

Fish Availability and Marketing System at Three Markets in Barisal, Bangladesh

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ABSTRACT: The fish availability and marketing system at three markets in Barisal were studied for a period of twelve months from August 2012 to July 2013. Data were collected through questionnaire interviews and focus group discussions. A total number of 64 fish species were recorded in the three markets during the study period. Among them highest amounts were ilish (39%) and lowest amounts were Thai koi (2%). About 85% of the fishes were brought from different rivers and ponds of the Barisal region and only 15% from Mymensingh, Jessor, Satkhira and from India (major carps). The marketing channel from fishermen/fish farmer to consumers passes through a number of intermediaries such as local *paikers/aratdar/mahajan* (local agent), wholesalers and retailers. The average gross profit of fish retailers in Port Road Bazar, Natun Bazar and Lakhutia Bazar were estimated as BDT 950/day, BDT 750/day and BDT 400/day (1 US\$=78 BDT), respectively. Lack of storage facilities, poor supply of ice, exploitation by middlemen, lack of money and infrastructure were the common constraints of the fish marketing.

KEYWORDS: Fish availability Fish marketing system, Fish retailers and Constraints.

1 INTRODUCTION

Bangladesh is blessed with rich extensive inland and marine fisheries potential resources with a wide variety of indigenous and exotic fish fauna. Fisheries sector represents one of the most productive and dynamic sectors in Bangladesh. The fisheries sector contributes about 60% of animal protein to the daily diets of the population, about 4.39% to GDP and 22.7% to agriculture. The sector has been earning substantial amount of foreign exchange and at present 2.46% of the country's export earning comes from this sector. This sector provide full time employment of 1.4 million professional fishers and fish farmer, and 11 million part-time fishers, fish farmer and women, which is about 11% of total population [1]. Barisal city is situated on the bank of the Kirtonkhola River and in the riverine way it is about 161 km from the capital city Dhaka. The noted rivers in the region are Lower Meghna, Arial khan, Kalabadar, Sahabajpur, Kirtankhola, Tetulia, Shandha and Amtali. A large amount of fishes are namely ilish, chingri, poa, bila, koral, pangus, ramsosh, tulardati, air, rita transported to Barisal town from these riverine areas. From pond and floodplain areas of the region a remarkable quantity of Indian major carps, shing, magur, koi are transported to Barisal. Barisal is interconnected with the capital and other adjacent districts by roads and highways and different river channels. In Bangladesh, fish marketing is almost exclusively a preserve of the private sector where the livelihoods of a large number of people are associated with fish production and marketing systems. Four distinct tiers viz. primary, secondary, higher secondary and retailer market of marketing systems are observed in the process of distribution of fishes in Bangladesh [2]. Fish collectors, commonly known as *Mahajan* or *Aratdar* procure fish from the catchers, with the help of local brokers who get a profit margin or commission from the *Mahajan*. However, the most serious marketing difficulties seem to occur in the remote communities which lack transport and ice, poor road facilities and where the farmers are in a particularly weak position in relation to intermediaries [3]. Several studies have already been carried out to explore the marketing system and the socio-economic condition of the poor retailers [4-8], but no or limited information is documented about the Barisal. Therefore, the present study was undertaken to understand the existing fish availability and marketing systems at three markets in Barisal.

2 MATERIALS AND METHODS

2.1 STUDY AREA

There are several fish markets in Barisal sadar upazila from them three important fish market were selected, namely Port Road Bazar, Natun Bazar, and Lakhutia Bazar. These three fish markets were selected for the study after discussion with the fishermen, fish traders, District Fisheries Officer, Upazila Fisheries Officers and NGO workers who are working with fisheries sector, based on market history, number of fish traders, duration of marketing time, season etc. The study was carried out for a period of one year from August 2012 to July 2013.

2.2 METHODOLOGY

For this study a combination of questionnaire interview, Focus Group Discussions (FGD) and crosscheck interviews were conducted with key informants such as Upazilla Fisheries Officer, Local leaders and NGOs workers. A total of 60 fish retailers were randomly chosen for questionnaire interviews from the three markets i.e. 20 in Port Road Bazar, 20 in Natun Bazar and 20 in Lakhutia Bazar. In addition, a total of 60 consumers were interviewed at the fish market, home or office with questionnaires.

2.3 DATA ANALYSIS

Tabular technique was applied for the analysis of data by using simple statistical tools like average and percentage by Microsoft Excel.

3 RESULTS

3.1 FISH SPECIES AVAILABILITY

During the study period, a total number of 64 fish species were recorded in the three markets (Table 1). Among them highest number (40-64) of fish species was recorded during the rainy season and lowest number of fish species (18-32) was recorded in winter and summer season in three markets (Fig. 1). It is noted that maximum number of fish species was recorded in the Port Road Bazar in all the season compared to Nutan Bazar and Lakhutia Bazar.

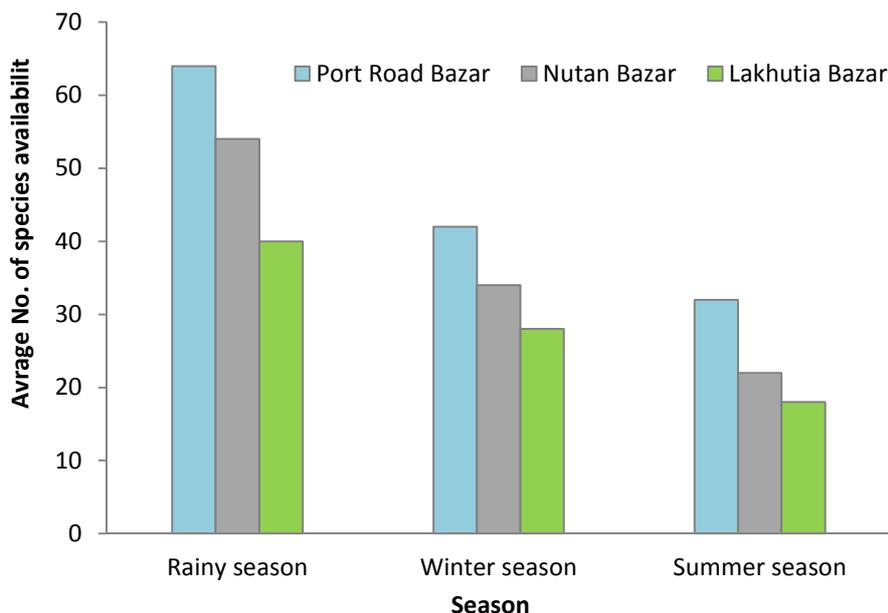


Fig.1. Availability of fish species in three different markets of Barisal

Table 1. List of fish species available during the study period in the three markets

SL NO.	FAMILY	SPECIES NAME	ENGLISH NAME	LOCAL NAME
1	Clupeidae	<i>Tenualosa ilisha</i>	Hilsa Shad	Ilish
2		<i>Tenualosa toil</i>	Toli Shad	Chandana ilish
3		<i>Gudusia chapra</i>	Indian River Shad	Chapila
4		<i>Corica soborna</i>	Ganges river sprat	Kachki
5	Gobiidae	<i>Glossogobius giuris</i>	Tank Goby	Bele
6		<i>Pseudapocryptes elongatus</i>		Chewa
7		<i>Awaous guamensis</i>	Pacific River Goby	Bila
8	Mugilidae	<i>Liza parmata</i>	Broad-mouthed Mullet	Bata
9	Sciaenidae	<i>Otolithoides pama</i>	Patna Croaker	Poa
10	Sillaginidae	<i>Sillaginopsis panijus</i>	Flathead Sillago	Tulardati
11	Bagridae	<i>Mystus gulio</i>	Long Whiskers Catfish	Gulsha Tengra
12		<i>Mystus vittatus</i>	Striped Dwarf Catfish	Tengra
13		<i>Rita rita</i>	Whale Catfish	Rita
14		<i>Sperata aor</i>	Long Whiskered catfish	Aor
15	Cyprinidae	<i>Amblypharyngodon idella</i>	Mola Carplet	Mola
16		<i>Salmostoma phulo</i>	Finescale Razorbelly Minnow	Chela
17		<i>Labeo rohita</i>	Rohu	Rui
18		<i>Catla catla</i>	Catla	Catla
19		<i>Cirrhinus cirrhosous</i>	Mirgal	Mirgal
20		<i>Labeo bata</i>	Bata	Bata
21		<i>Labeo calbasu</i>	Orange-fin Labeo	Calibaus
22		<i>Osteobrama cotio</i>	Barb	Dhela
23		<i>Esomus danricus</i>	Flying barb	Darkina
24		<i>Puntius ticto</i>	Ticto Barb	Tith Puti
25		<i>Puntius sarana</i>	Olive Barb	Sharputi
26		<i>Puntius sophore</i>	Pool Barb	Puti
27		<i>Barbonymus gonionotus</i>	Silver barb	Raj puti
28		<i>Ctenopharyngodon idella</i>	Grass carp	Grass carp
29		<i>Cyprinus carpio</i>	Common carp	Common carp
30		<i>Hypophthalmichthys molitrix</i>	Silver carp	Silver carp
31		<i>Aristichthys nobilis</i>	Bighead carp	Bighead carp
32	Notopteridae	<i>Chitala chitala</i>	Clown Knifefish	Chital
33		<i>Notopterus notopterus</i>	Bronze Featherback	Foli
34	Clariidae	<i>Clarias hatrachus</i>	Walking Catfish	Magur
35	Heteropneustidac	<i>Heteropneustes lbssilis</i>	Stinging Catfish	Shingh
36	Pangasidae	<i>Pangasius pangasius</i>	Yellowtail Catfish	Deshi pangus
37		<i>Pangasius hypophthalmus</i>		Thai pangus
38	Schilbcidae	<i>Ailia coda</i>	Gangetic Ailia	Kajuli
39		<i>Silonia silondia</i>	Silond Catfish	Shilong
40	Siluridae	<i>Ompok pabda</i>	Pabdah Catfish	Pabdah
41		<i>Wallago attu</i>	Freshwater Shark	Boal
42	Mastacembelidac	<i>Macragnathus aculeatus</i>	Lesser Spiny Eel	Tara baim
43	Synbranchidae	<i>Monopterus cuchia</i>	Cuchia	Kuchia
44	Ambassidae	<i>Chanda nama</i>	Elongate Glass Perchlet	Chanda
45	Anabantidae	<i>Anabas testuclineus</i>	Climbing Perch	Koi
46	Centropomidae	<i>Lates calcarifer</i>	Giant Perch	Coral
47	Channidae	<i>Channa punctata</i>	Spotted Snakehead	Taki
48		<i>Channa striata</i>	Snakehead Murrel	Shol
49		<i>Channa martdius</i>	Great Snakehead	Gojar
50		<i>Channa gachua</i>	Dwarf Snakehead	Cheng

51	Nandidae	<i>Nandus nandus</i>	Gangetic Leaffish	Vedah
52	Osphronemidae	<i>Colisa fasciata</i>	Banded Gourami	Kholisha
53	Stromatidae	<i>Pampus chinensis</i>	Chinese Pomfret	Rupchanda
54	Trichiuridae	<i>Eupleurogrammus muticus</i>	Smallhead Hairtail	Suri
55	Belonidac	<i>Xenentodon cancila</i>	Asian Needlefish	Kakila
56	Hemiramphidae	<i>Dermogenys brachynotopterus</i>	Gangetic Halfbeak	Ak thota
57	Tetraodontidae	<i>Tetraodon patoca</i>	Green Pufferfish	Potka
58	Dasyatidae	<i>Dasyatis zugei</i>	Pale-edged stingray	Sapla pata
59	Engraulidae	<i>Thryssa hamiltonii</i>	Hamilton's Thryssa	Ramsos
60	Syndontidae	<i>Harpodon nehereus</i>	Bombay duck	Loitta
61	Scombridae	<i>Scombermorus guttatus</i>	Indo Pacific Mackerel	Surma
62				Botol/Mochon
63	Crustacean	<i>Macrobrachium rosenbergii</i>	Giant river prawn	Golda Chingri
64		<i>Macrobrachium esculentum</i>	Sweet river prawn	Icha

3.2 FISH SPECIES COMPOSITION IN THREE MARKETS

Percent composition of different fish species in the three markets are shown in Figure 2, 3 & 4. Highest amounts (43%) of ilish were recorded in the Port Road Bazar and highest amounts (12%) of catfish were recorded in the Natun Bazar. On the other hand, highest amounts of carps (13%) and SIS (17%) were recorded in the Lakhutia Bazar. It was estimated that a major portion of the fish (39%) found in the three markets was ilish. Besides ilish, small quantities of other fishes such as Indian major carps and minor carps (11%), catfishes (10%), small indigenous fish (15%), prawn and shrimp (6%), marine fish (7%), Thai pangus (6%), tilapia (4%), and Thai koi (2%) were found in the three markets (Figure 2, 3 & 4).

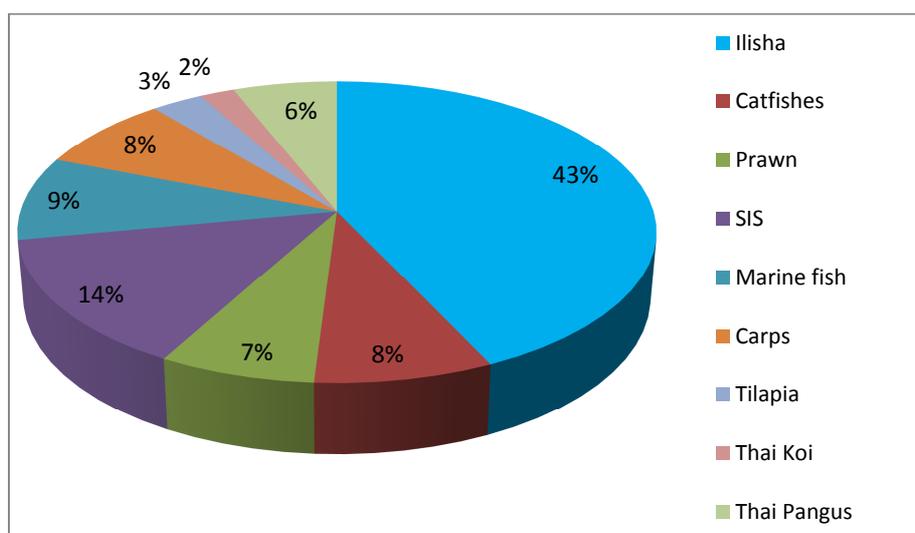


Fig. 2. Percent composition of different fishes in Port Road Bazar of Barisal

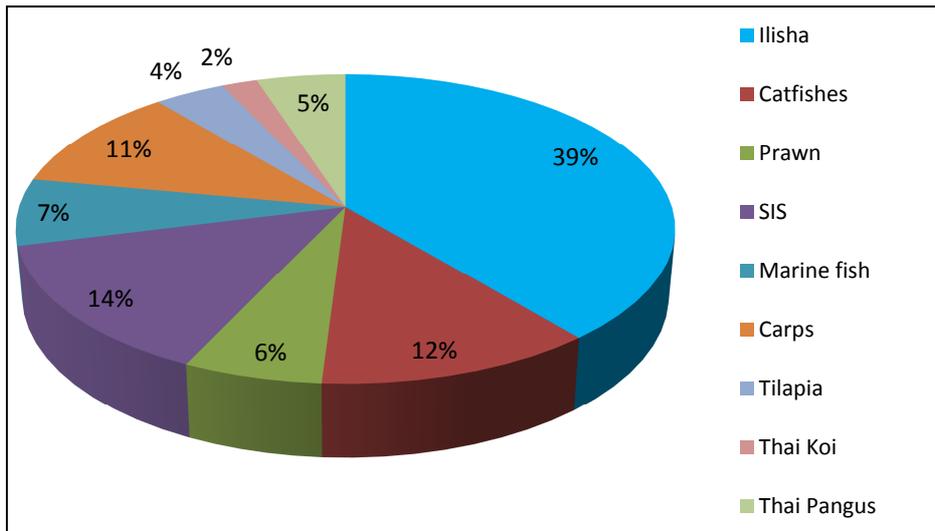


Fig. 3. Percent composition of different fishes in Natun Bazar of Barisal

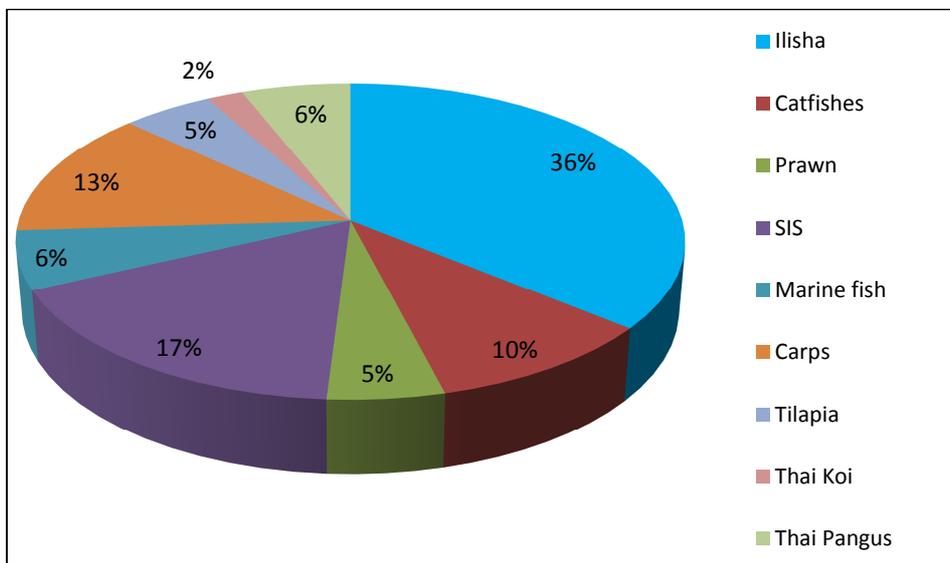


Fig. 4. Percent composition of different fishes in Lakhutia Bazar of Barisal

3.3 FISH DISTRIBUTION AND MARKETING SYSTEM

Almost similar market chains were observed in the three markets during the study period. A number of middlemen were found to be involved between farmers and consumers in fish marketing system. The market chain from farmers to consumers passes through a number of intermediaries, such as local fish traders (*paikers*), wholesalers and retailers and found four types of marketing chain (Fig. 5).

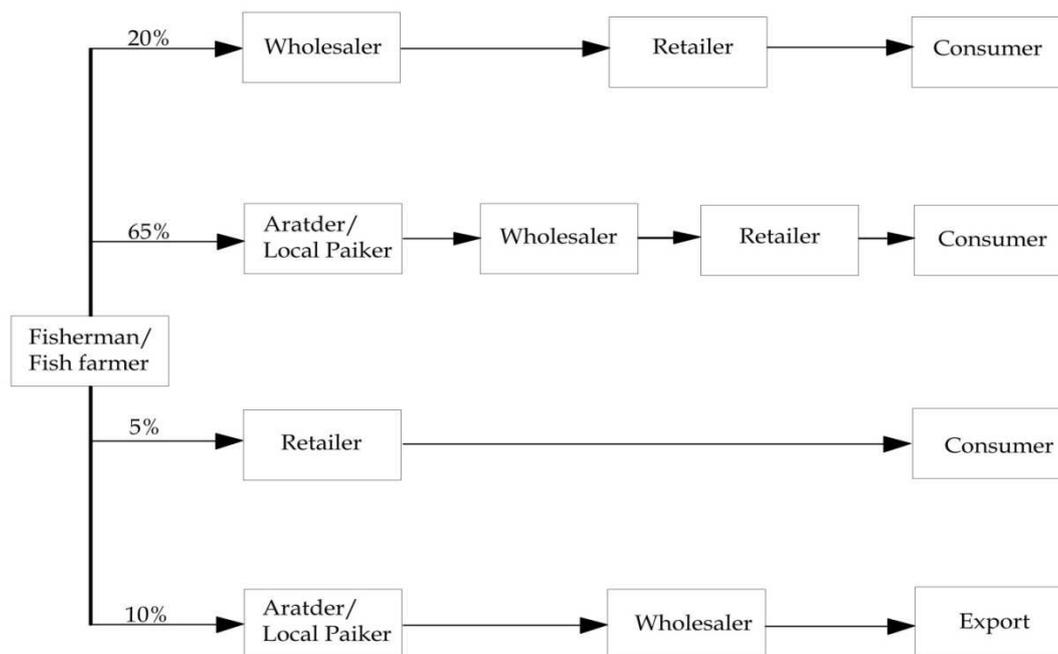


Fig. 5: Fish marketing chain in three fish markets of Barisal

3.4 SUPPLY OF FISH IN THE MARKETS

Most of the fish (85%) are brought from different rivers and ponds of the Barisal region (Sadar upazila, Mohipur, Patuakhali, Bhola, Pirojpur, Mehendigonj, Agouljara) and small parts (15%) from Jessore, Satkhira and Mymensingh region (especially Thai pangus, tilapia shing, magur, sarpunti, Thai koi) and Indian major carp from India (Table 2).

Table 2. Market shares of main fish species in three different fish markets

Fish	Port Road Bazar (%)	Natun Bazar (%)	Lakhutia Bazar (%)	Average (%)	Source of fish (%)
Ilish	43	39	36	39.33	Barisal region (85%)
Catfishes	8	12	10	10	
Prawn	7	6	5	6	
Small indigenous species (Mola, Bata, Bele, Poa, Tulardati, Ramsosh, Puti, Sarputi, Taki etc.)	14	14	17	15	
Marine fish (Rup chanda, Surma, Suri, Medh, Mochon)	9	7	6	7.33	
Local pond Carps	4	7	11	7.33	
Carps (Indian major carps & exotic carps)	4	4	2	3.33	Outside of Barisal (15%)
Tilapia	3	4	5	4	
Thai koi	2	2	2	2	
Thai pangus	6	5	6	5.66	
Total	100	100	100	100	

3.5 DAILY FISH TRADING AT THREE MARKETS

Daily fish trading in three markets are shown in Table 3. It was found that in Port Road Bazar fish trading occurs from 8 am to 5 pm, whereas in Natun Bazar it was 8 am to 10 am in the morning and 5 pm to 7 pm in evening. On the other hand, in Lakhutia Bazar, fish trading occurs only in the morning from 7 am to 10 am.

Table 3. Time of fish trading in three different markets of Barisal

Market Name	Time of fish trading		
	Morning	Noon	Evening
Port Road Bazar	8 am – 5 pm		
Natun Bazar	8 am – 10 am	×	5 pm – 7 pm
Lakhutia Bazar	7 am – 10 am	×	×

3.6 PRICE OF FISH

The price of fish varied with season, availability, size and quality. It is also varied with live or death condition especially shing, magur, koi, shol, taki, pangus etc. Among the three markets Port Road Bazar showed the lower prices of all kinds of fishes either native or exotic and captured or cultured compared to the other two markets (Table 4).

Table 4. The price of some important fish species in three different markets of Barisal

Most available Fishes	Price (BDT/kg)		
	Port Road Bazar	Natun Bazar	Lakhutia Bazar
Ilish (Medium) (<i>Tenualosa ilisha</i>)	400-500	420-550	500-550
Ilish (Large)	550-600	600-650	600-700
Prawn (Small size) (<i>Macrobrachium sp.</i>)	250-300	300-350	250-300
Prawn (Medium size)	380-420	400-500	400-450
Bele (<i>Glossogobius giuris</i>)	400-450	450-500	450-480
Tulardati (<i>Sillaginopsis panijus</i>)	250-300	280-350	300-380
Poa (<i>Otolithoides pama</i>)	180-250	200-280	250-300
Coral (<i>Lates calcarifer</i>)	350-400	350-400	400-450
Rita (<i>Rita rita</i>)	300-400	350-400	380-420
Ramsosh (<i>Thryssa hamiltonii</i>)	200-250	250-280	200-300
Shing (<i>Heteropneustes fossilis</i>)	400-450	450-600	450-550
Magur (<i>Clarias batrachus</i>)	400-450	450-600	450-550
Tilapia (<i>Oreochromis sp.</i>)	80-150	100-180	80-150
Rupsha	150-180	180-200	180-220
Surma	100-120	100-150	120-150
Rupchanda (<i>Pampus chinensis</i>)	200-300	250-350	250-300
Rui (<i>Labeo rohita</i>)	120-200	140-200	130-150
Catla (<i>Catla catla</i>)	140-180	150-220	120-220
Koi (<i>Anabas testudineus</i>)	150-220	150-250	200-300

(1 US\$=78 BDT)

3.7 DAILY AVERAGE GROSS PROFIT OF THE FISH RETAILERS

The average gross profit of fish retailers in Port Road Bazar, Natun Bazar and Lakhutia Bazar were estimated as BDT 950/day, BDT 750/day and BDT 400/day, respectively (Fig. 6).

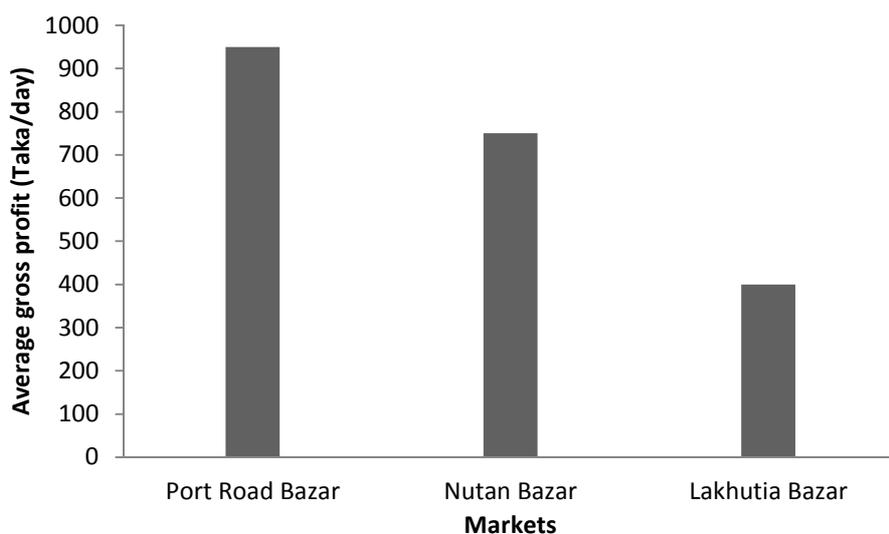


Fig. 6: Average daily profit of retailers in three markets of Barisal

3.8 CONSTRAINTS OF FISH MARKETING

A number of constraints for fish marketing were reported by the retailers. The highest proportion of respondents (26.67%) identified lack of infrastructure and 25% of respondents identified as lack of storage facilities as the main constraint of fish marketing. 21.67% respondent identified exploitation by middlemen, 11.67% identified poor supply of ice and 15% identified lack of money (Table 5).

Table 5. Key constraints for fish marketing by retailers

Constraints	Port Road Bazar (n = 20)	Natun Bazar (n = 20)	Lakhutia Bazar (n = 20)	Total (n = 60)
Lack of storage facilities	8 (40%)	5 (25%)	2 (10%)	15 (25.00%)
Exploitation by middlemen	6 (30%)	5 (25%)	2 (10%)	13 (21.67%)
Poor ice supply	3 (15%)	2 (10%)	2 (10%)	7 (11.67%)
Lack of money	2 (10%)	3 (15%)	4 (20%)	9 (15.00%)
Lack of infrastructure	1 (5%)	5 (25%)	10 (50%)	16 (26.67%)
Total	20 (100%)	20 (100%)	20 (100%)	60 (100%)

4 DISCUSSION

The present investigation was conducted to know the fish availability and marketing system at three markets in Barisal. A total number of 64 fish species were recorded during the study period in the three markets. In another study, a total number of 38 fish species [9] were recorded which is lower than the present study. This might be due to a considerable number of marine fish species were found in the three markets during the study period. It was estimated that a major portion of the fish (39%) found in the three markets was Ilish as because Barisal is in the coastal region of the country. Besides ilish, small quantities of other fishes such as Indian major carps and minor carps (11%), catfishes (10%), small indigenous fish (15%), prawn and shrimp (6%), marine fish (7%), Thai pangus (6%), tilapia (4%), Thai koi (2%) were found in the markets. Most of the fish (85%) are brought from different rivers of the district and the remaining part from Mymensingh, Jessore and Satkhira region (especially Thai pangus, carps, tilapia, shing, magur, sarpunti) and large sized Indian major carp from India. About half of the fish (48%) supplied in the markets was Indian major carps, minor carps and exotic carps, whereas Ilish was in small quantities (8%) in Mymensingh [7]. This might be due to that Mymensingh is far away from the coastal region. Moreover, supply of fish depends upon the demand of fish [10] also cause of variation in the supply of fish in different market.

The fish marketing chain from farmer to consumer passes through a number of intermediaries such as, local fish trader, *aratdar*, wholesalers and retailers. In the present study four types of marketing channels were observed in the Port Road Bazar and three types of channels were observed in Natun Bazar and Lakhutia Bazar. Several types of marketing channels

were observed in Netrokona, Mymensingh and Gazipur district [11]. Presence of intermediaries has also been reported in other parts of Bangladesh and India ([4-5]). The average gross profit of fish retailers in Port Road Bazar and Natun Bazar was estimated at BDT 950/day, and at BDT 750/day while retailers in Lakhutia Bazar was at BDT 400/day. The average gross profit of fish retailers in Nutun Bazar, Mymensingh was BDT 540 per day [12]. Among the 60 respondents, 70% retailers could improve their socioeconomic conditions whereas 30% could not improve their previous socioeconomic conditions due to lack of capital, failure of payment of bank loan in time or damage of crops or household by natural disasters. More or less similar findings were reported in the fish markets at Mymensingh [7]. The fish market and marketing system of Barisal were found to be manifested with a large number of problems. These were lack of storage facilities, lack of infrastructure, exploitation by middlemen, poor supply of ice and lack of money etc. The above problems regarding fish marketing were also reported by a number of authors ([5], [6], [11], [13]). On the basis of findings of the study the following recommendations have been made for the improvement of existing marketing of fishes:

- Cold storage should be constructed so that the fishermen/fish farmer, *Aratdar* and wholesaler can preserve their fish.
- Establishment of ice factories for sufficient supply for fish preservation.
- Improvement of fish transport, handling and shipment facilities.
- Modern communication system and availability of adequate market information should be introduced to remove unreliable price information.
- Water and electricity supply as well as drainage facilities should be improved at the market place to keep a healthy atmosphere for fish trading.
- Institutional credit can be provided on easy term for the retailers at their crisis moment.
- Government may fix the commission of *Aratdars* so that they cannot charge unreasonable commission for their service.

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