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ORIGINAL RESEARCH ARTICLE



Study on fish marketing system of some fish species in Hobiganj District, Bangladesh

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ABSTRACT

The study was conducted on fish marketing system of Hobiganj sadar upazila to look out the existing marketing channels of some fresh fish species and to explore marketing cost and income of wholesalers and retailers in the study areas. The present investigation was carried out for a period of July 2019 to November 2019 mainly in three different markets of Hobiganj sadar town of Bangladesh. A total of 60 fish traders were selected randomly and data were collected through direct interview utilizing a well-structured questionnaire. The study pointed that in supply chain about only 5% customers received fish from fish farmers directly and rest 95% fishes arrived to the consumer levels through intermediaries. About 60% fish species were come locally and 40% came from different portions of the country. Fish of most priceable and high consumer preference were Air and Ilish due to its good taste on the other hand Tilapia and Pungas were the less priceable and low consumer preference fish in the surveyed areas because of their bad odour and low taste. The net margin of piker, wholesaler and retailer were 690 Tk. (\$8.14), 350 Tk. (\$4.13), 830 Tk. (\$9.79) quintal-1 whereas gross margin was 900 Tk (\$10.62), 500 Tk. (\$5.90) and 1000 Tk. (\$11.80) quintal-1, respectively and these were satisfactory for their daily livelihood. Traders faced numerous problems such as poor drainage, security, electricity, icing, personal expense, unhygienic environment and transportation etc. To develop the facilities of fish marketing is crucial by improving fish transport facilities, establish ice factory and to introduce fish quality monitoring unit.

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INTRODUCTION

Bangladesh is blessed with paramount open water resources with an immense range of aquatic diversity. Fish is the major source of animal protein consumption in Bangladesh contributing about 60 percent of the per capita protein intake in the diet of the people of Bangladesh. To make fish accessibility to consumers at the right time and in the proper place necessitate an effective marketing system. According to Adrika (1977) marketing performs so many roles in an economic system which includes: links buyers and sellers, thus makes it possible for exchange relationship; enhance the way of living; aggressive marketing has been largely accountable for the high marital standard of living of most advanced economics. Marketing

provides a communication between the producers and consumers and the system is operated by a number of intermediaries (Monir *et al.*, 2013). Because of high demand and scarcity of riverine fishes and with the development of communication system the marketing system of these fishes are changing rapidly and the livelihood of fishermen who are engaged in fishing and marketing of fish from the rivers are affected due to lack of proper marketing system and are not getting fair price Amin and Nabi (2019). There has been a long marketing chain followed for fresh and processed fish all around the country. According to Kleih *et al.* (2001) the fish market structure depends from area to area, but in general it can be of four types such as primary, secondary, higher secondary and final consuming market. The engagement of huge numbers of middlemen and commission

agents eventually increases the price of the fish products (Ahmed *et al.*, 1993; Mazid, 1994) where the consumers buy the products at a higher price. It is true that the wholesalers are influential persons in the fish markets and they have a strong relationship with other intermediaries (Uddin *et al.*, 2018). Fisheries sector of Bangladesh has shown outstanding growth in recent years and ranks fourth in the world in terms of total fish production and contributes around 3.69% of the country's Gross Domestic Products (GDP) and 22.60% in agricultural GDP (DoF, 2015). With fourth position in fisheries, the country has high potentials in the sector for rural development, domestic nutritional security, employment generation, gender mainstreaming as well as export earnings (Rahman *et al.*, 2016). It has been essential to understand the current status of marketing of fishes for betterment of the existing condition. Major constraints prevailing in the fish marketing channels were reducing fishing areas, decreasing fish catch per day per fishermen, disturbance by illegal seasonal fishermen, scarce of bargaining power and market information, short of proper fish storage and preservation facilities in the fishing craft and fish markets, wastage of fish due to spoiling during transportation, sanitations, drainage and management problems within the market areas (Amin and Nabi, 2019). Without developing fish marketing system, fisheries sector and fishermen lifestyle will not be developed up to a satisfactory level (Islam *et al.*, 2015). However, many researchers have been observed to be studied about the marketing situation in Bangladesh and foreign country. But no such effort was being associated in Hobiganj region of Bangladesh. Hence, the study was conducted mainly in three fish market in Habiganj Sadar upazila, in Hobiganj district of Bangladesh. The main purpose of this investigation was to evaluate the status of fish marketing in terms of sources and availability of species, marketing channels, price analyses, and existing restrains through field investigation.

MATERIALS AND METHODS

The study was conducted mainly in three fish market of Hobiganj Sadar Town for a period of five months from July 2019 to November 2019. Over the study periods, a total of eight (8) fish species were selected and try to know about their market prices and the marketing channel. These fish species were Rohu (*Labeo rohita*), Shorpunti (*Puntius sarana*), Silver carp

(*Hypophthalmichthys molitrix*), Air (*Sperata aor*), Ilish (*Tenualosa ilisha*), Tilapia (*Oreochromis niloticus*), Golda (*Macrobrachium rosenbergii*), Pungas (*Pangasius Pangasius*). Total 30 fish traders and 30 customers were interviewed that were selected randomly 20 persons from each market. A questionnaire was prepared in English but they were asked in Bengali as well as in their local language as much as possible. Cross-check information was collected with key informants such as local leaders, Upazila Fisheries Officer (UFO) and relevant NGO workers. They were particularly erudite on particular topic and were expected to be able to provide facts against any ambiguity of information. The Respondents were asked about the overall marketing condition, supply and demand of fish, storage condition, sources, price, peak season of marketing, etc. After that all the data were summarized and tabulated. At the end, by using computer software Microsoft Excel entire tabulated data were analyzed.

RESULTS AND DISCUSSION

Fish markets scenario

Shayestanagar fish market, Chowdhury bazar fish market and Cinema Hall Road fish market is the principal and most popular fish market in the Hobiganj district. Fish markets scenario in Hobiganj is given in (Table 1). Generally, Shayestanagar fish market is a wholesale market and also retail market open at 7am and close at 8pm whereas other markets like Chowdhury bazar fish market and Cinema Hall Road fish market start marketing activities mainly at 8am and close at 9pm. There are about 45 Wholesaler and 79 retailers were found in Shayestanagar fish market, 88 retailers in Chowdhury Bazar and 85 in Cinema Hall Road Bazaar. Communications system was observed Good for all fish markets. Cemented drainage system was found more or less moderate. Availability of electricity were found in all markets. Ice and water facility were adequate in district fish markets. But overall sanitation and drainage system were found unsatisfactory level which reported as not only detrimental to health of fish sellers and fish buyers but also create a dirty market platform which is unaccepted. The same findings were supported by Uddin *et al.* (2018) and Kumar *et al.* (2008) who reported that infrastructure facilities drainage system and sanitation conditions of fish markets were found grossly inadequate and maintained poorly.

Table 1. General characteristics about the studied fish markets in Hobiganj.

Market Facilities	Shayestanagar fish market	Chowdhury bazar fish market	Cinema Hall Road fish market
Market type	Whole sale and retail both Bazar	Retail Bazar	Retail Bazar
No. of shop	Whole sale 45, retail 79	88	85
Market time	7 am - 8 pm	8pm- 9 pm	8am - 9pm
Platform	Absent or Cemented or iron made	Cemented	Cemented
Shade	Tin shed or absent	Tin shed	Cemented roof
Electricity	Present	Present	Present
Ice facility	Present	Present	Present
Water supply	Available	Available	Available
Sanitation	Very Poor	Very Poor	Poor
Drainage	Present but moderate	moderate	moderate
Communication system	Good	Good	Good

Table 2. Scientific name, local name, order and family of fresh fish species recorded in all the studied markets during the study period.

Scientific name	Local name	Order	Family
<i>Labeo rohita</i>	Rui	Cypriniformes	Cyprinidae
<i>Cirrhinu scirrhosis</i>	Mrigal	Cypriniformes	Cyprinidae
<i>Ctenopharyngodon Idella</i>	Grass carp	Cypriniformes	Cyprinidae
<i>Aristichthys nobilis</i>	Bighead carp	Cypriniformes	Cyprinidae
<i>Macrobrachium rude</i>	Kuchechinghri	Decapoda	Palaemonidae
<i>Macrobrachium rosenbergii</i>	Golda	Decapoda	Palaemonidae
<i>Notopterus chitala</i>	Chitol	Osteoglossiformes	Notopteridae
<i>Mastacembelus armatus</i>	Baim	Synbranchiformes	Mastacembelidae
<i>Mastacembelus pancalus</i>	Guchibaim	Synbranchiformes	Mastacembelidae
<i>Macragnathus aculeatus</i>	Tarabaim	Synbranchiformes	Mastacembelidae
<i>Bagarius bagarius</i>	Bagaaair	Siluriformes	Sisoridae
<i>Sperata seenghala</i>	Guizza Air	Siluriformes	Bagridae
<i>Sperata aor</i>	Air	Siluriformes	Bagridae
<i>Mystus vittatus</i>	Tengra	Siluriformes	Bagridae
<i>Mystus cavasius</i>	Gulsha	Siluriformes	Bagridae
<i>Ailia coila</i>	Kajuli	Siluriformes	Schilbeidae
<i>Eutropichthys vacha</i>	Bacha	Siluriformes	Schilbeidae
<i>Neotropius atherinoides</i>	Batashi	Siluriformes	Schilbeidae
<i>Clarias batrachus</i>	Magur	Siluriformes	Clariidae
<i>Heteropneustes fossilis</i>	Shing	Siluriformes	Heteropneustidae
<i>Ompok pabda</i>	Pabda	Siluriformes	Siluridae
<i>Wallago attu</i>	Boal	Siluriformes	Siluridae
<i>Chanda nama</i>	Lambachanda	Perciformes	Ambassidae
<i>Pseudambassis baculis</i>	Chanda	Perciformes	Ambassidae
<i>Parambassis lala</i>	Lalchanda	Perciformes	Ambassidae
<i>Glossogobius giuris</i>	Bele	Perciformes	Gobiidae
<i>Colisafa sciatus</i>	Kolisha	Perciformes	Anabantidae
<i>Anabas testudineus</i>	Koi	Perciformes	Anabantidae
<i>Nandus nandus</i>	Veda	Perciformes	Nandidae
<i>Channa orientalis</i>	Cheng	Perciformes	Channidae
<i>Channa punctatus</i>	Taki	Perciformes	Channidae
<i>Channa striatas</i>	Shol	Perciformes	Channidae
<i>Channa marulius</i>	Gozar	Perciformes	Channidae
<i>Tetraodon cutcutia</i>	Potoka	Tetraodontiformes	Tetraodontidae
<i>Monopterusuchia</i>	Kuchia	Synbranchiformes	Synbranchidae
<i>Xenentodon cancila</i>	Kankila	Beloniformes	Belonidae
<i>Hyporhamphus limbatus</i>	Ek Thuita	Beloniformes	Hemirhamphidae
<i>Amblypharyngodon mola</i>	Mola	Cypriniformes	Cyprinidae
<i>Puntius sophore</i>	Jatpunti	Cypriniformes	Cyprinidae
<i>Puntius sarana</i>	Shorpunti	Cypriniformes	Cyprinidae
<i>Puntius ticto</i>	Tit punti	Cypriniformes	Cyprinidae
<i>Labeo bata</i>	Bata	Cypriniformes	Cyprinidae
<i>Labeo gonius</i>	Goinia	Cypriniformes	Cyprinidae
<i>Osteobrama cotio</i>	Dhela	Cypriniformes	Cyprinidae
<i>Tenualosa ilisha</i>	Ilish	Clupefomes	Clupeidae
<i>Gudusia chapra</i>	Chapila	Cypriniformes	Clupeidae
<i>Corica soborna</i>	Kachki	Cypriniformes	Clupeidae
<i>Lepidocephalichthys guntea</i>	Gutum	Cypriniformes	Cobitidae
<i>Botia Dario</i>	Rani	Cypriniformes	Cobitidae

Table 3. Average retail price (Tk. Kg⁻¹) of eight selected fishes in different markets in Hobiganj Sadar district.

Fish species	Shayestanagar fish market (Tk.kg ⁻¹) (USD)	Chowdhury bazar fish market (Tk.kg ⁻¹) (USD)	Cinema Hall Road fish market (Tk.kg ⁻¹) (USD)
Rui	225 (2.65)	231 (2.72)	267.2 (3.15)
Silver carp	247.6 (2.92)	312.2 (3.68)	296.6 (3.50)
Air	561 (6.62)	561.2 (6.62)	661.6 (7.80)
Shorpunti	242.2 (2.86)	249.8 (2.95)	244 (2.88)
Ilish	550.2 (6.49)	632.6 (7.46)	747.4 (8.82)
Tilapia	126.4 (1.49)	143.8 (1.70)	162 (1.91)
Golda	554 (6.53)	626.6 (7.39)	616.8 (7.28)
pungas	117.4 (1.38)	115.2 (1.36)	145.9 (1.72)

Table 4. Marketing margin of intermediaries (Tk.quintal⁻¹ of fishes) in Hobiganj Sadar Town.

Intermediary	Purchase price (B) tk. (USD)	Sell price (A) tk. (USD)	Gross Margin C=(A-B) tk. (USD)	Marketing cost (D) tk. (USD)	Net margin (E)=(C-D) tk. (USD)
Paiker	8300 (97.90)	9200 (108.51)	900 (10.62)	210 (2.48)	690 (8.14)
Wholesaler	9200 (108.51)	9700 (114.41)	500 (5.90)	150 (1.77)	350 (4.13)
Retailer	9700 (114.41)	10700 (126.21)	1000 (11.80)	170 (2.01)	830 (9.79)

Sources of fishes and availability fishes in study area

The present study revealed that most of the fishes 60% come from the local areas (Sunamganj, Azmiriganj, Baniachong, Hobiganj, Nobiganj, Lakhai, Moulovibazar, Srimangle, Sylhet division etc.) and only 40% come from outside mainly from Jessore, Khulna, Bagerhat, Satkhira, Barisal, Raj Shahi, Mymensingh, Chandpur, Chittagong but the study of Uddin *et al.* (2018) showed a wide differences that 85% is imported from outside where the local supply of fish is only 15%. Mainly the big sizes fishes are coming from the outside districts but small sizes fish demands are to be fulfilled by the local waterbodies like lake, ponds, small hoar or seasonal water bodies from Hobiganj districts. An effort had been made to find out available fish which were accomplished by a number of fish intermediaries in Hobiganj sadar. There is a list of fresh fish species recorded in all the studied markets during the study period in (Table 2).

Marketing channel of fish

Marketing channel is the place where involvement of some middlemen through which transformation of fish take place from producer to consumer. Similar results observed from the study of Uddin *et al.* (2018) that the market chain from farmer to consumers passes through a number of intermediaries, such as: local fish traders paikers, wholesalers and retailers whereas ten types of channel also were found for marketing fish in Amin and Nabi (2019) study. A total of five marketing channels were found in the flow of indigenous fish in Hobiganj city, these were given below-

- Channel 1: Fishermen/Producer- Consumer
- Channel 2: Fishermen/Producer- Retailer-Consumer
- Channel 3: Fishermen/Producer - Wholesaler - Retailer - Consumer
- Channel 4: Fishermen/Producer- Aratdar (Commission agent) - Retailer- Consumer
- Channel 5: Fishermen/Producer-Aratdar (Commission agent) - Wholesaler- Retailer-Consumer

A flow chart of marketing channels of fishes shown in (Figure 1). From the figure, it was clear observation that only 5% consumers get fish and fishery related products from fish producers/capturers directly and others 95% fishes reached to the consumer levels through different intermediaries (beparis, aratdars, wholesalers and retailers etc.). Similar results also observed from the study of Rokeya, (1997) who revealed that fishermen hardly get chance to communicate directly with the ultimate consumers.

Analyses of price for fishes

On the basis of species sizes, freshness, market demands and seasons, the price of fishes are to be varied. The price of fish depended on market structure, species and size of fishes reported by Uddin *et al.* (2018), Suman *et al.* (2019) and Srivastava (1985) also observed price differences among the fish species according to their availability, size and consumer choices. Average retail price of eight selected fishes in different markets are shown in (Table 3). In the study area it was observed that average retail price of Roi was the highest BDT 267.2 Tk.kg⁻¹ (\$3.15) in Cinema Hall Road fish market and the lowest BDT 225 Tk.kg⁻¹ (\$2.65) in Shayestanagar bazar. Silver carp was the highest BDT 312.2 Tk.kg⁻¹ (\$3.68) in Chowdhury bazar and the lowest BDT 247.6 Tk.kg⁻¹ (\$2.92) in Shayestanagar bazar. Air was the highest BDT 661.6 Tk.kg⁻¹ (\$7.80) in Cinema Hall Road fish market and the lowest BDT 561 Tk.kg⁻¹ (\$6.62) in Shayestanagar bazar. Shorpunti was the highest BDT 249.8 Tk.kg⁻¹ (\$2.95) in Chowdhury market and the lowest BDT 242.2 Tk.kg⁻¹ (\$2.86) in Shayestanagar bazar. Ilish was the highest BDT 747.4 Tk.kg⁻¹ (\$8.82) in Cinema Hall Road fish market and the lowest BDT 550.2 Tk.kg⁻¹ (\$6.49) in Shayestanagar bazar. Tilapia was the highest BDT 162 Tk.kg⁻¹ (\$1.91) in Cinema Hall Road fish market and the lowest BDT 126.4 Tk.kg⁻¹ (\$1.49) in Shayestanagar bazar. Golda was the highest BDT 626.6 Tk.kg⁻¹ (\$7.39) in Chowdhury market and the lowest BDT 554 Tk.kg⁻¹ (\$6.53) in Shayestanagar bazar. Pungas was the highest BDT 145.9 Tk.kg⁻¹ (\$1.36) in Cinema Hall Road fish market and the lowest BDT 115.2 Tk.kg⁻¹ (\$1.72) in Chowdhury bazar. Fish of most priceable were Air and Ilish due to its good taste on the other hand Tilapia and Pungas were the less priceable fish in the study area because of their bad odour and low taste. More or less same price were observed in the study of Morzina *et al.* (2018). The price of the Indian major carps such as, Rui (*Labeo rohita*), Catla (*Gibelion catla*) and Mrigal (*Cirrhinus mrigala*), was more than the exotic fish such as, silver carp (*Hypophthalmichthys molitrix*), grass carp (*Ctenopharyngodon idella*) and common carp (*Cyprinus carpio*), rajputi (*Barbodes gonionotus*), pangas (*Pangasius pangasius*) reported by Suman *et al.* (2019).

This price is not same in the market for all the time. It varies for many reasons but most importantly for season. Here, season to season variation in prices of fish species of these study area were observed in (Figures 2-4) during the study period respectively. From the results, it was found that prices of fishes are relatively higher during July to August when the fish are in short supply comparatively prices remain lower in October to November which resulted from the increased availability of both captured and cultured fishes. Fish Traders reported that

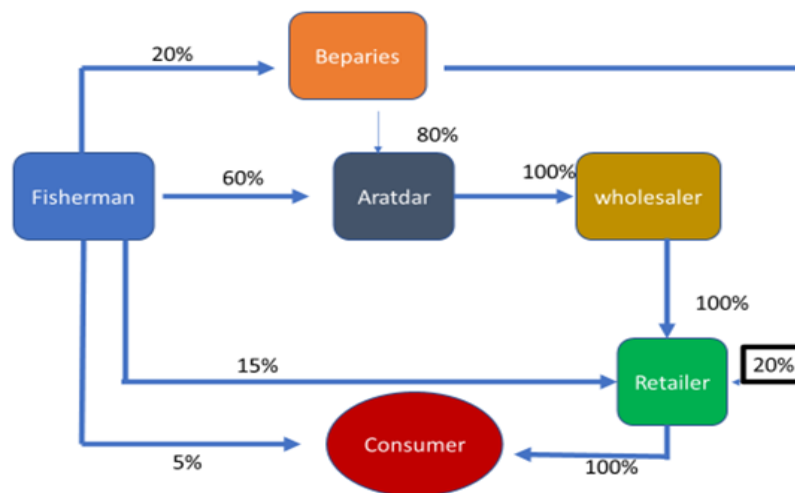


Figure 1. Marketing channels of fishes in the study area.

price fluctuation depends on daily demand and generally seasonal variations in price were the lowest in pre-winter and winter (November to January) and during fish harvesting season as well as the highest in summer (March to May), and Similar variations in fish prices reported by Uddin *et al.* (2018); Quddus (1991); Siddique (2001); Rahman (2003).

Net marketing margin

During the study period, fish marketing costs were identified such as transportation cost, cost of storage and icing, cost of wastages, and miscellaneous expenditures. Net marketing margins include all the marketing cost and loss or profit incurred by all intermediaries. When the wholesalers sold product to the retailer earned a gross margin of Tk 500 (\$5.90) per quintal and after deducting, marketing cost of Tk 150 (\$1.77) per quintal the overall net margin stood at Tk 350 (\$4.13) per quintal. After that the retailer also sold those to the consumer got a gross margin 1000 Tk (\$11.80) and after deduction of marketing cost was 170 Tk (\$2.01) the net margin 830 Tk (\$9.79) was stood in the study area. Likewise, paiker also earned net margin 690 Tk (\$8.14) after the same process (Table 4). The nearest similar gross profit found in the study of Uddin *et al.* (2018) where estimated the gross profit by traders Tk/Kg. According to Ara *et al.* (2010) reported that the average marketing margin per quintal of fish for fishermen was 305.56 taka (\$3.60) and for aratdar, paiker and retailer were 334.65 (\$3.95), 515.80 (\$6.08) and 340.40 taka (\$4.02), respectively. Also, Mia, (1996). reported the average marketing cost per quintal of fish incurred by these intermediaries in Muktagachha, Fulpur and Mymensingh were 555.14 taka (\$6.55), 209.91 taka (\$2.48), and 660.53 taka (\$7.79), respectively.

Transportation and preservation

Various kinds of vehicles were found used for fish transportation these were both mechanized and non-mechanized vehicles for example van, traditional boats, motor launches, truck, rickshaw, taxi, thela etc. Most of aratdar used ice to preserved fish, which was supplied from ice factory. Around 200-500gm ice have been used per kg fish.

Challenges or difficulties

Although these fish market deal a massive business everyday but there were found a lot of constraints which need to be resolved as soon as possible. Some are listed below:

- The fish producers, fishermen, market, intermediaries and the ultimate consumers affected negatively due to price fluctuation of fish from season to season.
- Rough handling of fish in markets.
- After harvesting, fish passes through a number of channels and intermediaries which taken more time to reach the ultimate consumers.
- As a consequence of time consume during transportation fish quality relatively degraded.
- Poor drainage system, water supply scarcity, proper platform and shade, inadequate sanitation facilities of the fish market.
- High transport cost and poor communications system of study area.

Similar Challenges or difficulties reported by Suman *et al.* (2019).

Recommendation

- The improvement of good roads and transport networks can decline the superfluous involvement of intermediaries, which could be advantageous for both consumers and the fishers/farmers.
- fish market channel should be Shorter by inhabiting the entrance of some intermediaries.
- More ice-plants, cold-storage should be increased.
- Sufficient auction places, handling facilities drainage system and preservation facilities should be improved.
- Price policy should fix and maintain by the combination of Go, NGO and private sectors.
- Monitoring should be carried out by the authority to ensure fish quality needs to be strengthened.

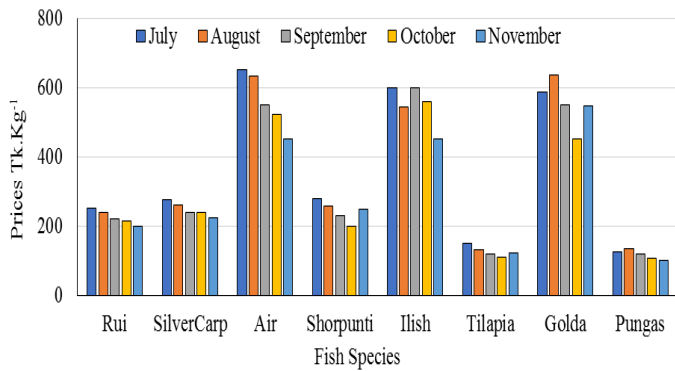


Figure 2. Fish prices of Shayestanagar Bazar during July to November 2019.

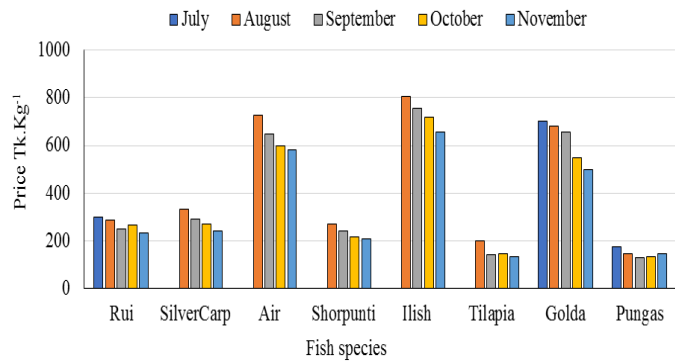


Figure 4. Fish prices of Cinema Hall Road Bazar during July to November 2019.

Conclusion

Fish marketing plays a vital role in the economy of Bangladesh, contributing to food production, diversification of the financial condition, enhanced job opportunities, and controlled rural communities. In our study the price of fishes was to be varied on the basis of species sizes, freshness, market demands and seasons and the fish market and marketing environment were found to be manifested with a large number of difficulties. Developing the marketing chain of the fish needs to be shorten the marketing channel. Involvement of more intermediaries in the marketing channel is the main reason of higher product price although net marketing margins include wholesalers, paiker and retailer were satisfactory for their daily livelihood. For sustainable natural fish marketing system, a positive policy at government level should be considered. This environment has adopted awareness among fishery biologists, politicians and ecologists of the demand for better conservation of diversity of important fish and the need to save such fish from being extinction in this nation. Moreover, appropriate marketing strategies and adequate monitoring should be done to ensure premium quality fishery product and healthy economy of producer.

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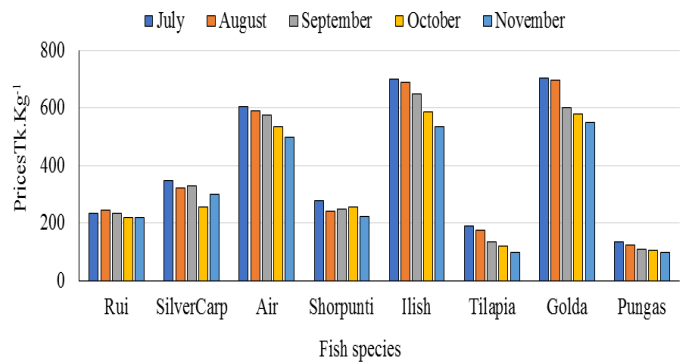


Figure 3. Fish prices of Chowdhury Bazar during July to November 2019.

Conflict of interest

Authors have declared that there are no competing interests exist and also, the research funded by personal efforts of the authors.

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