cox's Bazaar markets.

Income of Traders and Associated Groups

Despite poor marketing facilities, livelihood outcomes are positive and most of the households of traders have improved their socio-economic conditions through fish marketing. Fish trading is a profitable business and almost all traders have made profits and increased income. Study results suggest that traders have broadly improved their standards of living, purchasing power, choice, and ability as an economic sector. The most significant change was in food consumption. The second most important change in the standard of living was in home improvement. Traders have improved their *katcha* (i.e. rough and rural) houses, although many of the former can still be seen.

According to the survey, the average daily income of a fish trader (retailer) was calculated at US$ 2.79 which was higher than fishermen and day laborers, but lower than wholesalers, suppliers and commission agents (Fig. 4). Survey results showed that a wholesaler makes an average net profit of US$ 4.55 per day. The average net profit of wholesalers was higher than any other market operators due to access to capital, higher education levels, greater experience of fish trading, and control of fish marketing systems (i.e. powerful intermediaries). The average daily income of a commission agent and supplier was estimated at US$ 3.23 and US$ 3.75 respectively. Fishermen stated that their average daily income was US$ 2.2, and varies with fishing rate, weather conditions and the market price of fish. Increasing population pressures may aggravate the problem of meager incomes of fishermen. However, the lowest daily income was found for day laborers (US$1.17).
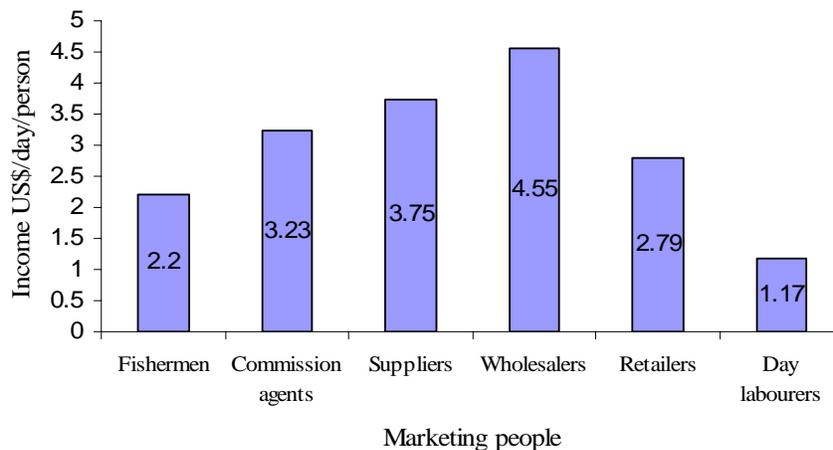
Figure 4. The Average Daily Income of Market Operators in the Study Area

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. Comparatively 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. Table IV shows major marketing constraints with its possible solutions for the development of marine fish marketing systems in coastal Bangladesh.

Table IV: Constraints of Marine Fish Marketing Systems

Key constraints	Reported by respondents (%)	Possible suggestions	Service providers
1. Poor infrastructure	38	Infrastructure development	Local Government and Rural Development (LGRD)
2. Lack of credit facilities	22	Access to credit	National banks and NGOs
3. Inadequate supply of ice	19	Establishment of ice factories	Private and public sectors
4. Lack of training facilities	18	Extension and training facilities	Department of Fisheries (DOF)
5. Poor hygiene and sanitation	3	Improve hygiene and sanitary condition	Department of Fisheries (DOF); Department of Quality Control

Source: Survey data (2005)

Development of Marketing Systems

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

- **Infrastructure:** improvements of fish landing, modern wholesale and retail markets, road and transport systems, handling, and preservation facilities are essential to supply quality products.

- **Credit facilities:** fishermen, traders and associated groups do not have easy access to bank and NGO credits due to too much official paperwork and collateral arrangements. Therefore, assisting traders to obtain cheaper adequate bank credit for market operating costs should be considered.

- **Supply of ice:** insufficient supply of ice in markets is one of the most serious problems for fish preservation. Ice is fundamental for good quality fish storage and preservation. Having ice readily available on the premises would facilitate the enhancement of appropriate fish handling. It is therefore necessary to establish a sufficient number of ice factories for marketing of quality fish.

- **Hygiene and quality:** there seems to be very limited knowledge amongst fishermen, traders and intermediaries with regard to sanitary standards and fish quality. It is also imperative that the fish markets are kept clean. Proper management with regard to day-to-day maintenance of the premises from a sanitary point of view has to be ensured. Improvements to hygienic conditions of fish landing centers and markets are essential for producing good quality products. Thus, training of fish market operators in areas of preservation, handling, icing and curing should be provided.

- **Government policy:** a positive policy at government level should be considered for sustainable marine fish marketing systems.

Table V: SWOT Analysis for the Development of Marine Fish Marketing Systems

Strengths	Weakness
• Diverse of marine fisheries resources • Almost all Bangladeshi people eat fish • Large number of people involve in fish marketing • Traditional and less competitive marketing systems • Strong network of market operators • Environmentally friendly activities	• Poor market infrastructure • Unhygienic conditions • Inadequate ice facilities • Lack of concern from the government and NGOs • Weak fishermen's cooperative societies and traders' associations • Poor socio-economic conditions of traders and associated groups
Opportunities	**Threats**
• High demand for marine fish • Employment opportunities • Export potential • Increase in fish price will increase incomes • Improvement of socio-economic conditions of poor market operators	• Inadequate supply of fish • Controlled by powerful intermediaries • Comparatively long marketing chain • Higher marketing costs • Lower marketing profits • Almost total lack of credit facilities

Source: Survey data (2005)

CONCLUSIONS

Marine fish marketing plays an important role in the economy of Bangladesh, contributing to increased food production, diverse the economy, increased employment opportunities, and maintained rural communities. However, concerns arise about the long-term sustainability of marine fish marketing due to poor road and transport facilities, lack of money and credit facilities, poor supplies of ice, poor institutional support and inadequate extension services. It is therefore necessary to provide institutional and organizational support, government support, extension 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.

ACKNOWLEDGEMENTS

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