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Dr. Zannatul Ferdoushi
Department of Fisheries
Management, Faculty of
Fisheries, Hajee Mohammad
Danesh Science and Technology
University, Dinajpur-5200.

Md. Mominur Rased
Department of Fisheries
Management, Faculty of
Fisheries, Hajee Mohammad
Danesh Science and Technology
University, Dinajpur-5200.

Md. Abu Zafar
Department of Aquaculture,
Faculty of Fisheries, Hajee
Mohammad Danesh Science and
Technology University,
Dinajpur-5200.

VC Roy
Department of Fisheries
Technology, Faculty of Fisheries,
Hajee Mohammad Danesh
Science and Technology
University, Dinajpur-5200.

Sadiba Islam
Department of Fisheries
Management, Faculty of
Fisheries, Hajee Mohammad
Danesh Science and Technology
University, Dinajpur-5200.

Correspondence
Zannatul Ferdoushi
Department of Fisheries
Management, Faculty of
Fisheries, Hajee Mohammad
Danesh Science and Technology
University, Dinajpur-5200.

Species availability and marketing system of traditionally dried fish in Rangpur division of Bangladesh

**Dr. Zannatul Ferdoushi, Md. Mominur Rased, Md. Abu Zafar, VC Roy,
Sadiba Islam**

Abstract

A survey was conducted on traditionally dried fish marketing of Rangpur division. The present study found that there are 22 species of dry fishes available in Rangpur division of which 15 are freshwater species and 7 are marine water species. Prices of the dried fishes in wholesale or retail markets were found to vary on the basis of species, size and quality of the final product. In Rangpur retail markets the maximum net profit was calculated as 12.14 Tk/kg for (*Trichiurus lepturus*) Churi dried fish. On the other hand, the minimum net profit was found in small indigenous species such as Chela (*Salmostoma acinaces*) fishes. Whereas, in Dinajpur and Thakurgaon retail market the maximum net profit was found higher in case of Mola (*Amblypharyngodon mola*) as 18.77 Tk/kg and 32.60 Tk/kg respectively. Two wholesale markets are reported in Rangpur division; the Ghaghatpara *arat* and Saidpur *arat*. The retailers of this region usually collect dry fish from those *arats* and consumers get the dry fishes from the retailers. Locally produced dry fishes are sold to the wholesalers of Rangpur and Saidpur *arat* and finally go to the consumers through retailers. Several marketing problems were found which include lack of capital, higher transportation cost, storage problem, lower market demand and higher loan interest rate etc.

Keywords: Dry fish, marketing, market, Bangladesh.

1. Introduction

Dry fish (*shutki*) is one of the popular food items and is widely consumed in Bangladesh. Many people of Bangladesh depend on the dry fishes. Protein content of dry fish is 16.6-22.8 gm per 100 gm (BBS, 2010) [1]. Now a day's dry fish plays an important role in the economy of Bangladesh. In the fiscal year of 2012-2013, Bangladesh exported a total of 1278 MT of dry fishes which nearly earn 36.03 crore taka and contributed 2.01% in the total export value of Bangladesh (DoF, 2014) [3]. Various types of freshwater fishes in Bangladesh as like different SIS species, crap, snakehead, eel etc. and marine water fishes like *Harpadon nehereus* (Loittya), *Awaous grammepomus* (Balua), *Trichiurus lepturus* (Churi), *Stromateus chinensis* (Rupchanda) etc. are dried in sun. (Biswas, 2001) [2] Identified 20 types of dry marine fishes are available in Bangladesh. (Flowra *et al.*, 2010) [4] Found 25 types of fresh and marine water dry fishes in Rajshahi and Thakurgaon districts of Bangladesh.

Several studies on dry fish and its marketing system in Bangladesh had been conducted by researchers (Monir, 2012; Sultana, 2011; Flowra *et al.* 2010; Nayeem *et al.* 2010; Hafiza 2008; Shamsuddoha, 2007) [7, 11, 4, 8, 5, 12]. Generally dry fish and fishery products are marketed through many different channels and outlets in Bangladesh (Reza *et al.*, 2005, Nayeem *et al.*, 2010) [10, 8]. According to their findings mostly the availability of dry fish and its marketing structure are varies with area.

Like other part of Bangladesh dry fish is also popular and preferred by the people of Rangpur division and found in almost all municipal and rural markets in this market. The main sources of dry fish in Rangpur division are Saidpur *arat* and Chittagong. However, a very few information on the dry fish availability and marketing system of Rangpur division is available, especially in Rangpur, Dinajpur, Panchagarh and Thakurgaon districts. Therefore, the present work was designed considering the following objectives: The main objectives of the study were:

- To describe the availability of dry fish in the markets of Rangpur, Dinajpur, Thakurgaon, and Panchagarh districts

- To identify the marketing channels and marketing system of dry fish in those areas
- To identify the problems and provide suggestions for improvement of dry fish marketing in Rangpur region

2. Materials and Methods

The study was based on market survey obtaining information through a sample survey among dry fish traders.

2.1 Selection of study area

For the convenient of the study, four districts (Rangpur, Dinajpur, Thakurgaon, Panchagarh) of Rangpur division were selected for data collection. From each district four fish markets were selected for the purpose of the study.

2.2 Preparation of interview schedules

To fulfill the research objectives, at first draft survey schedule was prepared. Then it was pre-tested by interviewing a few dry fish traders of the study area. After pre-testing a set of final survey schedule was developed with necessary corrections and modifications. The schedule was elaborated to include all types of questions relating to dry fish marketing system.

2.3 Selection of sample

The questionnaire interviews were taken through random sampling method. In total 80 retailers and 20 wholesalers were selected from different fish markets.

2.4 Period of data collection

The study was conducted for a period of 6 months from January 2013 to June 2013.

2.5 Data collection

Primary data were collected through face to face interview. Most of the respondents had no written documents regarding purchase, consumption, sales and other aspects of dried fish marketing. Interviews were conducted at the market centre during marketing time. The questionnaire was simple and focusing only marketing information.

2.6 Data Processing and Analysis

After collection of data, these were edited and coded. All the collected data were summarized, scrutinized carefully and tabulated. The data were processed and finally analyzed using Microsoft Excel Program. At each stage of the survey, data were checked up, editing, coding and transferred into computer. The gross margin or gross profit of the dry fish traders was calculated by the following equation

$$\text{Gross Margin} = \frac{\text{Selling Price} - \text{Buying Price}}{\text{Selling Price}} \times 100$$

The total marketing cost was calculated by adding the shop rent, electricity bill and transportation cost together for per kg of each species. Then the net margin or net profit of the dry fish traders was calculated the following equation.

$$\text{Net Margin} = \frac{\text{Selling Price} - (\text{Buying Price} + \text{Total Marketing Cost})}{\text{Selling Price}} \times 100$$

3. Results and Discussion

3.1 Sources of dried fish for wholesalers

The source of raw materials for any business is very important. The transport cost is depends on the distance of the source of goods. From the findings of the study the main source of dry fish in Rangpur division is Chittagong and Khulna. In Rangpur, it was found that 40% of the dry fish come from Chittagong and 40% come from Khulna and another 20% come from both markets. In Saidpur, 50% of the dried fishes come from Chittagong, 40% come from Khulna and another 10% of the dried fish comes from both markets.

3.2 Supply of dry fishes for retailers

The source of dry fish for the retailers of study areas are Saidpur *arat* and Rangpur *arat*. From the findings of this present survey it was revealed that in Rangpur district, 93% of the dried fish comes from Rangpur *arat*, 5% comes from Saidpur *arat* and 2% comes from both of the market. In Dinajpur, Thakurgaon and Panchagarh 100% dried fishes comes from Saidpur *arat*.

3.3 Available dried fish species

A good number of fresh water and marine water dried fishes are available in study area. Result from the present survey shows that 15 species of fresh water and 7 species of marine water dried fish (6 full dry and 1 salted dehydrated) are available in Rangpur division (Table 1). (Biswas, 2001) [2] identified 20 types of marine dry fish available in Chittagong, Dhaka and Cox's Bazar districts. (Hafiza, 2008) [5] also recorded some dried SIS fish species in Mymensingh and Netrokona districts. Moreover, (Flowra *et al.*, 2010) [4] also explored 25 types of fresh and marine water dry fishes in Rajshahi and Thakurgaon districts. The available species of dry fishes in both studies is more or less similar.

Table 1: Availability of fresh water dry fishes in Rangpur division

SL. No.	Scientific Name	English Name	Local Name	Family
1	<i>Wallago attu</i>	Freshwater Shark	Boal	Schilbeidae
2	<i>Channa punctatus</i>	Green Snake Head	Taki	Channidae
3	<i>Labeo rohita</i>	Rohu	Rui	Cyprinidae
4	<i>Mystus vittatus</i>	Striped Dwarf Catfish	Tangra	Bagridae
5	<i>Awaous grammepomus</i>	Scribbled goby	Balia	Gobiidae
6	<i>Botia dario</i>	Bengal loach	Bow fish	Botiidae
7	<i>Channa striatus</i>	Striped Snakehead	Shol	Channidae
8	<i>Puntius ticto</i>	Ticto barb/fire-fin barb	Tit Punti	Cyprinidae
9	<i>Macrognathus aculeatus</i>	Spiny eel	Baim	Mastacembelidae
10	<i>Parluciosoma daniconius</i>	Blackline Rasbora	Darkina	Cyprinidae
11	<i>Amblypharyngodon mola</i>	Mola carplet	Mola	Cyprinidae
12	<i>Salmostoma acinaces</i>	Silver razorbelly minnow	Chela	Cyprinidae
13	<i>Setipinna phasa</i>	Gangetic hairfin anchovy	Fesha	Engraulidae
14	<i>Gudusia chapra</i>	Indian River Shad	Chapila	Clupeidae
15	<i>Ailia coila</i>	Gangetic ailia	Kajoli	Schilbeidae

Table 2: Availability of marine water dry fishes in Rangpur division

SL. No.	Scientific Name	English Name	Local Name	Family
1	<i>Harpadon nehereus</i>	Bombay Duck	Loittyta	Harpodontidae
2	<i>Macrobrachium malcolmsoni</i>	Monsoon River Prawn	Chingri/Icha	Palaemonidae
3	<i>Sicamugil cascasia</i>	Yellowtail mullet	Kaski	Mugilidae
4	<i>Lates calcarifer</i>	Barramundi	Bhetki	Centropomidae
5	<i>Trichiurus lepturus</i>	Ribbon Fish	Churi	Trichiuridae
6	<i>Johnious argentatus</i>	Golden Jaw Fish	Lal Poa	Sciaenidae
Salted Dehydrated				
7.	<i>Tenualosa ilisha</i>	River shad	Ilish	<i>Clupeidae</i>

3.4 Average Price of Dry Fishes in Four Different Districts

Prices of the dried fishes in wholesale or retail markets were found to be varied on the basis of species, size and quality of the final product. In the present study, it was estimated that the price of dry fishes varies from 215 Tk/ kg to 914 Tk/kg of dry fish depends on species and quality. The price often related to the season (Flowra *et al.*, 2010) [4]. (Khan, 1995) [6] reported that the highest price of dry fishes was found during summer season and lowest was in winter. From the findings of the present survey, among the available dried fishes, the average

price of fresh water Striped Snakehead (*Channa striatus*) found higher (914± 149Tk/ kg) in Rangpur district followed by Dinajpur district (600±20 Tk/ kg). On the other hand, the price of marine Barramundi (*Lates calcarifer*) found higher in Dinajpur district followed by Rangpur district. The lowest average prices were mostly observed in small dry fishes such as Bengal loach, Ticto barb, scribbled goby so on. Moreover, salted dry river shad's (*Tenualosa ilisha*) price found higher in Rangpur district.

Table 3: Average price of dry fishes in four different markets

Sl. No.	Major Fish	Average price in Rangpur (Tk/Kg)	Average price in Dinajpur (Tk/Kg)	Average price in Thakurgaon (Tk/Kg)	Average price in Panchagarh (Tk/Kg)
1	Boal (<i>Wallago attu</i>)	407 ± 12	420 ± 22	450 ± 21	400 ± 8
2	Taki (<i>Channa punctatus</i>)	517± 29	-	500 ± 0	450 ± 10
3	Rui (<i>Labeo rohita</i>)	583± 29	-	550 ± 0	550 ± 71
4	Tangra (<i>Mystus vittatus</i>)	480 ± 20	-	360 ± 0	-
5	Balia (<i>Awaous grammepomus</i>)	215 ± 44	-	230 ± 8	-
6	Bow fish (<i>Botia dario</i>)	-	250 ± 0	-	-
7	Shol (<i>Channa striatus</i>)	914± 149	600 ± 20	-	-
8	Tit Puntí (<i>Puntius ticto</i>)	275 ± 7	320 ± 20	-	-
9	Baim (<i>Macrognathus aculeatus</i>)	666± 117	645 ± 140	534 ± 76	550 ± 42
10	Darkina (<i>Parluciosoma daniconius</i>)	305 ± 7	320 ± 0	-	-
11	Mola (<i>Amblypharyngodon mola</i>)	285 ± 7	250 ± 5	300 ± 0	-
12	Loittyta (<i>Harpadon nehereus</i>)	450± 19	382 ± 30	399 ± 43	382 ± 30
13	Chingri (<i>Macrobrachium malcolmsoni</i>)	278± 34	344 ± 44	305 ± 24	283± 33
14	Kaski (<i>Sicamugil cascasia</i>)	345± 69	365± 58	352± 47	349± 55
15	Bhetki (<i>Lates calcarifer</i>)	726± 88	755 ± 25	656± 94	619 ± 75
16	Chela (<i>Salmostoma acinaces</i>)	358 ± 45	370 ± 53	362± 42	334± 48
17	Fesha (<i>Setipinna phasa</i>)	377± 26	380 ± 20	400 ± 14	350 ± 50
18	Churi (<i>Trichiurus lepturus</i>)	390 ± 14	450 ± 8	430 ± 8	-
19	Lal Poa (<i>Johnious argentatus</i>)	365 ± 21	-	400 ± 0	-
20	Ilish (<i>Tenualosa ilisha</i>)	536 ± 60	500 ± 0	521± 39	525 ± 46
21	Chapila (<i>Gudusia chapra</i>)	-	420 ± 0	420 ± 26	-
22	Kajoli (<i>Ailia coila</i>)	300 ± 0	-	-	-

3.5 Profit Margin

During the study period the profit margin was calculated separately for four different district markets. Table 4, 5, 6, 7 are showing different profit margin of dried fishes in four district level. In Rangpur retail markets the maximum net profit was calculated as 12.14 Tk/kg for (*Trichiurus lepturus*) Churi dried fish. On the other hand, the minimum net profit was found in small Chela (*Salmostoma acinaces*) fishes. Whereas, in Dinajpur and Thakurgaon retail market the maximum net profit was found higher in case of Mola (*Amblypharyngodon mola*) as 18.77 Tk/kg and 32.60 Tk/kg

respectively. The minimum net profit was found for Chela (*Salmostoma acinaces*) as 1.80 Tk/kg and 2.84 Tk/kg in Dinajpur and Thakurgaon retail market respectively. In Panchagarh retail market the maximum net profit was estimated for Chela (*Salmostoma acinaces*) fish was 12.64 Tk/kg and minimum was 1.73 Tk/kg in case of (*Channa punctatus*) Taki dried fishes.

The net margin for salted dehydrated Ilish (*Tenualosa ilisha*) was found higher in Thakurgaon retail market (15.14 Tk/kg). The second highest was observed in Dinajpur retail market (11.04 Tk/kg) followed by Rangpur district (10.14 Tk/kg).

Table 4: Profit margin of Rangpur retail markets

Sl. No.	Species	Buying Price (Tk/kg)	Selling Price (Tk/kg)	Gross Margin	Total Marketing Cost (Tk/Kg)	Net Margin
1	<i>Wallago attu</i>	385	400	3.75	1.58	3.35
2	<i>Channa punctatus</i>	490	516.6	5.15	1.42	4.87
3	<i>Labeo rohita</i>	555	583.33	4.86	1.58	4.59
4	<i>Mystus vittatus</i>	480	500	4.00	1.42	3.72
5	<i>Awaous grammepomus</i>	200	215	6.98	1.27	6.39
6	<i>Channa striatus</i>	850	914.28	7.03	1.11	6.91
7	<i>Puntius ticto</i>	260	280	7.14	1.90	6.46
8	<i>Macragnathus aculeatus</i>	650	666.66	2.50	1.74	2.24
9	<i>Parluciosoma daniconius</i>	290	300	3.33	1.34	2.89
10	<i>Amblypharyngodon mola</i>	250	280	10.71	1.19	10.29
11	<i>Harpadon nehereus</i>	400	450.27	11.16	15.03	7.83
12	<i>Macrobrachium malcolmsoni</i>	250	278.94	10.37	17.40	4.14
13	<i>Sicamugil cascasia</i>	320	345.62	7.41	16.61	2.61
14	<i>Lates calcarifer</i>	600	641.66	6.49	2.77	6.06
15	<i>Salmostoma acinaces</i>	350	357.77	2.17	1.34	1.80
16	<i>Setipinna phasa</i>	330	352.5	6.38	1.19	6.05
17	<i>Trichiurus lepturus</i>	350	400	12.50	1.42	12.14
18	<i>Johnious argentatus</i>	330	350	5.71	1.58	5.26
19	<i>Ailia coila</i>	270	300	10.00	1.58	9.47
20	<i>Tenualosa ilisha</i> (Salted dehydrated)	480	536.36	10.51	1.98	10.14

Table 5: Profit margin of Dinajpur retail markets

Sl. No.	Species	Buying Price (Tk/kg)	Selling Price (Tk/kg)	Gross Margin	Total Marketing Cost (Tk/Kg)	Net Margin
1	<i>Wallago attu</i>	380	420	9.52	5.12	8.31
2	<i>Botia dario</i>	200	250	20.00	4.09	18.36
3	<i>Channa striatus</i>	550	600	8.33	5.12	7.48
4	<i>Puntius ticto</i>	280	320	12.50	5.12	10.90
5	<i>Macragnathus aculeatus</i>	610	645	5.43	6.14	4.47
6	<i>Parluciosoma daniconius</i>	280	320	12.50	5.80	10.69
7	<i>Amblypharyngodon mola</i>	200	250	20.00	3.07	18.77
8	<i>Harpadon nehereus</i>	340	382	10.99	10.92	8.14
9	<i>Macrobrachium malcolmsoni</i>	280	344	18.60	10.23	15.63
10	<i>Sicamugil cascasia</i>	320	365	12.41	10.23	9.61
11	<i>Lates calcarifer</i>	600	725	17.24	5.46	16.49
12	<i>Salmostoma acinaces</i>	350	370	5.41	5.12	4.02
13	<i>Setipinna phasa</i>	330	380	13.16	4.78	11.90
14	<i>Trichiurus lepturus</i>	380	450	15.56	3.75	14.72
15	<i>Tenualosa ilisha</i>	440	500	12.00	4.78	11.04
16	<i>Gudusia chapra</i>	380	420	9.52	2.05	9.04

Table 6: Profit margin of Thakurgaon retail markets

Sl. No.	Species	Buying Price (Tk/kg)	Selling Price (Tk/kg)	Gross Margin	Total Marketing Cost (Tk/Kg)	Net Margin
1	<i>Wallago attu</i>	380	450	15.56	2.74	14.95
2	<i>Channa punctatus</i>	420	500	16.00	3.01	15.40
3	<i>Labeo rohita</i>	500	550	9.09	2.74	8.59
4	<i>Mystus vittatus</i>	320	360	11.11	2.19	10.50
5	<i>Awaous grammepomus</i>	200	230	13.04	1.92	12.21
6	<i>Macragnathus aculeatus</i>	490	533	8.12	2.74	7.61
7	<i>Amblypharyngodon mola</i>	200	300	33.33	2.19	32.60
8	<i>Harpadon nehereus</i>	340	399	14.79	6.57	13.14
9	<i>Macrobrachium malcolmsoni</i>	280	305	8.20	6.85	5.95
10	<i>Sicamugil cascasia</i>	320	353	9.22	5.48	7.67
11	<i>Lates calcarifer</i>	600	656	8.57	2.74	8.15
12	<i>Salmostoma acinaces</i>	350	363	3.45	2.19	2.84
13	<i>Setipinna phasa</i>	330	400	17.50	2.19	16.95
14	<i>Trichiurus lepturus</i>	380	430	11.63	1.64	11.25
15	<i>Johnious argentatus</i>	330	400	17.50	2.74	16.82
16	<i>Tenualosa ilisha</i>	440	521	15.62	2.47	15.14
17	<i>Gudusia chapra</i>	380	420	9.52	2.19	9.00

Table 7: Profit margin of Panchagarh retail markets

Sl. No.	Species	Buying Price (Tk/kg)	Selling Price (Tk/kg)	Gross Margin	Total Marketing Cost (Tk/Kg)	Net Margin
1	<i>Wallago attu</i>	385	400	3.75	2.24	3.19
2	<i>Channa punctatus</i>	440	450	2.22	2.24	1.73
3	<i>Labeo rohita</i>	510	550	7.27	1.96	6.92
4	<i>Macrornathus aculeatus</i>	500	550	9.09	2.79	8.58
5	<i>Harpadon nehereus</i>	335	382	12.30	4.47	11.13
6	<i>Macrobrachium malcolmsoni</i>	250	283.5	11.82	4.19	10.34
7	<i>Sicamugil cascasia</i>	320	349.37	8.41	3.35	7.45
8	<i>Lates calcarifer</i>	510	555	8.11	2.24	7.71
9	<i>Salmostoma acinaces</i>	290	334.5	13.30	2.24	12.64
10	<i>Setipinna phasa</i>	330	350	5.71	1.68	5.24
11	<i>Tenuulosa ilisha</i>	480	525	8.57	2.51	8.09

3.6 Marketing of dried fish

In dry fish marketing system, a number of middlemen involved in Rangpur division. The market chain starts from fisherman or dry fish producer to consumers passes through a number of intermediates; local dry fish trader, agents, wholesalers and retailers.

The wholesalers mainly collect all dried fishes from Chittagong and Khulna division. With a few exceptions, dry fish producers usually do not communicate with the consumers, marketing communication being made through middleman. The middlemen buy dried fishes from dry fish producers but do not seem to have formal agreements with particular producers. There are two wholesaler markets in Rangpur division, the Ghaghatpara *arat*, Rangpur and another one is the Saidpur *arat*, Nilphamari. The dry fishes are comes to the Ghaghatpara *arat* and Saidpur *arat* through different middleman. The retailers of Rangpur, Dinajpur, Thakurgaon

and Panchagarh usually buy dry fish from those *arats* and directly sell to the consumers. The study identified five different marketing channels. The wholesalers of the Rangpur and Saidpur purchase dry fishes from Chittagong’s wholesale market either directly or through middleman. The retailers of Rangpur, Dinajpur, Thakurgaon and Panchagarh get dry fish directly from Rangpur or Saidpur *arat* and finally consumers get the dry fishes from the retailers. Locally produced dry fishes in Rangpur and Saidpur are sold to the wholesalers of Rangpur and Saidpur *arat* and finally go to the consumers through retailers. (Nayeem *et al.* 2003) [8] observed marketing system of traditional dried and semi-fermented fish product (*chepa-shutki*) of Mymensingh division and identified mar the marketing chain as, Wholesaler → Retailer → Consumer. In both studies, the marketing channel of dry fishes is started from the producers and then go to wholesalers, retailers and finally up to consumers.

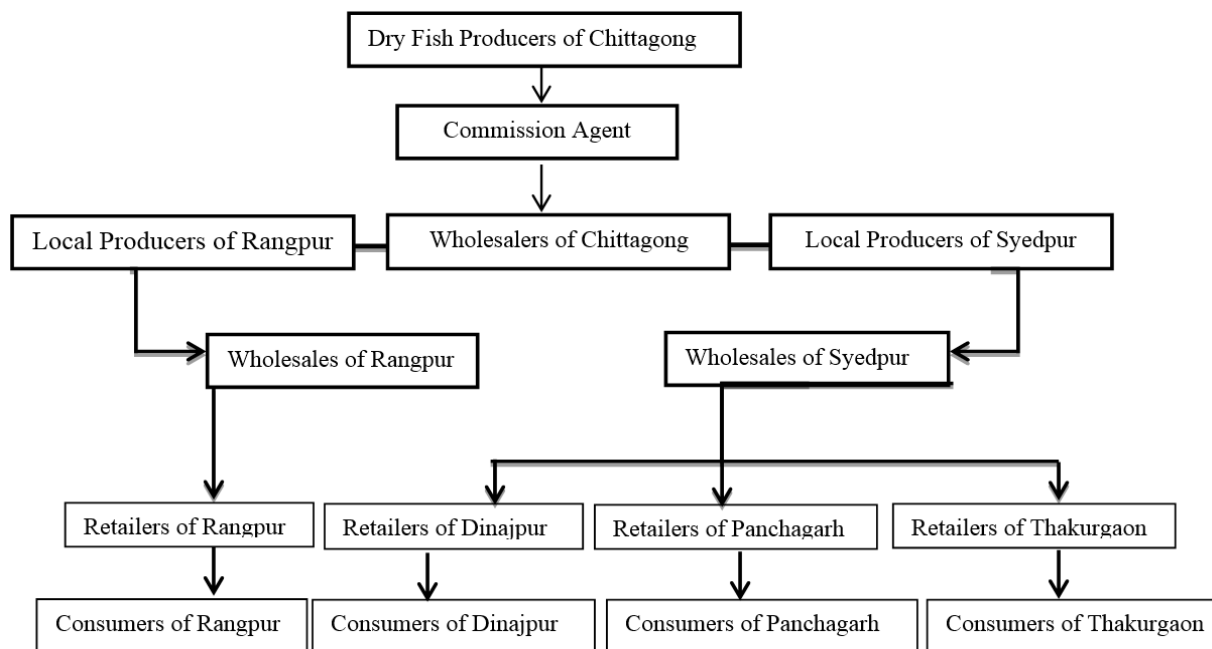


Fig 1: Dry fish marketing channel

3.7 Problems

From the present study, several marketing problems were found which include lack of capital, higher transportation cost, storage problem, lower market demand and higher loan interest rate etc. (Rokeya *et al.* 1997) [9] also identified similar problems in dry fish marketing of Mymensingh division. So governments should take necessary measures to improve this

sector through mitigating those problems which in turn develop the national economy.

4. Conclusion

In the present study, poor quality and inadequate infrastructure in wholesale and retail market were identified. Moreover, involvement of large number of middlemen ultimately

increases the price of dry fish product. Lack of capital, higher transportation cost, lower market demand and higher loan interest are also marked as problems in dry fish marketing system in Rangpur division. However, the study suggested more survey on dry fish quality. In addition it also recommended the authority should take necessary steps to mitigate the existing constraint in dry fish marketing.

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