

# The Marketing System of Agricultural Products in Bangladesh: A Case Study from Sylhet District

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## ABSTRACT

*The monotonous demand for rice in Bangladesh is shifting rapidly. Positive economic growth and urbanization are the key factors behind this change. The agricultural marketing system is traditional and not properly functional. A group of intermediaries controls the market and supply chain of agricultural products. A proper functional market is vital for food producers, processors, traders, and consumers. Bangladesh has become self-sufficient in cereal crop production, but the production of horticultural crops is not sufficient yet. This situation has led to severe bottlenecks in the processes of marketing. The study aimed at assessing the present marketing system of agricultural products in Sylhet and at determining the marketing constraints and potentialities of farm products in this area. It was found that the net marketing margin was the highest in the case of the retailer and the lowest in case of Aratdar. But Return on operating capital was the highest for the Aratdar because they did not need to purchase the product they handle. The farmers identified the high price of seed as the topmost constraint in production and marketing systems. Re-structuring of Market Management System and updating regulatory and institutional set up are highly essential for the proper functioning of the market system.*

**Keywords:** Economic growth, supply chain, constraint, intermediaries, horticultural crops

## INTRODUCTION

Agricultural sector plays a vital role in the overall economic performance of Bangladesh in terms of its contribution to GDP, employment generation, and food security (Alam 2011). Moreover, the livelihoods of the majority of the population in Bangladesh are dependent on agriculture. Thus, the economic development planning of this country is determined by the productivity, growth, and efficiency of the agricultural sector. Any damages in this sector broadly impact the wellbeing of most of the people of this country (Islam 2010). The production of rice in terms of cropped area and stock contributes to the lion share of the agricultural output in Bangladesh. About 74.4 % of the total cropped area is used for rice production, where about 3 % for wheat.

On the contrary, cultivation of horticultural products takes up only about 7.3% of this total cultivable land, but it generates more than 18 % of its agricultural GDP (BBS 2007).

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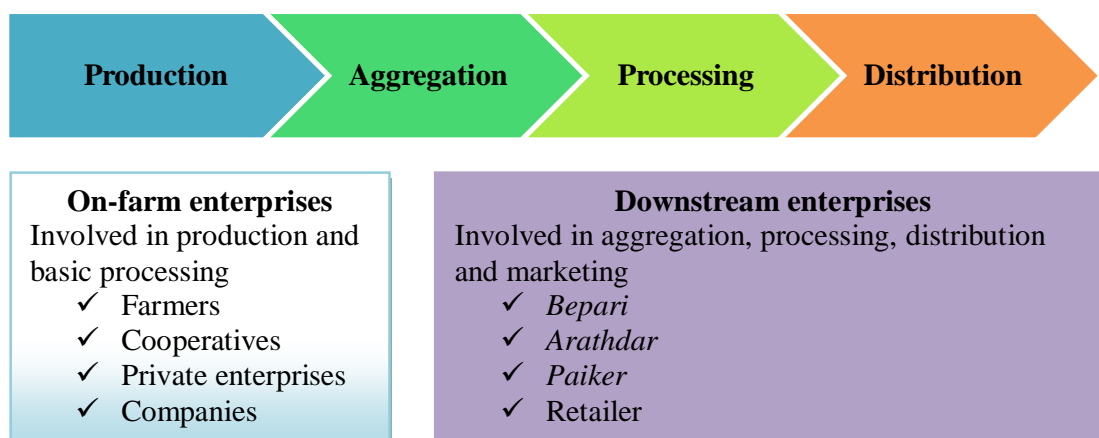
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Horticultural production is not well documented in Bangladesh like cereals. In the past, the emphasis was given to rice production to achieve domestic self-sufficiency in food grains as Bangladesh was a food deficit country for a long time (Hossain et al. 2005, Alam 2011). Therefore, the production of some horticultural crops declined.

The demand for food in Bangladesh is changing rapidly. Economic growth and urbanization are combining to shift food demand away from traditional staples to high-value foods (Begum & Haese 2010), which represents an enormous opportunity for food producers, processors, and sellers. Because the production of many high-value agricultural commodities tends to be labour intensive. It also represents an opportunity to generate rural employment and raise rural incomes. This changing domestic demand is increased by growing global demand for high value agricultural products-global demand that provides additional opportunities for producers and exporters in Bangladesh

The development of agricultural marketing depends on market intelligence and proper enforcement with relevant rules and regulations. Therefore, marketing resource is interlinked with costs and profitability. The export of horticultural crops from Bangladesh is still very insignificant. Practical feasibility studies should be undertaken to ascertain if Bangladesh can compete favourably with other exporting countries for fresh vegetables and fruits in the supermarkets of the developed countries in respect of quality products and regularly in supply. High cost and shortage of available air-cargo space are also impeding export. The high-end market for a perishable item has not yet fully developed (Singha & Maezawa 2019, Alam 2010, Hossain & Hossain 2013, Islam & Ahsan 2009). It is still in a growing stage in Bangladesh, mainly because the demand is still minimal. If the overall marketing is improved, it will serve the interests of the supermarkets and the customers.



**Figure 1:** Conceptual Framework of the Marketing System of Agricultural Products

There are a lot of challenges in capitalizing these opportunities. High-value agricultural food products are highly perishable than traditional cereals. They require more advanced post-harvest technologies, quicker controlled transportation facilities, and efficient marketing systems (Singha & Maezawa 2019). For competing in the international market, quality control is inevitable. Feasibility studies are essential for enhancing the export of agricultural products.

The agents of marketing operation are '*Farias*' or collectors, '*Beparis*' or assemblers, '*aratdars*' or wholesalers and retailers (Fazlur 2008, Hossain & Arangzeb 2009, Islam et al. 2019, Parvez et al. 2016, Parvez et al. 2019). Farmers are involved in the production and primary processing where, the intermediaries are involved in aggregation, processing, distribution and marketing (Figure 1).

The quality of agricultural products, especially vegetables and fruits marketed in Bangladesh, is not highly satisfactory. This is the result of unscientific post-harvest handlings, such as grading, washing, trimming, cooling, packaging, and transport (Hossain 2016, Islam & Ahsan 2009, Siddique 2018). Post-harvest loss is also very high due to the same reasons. Bangladesh has become self-sufficient in cereal crop production but horticultural crops like fruits, vegetables, and spices, which supply the essential nutrients like vitamin and minerals, the production is not yet sufficient. The low consumption of fruits and vegetables is due to small production. To bridge this gap, the development of improved varieties and production technologies of fruits and vegetables is the utmost requirement.

The seasonality of production further complicates the marketing of horticultural products. Some items are produced around the year but the volume is abundant in some months, and even some are produced only during a short period. Moreover, during the seasonal glut, farmers are compelled to sell their produce at a throwaway price due to the lack of proper preservation facilities and cash need. Different marketing approaches, like group marketing and contract marketing, maybe the interventions to establish linkages with various market actors for better value chain management. Afterward, the marketing procedure is highly imperfect in Bangladesh, as supply does not correlate with the actual demand. This situation has led to severe bottlenecks in the processes of marketing (Hoque et al. 2008). The study aimed at assessing the present marketing system of agricultural products in Sylhet and at finding out the marketing constraints and potentialities of agricultural products in this area.

## METHODOLOGY

This study followed both qualitative and quantitative method. The samples included all categories of stakeholders involved in the marketing system of agricultural commodities. Data were collected following a semi-structured sampling method. The sample size was 100, including 60 farmers, 10 *Bepari* (Collector), 10 *Aratdar* (Assembler), 05 *Paiker* (wholesaler) and 15 retailers. The intermediaries were selected through purposive sampling from different market places where they were doing business. A semi-structured questionnaire was developed for collecting the data based on the objectives of the study. The questionnaires contain both open and closed form of questions. The questions in the schedule were simple, direct, and easily understandable by farmers and other target stakeholders. The questionnaire was prepared in English as well as Bengali also. The following indices were calculated using the collected data.

## Calculation of Indices

$C_h$  = Number of responses indicating high constraint

$C_m$  = Number of responses indicating medium constraint

$C_l$  = Number of responses indicating low

The total cost of production was calculated by using the following formula:

Total cost of production (Tk./acre) = Labour cost (Tk./ acre) + Material Cost (Tk./ acre) + Machinery cost (Tk./ acre) + Interest on operating capital (Tk./ acre) + Land use cost (Tk./ acre).

The Benefit Cost Ratio was calculated by using the following formula:

$$\text{Benefit cost ratio} = \frac{\text{Gross return (Tk./acre)}}{\text{Total cost (Tk./acre)}}$$

Net returns of farmers were estimated by using following formula:

i. Gross return (Tk./ acre) = Yield (quantity/ acre) × Sales price (Tk./ acre)

Total cost (Tk./ acre) = Total production cost (Tk./ acre) + Marketing cost (Tk./ acre)

Net return = Gross return (Tk./ acre) - Total cost (Tk./ acre).

The marketing margins and net margins of intermediaries were estimated by using the following formula:

i) Gross marketing margin (Tk./quantity) = Sale price (Tk./quantity) - Purchase price (Tk./quantity).

ii) Net marketing margin (Tk./quantity) = Gross marketing margin (Tk./quantity) - Marketing cost (Tk./quantity)

iii) Return on operating capital =  $\frac{\text{Net margin (Tk/quantity)}}{\text{Total operating capital(Tk/quantity)}} \times 100$

Where total operating capital = Purchase price + Marketing cost (for the intermediaries).

Interest on operating capital =  $AO \times i \times t$

Where, AO = (Total operating capital)/2; i = Rate of interest; t = Length of crop period (Miah 1987).

## Land Use Cost

Land use cost varied from village to village depending upon the soil type, topography, location, and security of the particular crop field. Land use cost was calculated using one of the following concepts:

i) Interest on the value of land

ii) Valuation of land at its cash lease price per year and

iii) Forgoing income from alternative use.

Here, the costs of land use were calculated as the lease value of the land.

**Constraint facing index (CIF):** A constraint facing index for each selected constraints were computed by using the following formula (Pandit & Basak 2013):

$$CFI = (C_h \times 3) + (C_m \times 2) + (C_l \times 1) + (C_n \times 0)$$

Where,

$C_h$  = Number of responses indicating high constraint

$C_m$  = Number of responses indicating medium constraint

$C_l$  = Number of responses indicating low constraint

C<sub>n</sub> = Number of responses indicating no constraint

**Market chain analysis**

Market chain analysis allows the user to understand the forces driving change in the commodity sector. Technological change can be analyzed at the result of the market, i.e., working one's way back from consumer demand for specific products and qualities to earlier stages in the chain. Market demand has implications for transport and processing, the technology of primary production and ultimately, the inputs used. It makes it easier to identify the policies which can be implemented to enable individual producers and countries to increase their share of these gains.

**RESULTS AND DISCUSSION**

**Demographic Profiles of the Intermediaries**

Table 1 depicts that the majority of the *Bepari*, *Aratdar*, and *Paiker* completed the secondary level of education. In the case of retailers, most of them (40%) attended a primary level of education. Overall, 45% of intermediaries completed the secondary level of education. Only 2.5% of traders earned a higher secondary and above level of education. None of the *Aratdars* was illiterate while 20% of *Bepari*, 30% of *Paiker*, and 26.6% of retailers were found illiterate.

**Table 1:** Literacy Level of Intermediaries

Educational Status	Types of intermediaries				
	Bepari %	Aratdar %	Paiker %	Retailer %	All %
Illiterate	20	0	30	26.7	22.5
Primary (class 1 to 5)	20	40	20	40	30
Secondary (class 6 to 10)	60	60	40	33.3	45
Higher secondary and above (class 11 to above)	0		10	0	2.5
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

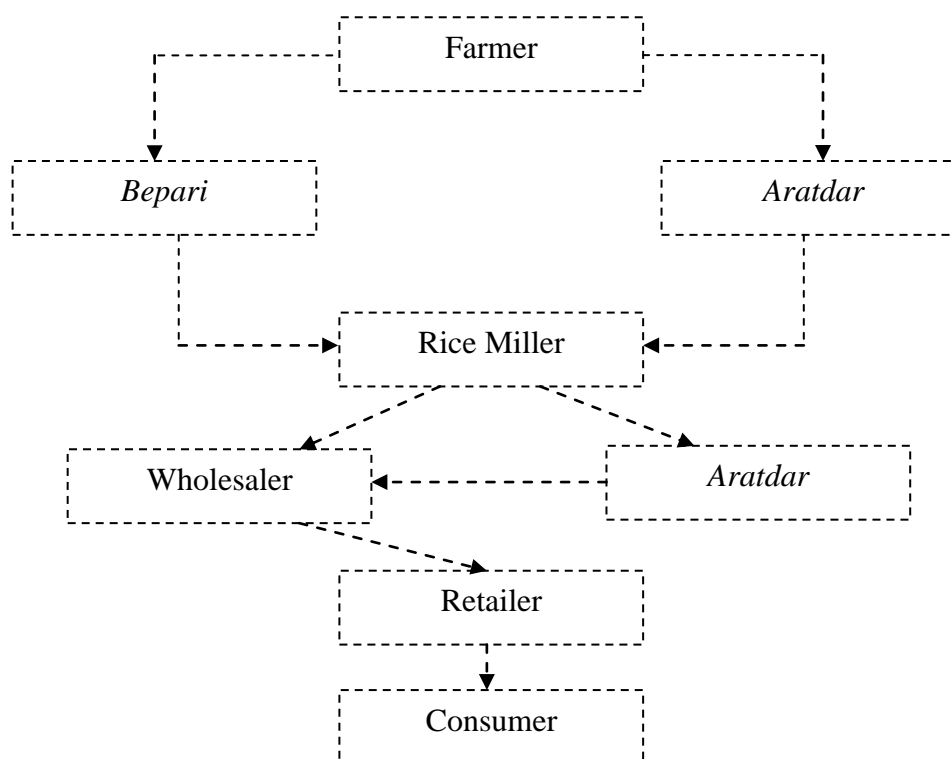
On average, 45% of intermediaries had working experience of 5 to 10 years (Table 2). Near about 30% of the intermediaries had more than ten years long working experience.

**Table 2:** Length of Experience in Agricultural Product Marketing

Length of experience (Years)	Types of intermediaries				All
	Bepari %	Aratdar %	Paiker %	Retailer %	
0-5	20	40	30	20	25
5-10	50	40	40	46.67	45
>10	30	20	30	33.33	30
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

### Marketing system of rice

In between farmers and consumers, there a group of intermediaries in the market chain. *Bepari* and *Aratdar* directly purchase rice from the farmers. They send the rice to rice miller for husking processes. The rice miller sometimes sends back to *aratdar*, while *Aratdar* sells to the wholesaler. In some cases, the rice miller directly transmits to the wholesaler. The retailer collects from the wholesaler. In this chain, the consumer is the ending point (Figure 2).

**Figure 2:** Market Chain of Rice

The total highest marketing cost of 100 kg of rice was Tk. 298.76 incurred by Retailer followed by *Bepari* (Tk. 200.75), *Paiker* or wholesaler (Tk. 121.87) and *Aratdar* (Tk. 71.42).

The *Aratdar* pay the highest commission (62.35%) for *Bepari* (wholesaler). In the case of *Aratdar*, loading and unloading was the most top cost item followed by market toll (19.67%), wastage (16.34 %), wages& salaries (15.21 %), rent and electricity (8.64 %), storage (5.82 %) and personal expenses (5.61 %). Retailers spent the highest cost for wages and salaries (26.05%) followed by rent and electricity (17.88%), storage (11.77%), transportation (11.24%), wastage (8.11), market toll (7.02%), loading and unloading (5.56%) and the personal expenses (2.01%). The *Paiker* spends about 46% of total marketing cost in for transportation, loading, and unloading (Table 3). No intermediary class spends any money on grading. Secondly, the personal expenses varied from one group to another. Wastage was another essential cost item for all the traders. Low-security cost indicated an excellent business environment.

**Table 3:** Marketing Cost of Rice Traders

Cost items	Tk. per 100 kg							
	Bepari		Aratdar		Paiker		Retailer	
	Taka	%	Taka	%	Taka	%	Taka	%
Transportation	20.9	10.4	0.0	0.0	40.4	33.1	33.6	11.2
Commission	127.2	63.4	0.0	0.0	0.0	0.0	0.0	0.0
Storage	0.0	0.0	4.2	5.8	6.4	5.3	35.2	11.8
Wastage	12.2	6.1	11.7	16.3	18.9	15.5	24.2	8.1
Wages & salaries	8.4	4.2	10.9	15.2	7.0	5.7	77.8	26.1
Market toll	6.1	3.0	14.1	19.7	4.2	3.4	21.0	7.0
Rent & electricity	5.4	2.7	6.2	8.6	13.2	10.8	53.4	17.9
Loading & unloading	9.9	4.9	16.9	23.7	15.6	12.8	16.6	5.6
Grading	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mobile phone	2.1	1.0	2.8	4.0	5.7	4.6	8.1	2.7
Security cost	1.8	0.9	0.7	1.0	1.0	0.8	9.7	3.2
Personal expenses	3.2	1.6	4.0	5.6	8.8	7.2	6.0	2.0
Others	3.8	1.9	0.0	0.0	0.9	0.7	13.2	4.4
Total	200.8	100.0	71.4	100.0	121.9	100.0	298.8	100.0

It is evident that the net marketing margin of Aus rice traders is highest for the retailer (Tk. 203.24 per 100 kg), where the lowest for the *Bepari* (Tk. 54.25 per 100 kg). But ROO was the highest for *Aratdar*(77.82%) because they did not need to purchase the product they handle (Table 5).

**Table 4:** Marketing Margin of Rice (Aus) Traders (Tk. per 100 kg)

Traders	Purchase Price	Sale Price	Gross marketing margin	Marketing cost	Net marketing margin	ROO (%)
<i>Bepari</i>	1657.0	1912.0	255.0	200.8	54.3	2.9
<i>Aratdar</i>			127.0	71.4	55.6	77.8
<i>Paiker</i>	3470.0	3650.0	180.0	121.9	58.1	1.6
Retailer	3482.0	3984.0	502.0	298.8	203.2	5.4

Table 5 showed that the net marketing margin of *Aman* rice traders was the highest for the retailer (Tk. 125.24 per 100 kg) and lowest for the *Bepari* (Tk. 44.25 per 100 kg). But ROO was the highest for *Aratdar* (77.82%) because they did not need to purchase the product they handle.

**Table 5:** Marketing Margin of Rice (Aman) Traders (Tk. per 100 kg)

Traders	Purchase Price	Sale Price	Gross marketing margin	Marketing cost	Net marketing margin	ROO (%)
<i>Bepari</i>	1595.0	1840.0	245.0	200.8	44.3	2.5
<i>Aratdar</i>			127.0	71.4	55.6	77.8
<i>Paiker</i>	3612.0	3750.0	138.0	121.9	16.1	0.4
Retailer	3502.0	3926.0	424.0	298.8	125.2	3.3

It was found that the net marketing margin of *Boro* rice traders was the highest for the retailer (Tk. 95.24 per 100 kg) and the lowest for the *Arathder* (Tk. 55.58/100 kg). But ROO was the highest for *Aratdar* (77.82%) because they did not need to purchase the product they handle (Table 6).

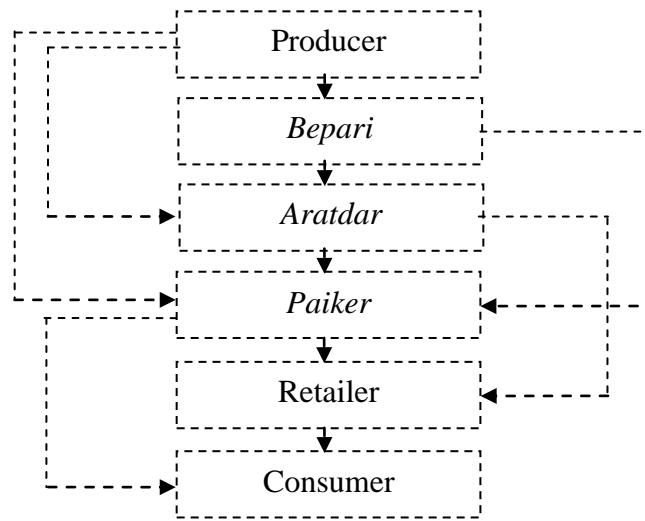
**Table 6:** Marketing Margin of Rice (boro) Traders (Tk. per 100 kg)

Traders	Purchase Price	Sale Price	Gross marketing margin	Marketing cost	Net marketing margin	ROO (%)
<i>Bepari</i>	1690.0	1975.0	285.0	200.8	84.3	4.5
<i>Aratdar</i>			127.0	71.4	55.6	77.8
<i>Paiker</i>	3587.0	3783.0	196.0	121.9	74.1	2.0
Retailer	3652.0	4046.0	394.0	298.8	95.2	2.4

The marketing costs incurred by the various traders for *Aus*, *Aman*, and *Boro* rice were different. The net marketing margin was the highest in all the cases for the retailers in case of *Aus*, *Aman*, and *Boro*.



### Marketing system of vegetables



**Figure 3:** Market Chain of Vegetables and Fruits

The market chain of vegetables and fruits is almost similar to rice, but there is no miller in the chain (Figure 3).

**Table 7:** Average Volume of Vegetables Handled Per Month by Traders

Traders	The volume of vegetables (kg)				Total
	Cabbage	Cauliflower	Tomato	Bean	
<i>Bepari</i>	26807.7	33472.7	49609.2	25291.7	135181.3
<i>Aratdar</i>	85152.9	115982.4	59147.1	48547.1	308829.4
<i>Paiker</i>	25097.5	14519.4	15487.3	12893.6	67997.8
Retailers	1027.8	965.3	1361.0	841.1	4195.1

The highest portion of vegetables was handled by *Aratdar*, followed by *Bepari*, *Paiker*, and retailers (Table 7).

**Table 8:** Modes of Transportation Used by Vegetable Traders

Traders	Mode of transportation (%)								Total
	Pushcart	Rickshaw	Van	Tempo	Pick-up	Boat	Bus	Head load	
<i>Bepari</i>	0	12	41	0	47	0	0	0	100
<i>Aratdar</i>	5	15	21	0	53	0	6	0	100
<i>Paiker</i>	0	6	24	15	51	4	0	0	100
Retailer	6	10	54	15	5	3	3	4	100

Table 8 depicts that different types of vehicles like pushcart, rickshaw, van, tempo, pick-up, boat, bus, and head load were used as a mode of vegetable transportation. Among them, the pick-up was mostly by *Bepari*, *Aratdar*, and *Paiker*. Retailers mostly used the van as their primary mode of transportation.

**Table 9:** Sources of Market Information for Vegetable Traders (Percentage of respondents)

Traders	Sources of market information (%)							Have no market information (%)
	Local market visit & personal observation	Fellow traders	<i>Aratdar</i>	<i>Paiker</i>	<i>Bepari</i>	Market committee	DAM	
<i>Bepari</i>	7	14	79	0	0	0	0	0
<i>Aratdar</i>	0	10	0	7	29	36	0	18
<i>Paiker</i>	22	7	44	0	0	9	5	13
Retailer	10	3	20	32	0	0	10	25

DAM=Department of Agricultural Marketing

It is found that 100% of *Bepari* collected market information, whereas 82% of *Aratdar*, 87% of *Paiker* and 75% of the retailers were informed about market information. The *Aratdar* also acted as the primary source of market information compared to other vegetable traders (Table 9).

**Table 10:** Marketing cost of Different Vegetable Traders

Cost items	Tk./100 kg							
	<i>Bepari</i>		<i>Aratdar</i>		<i>Paiker</i>		Retailer	
	Taka	%	Taka	%	Taka	%	Taka	%
Transportation	33.3	15.2	0.0	0.0	34.9	26.5	40.6	21.9
<i>Aratdar's</i> commission	113.5	53.2	0.0	0.0	0.0	0.0	0.0	0.0
Storage	1.0	0.5	5.0	16.2	19.1	14.5	10.9	5.9
Wastage	21.5	10.0	2.1	6.6	20.8	15.8	29.2	15.7
Wages & salaries	15.6	7.3	5.5	17.8	15.9	12.1	9.4	5.1
Market toll	3.0	1.4	1.5	4.7	7.3	5.6	15.8	8.5
Rent & electricity	8.7	4.1	3.1	10.1	4.1	3.2	22.0	11.9
Loading & unloading	5.9	2.8	4.7	15.2	6.9	5.3	10.1	5.5
Grading	0.9	0.4	0.7	2.1	4.8	3.7	5.0	2.7
Mobile phone	2.9	1.4	2.0	6.4	3.1	2.3	16.3	8.8
Security cost	2.5	1.2	3.3	10.5	1.8	1.4	8.1	4.4
Personal expenses	3.7	1.7	1.1	3.4	8.8	6.7	12.7	6.9
Others	1.4	0.7	2.2	6.9	4.0	3.1	5.4	2.9
Total	213.8	100.0	31.0	100.0	131.5	100.0	185.5	100.0

Table 10 showed that total cost of *Bepari*, *Aratdar*, *Paiker*, and Retailer was Tk. 213.77, Tk. 31.04, Tk. 131.54 and Tk. 185.50 per 100 kg, respectively. *Bepari* incurred the highest cost in *Aratdar's* commission (53.16%). It was also observed that *Paiker* and retailer incurred the highest cost in transportation, while *Aratdar* in storage.

**Table 11:** Marketing Margin of Cabbage Traders (Tk. per 100 kg)

Traders	Purchase price	Sale price	Gross marketing margin	Marketing cost	Net marketing margin	ROO (%)
<i>Bepari</i>	1426.9	1762.5	335.6	213.8	121.8	7.4
<i>Aratdar</i>	0	0	119.0	31.0	88.0	283.4
<i>Paiker</i>	1705.0	1900.3	195.3	131.5	63.8	3.5
Retailer	1860.0	2165.0	305.0	185.5	119.5	5.8

The net marketing margin was the highest for *Bepari* (Tk. 121.8/ 100 kg) and lowest in case of Retailer (Tk. 119.50/ 100 kg). But ROO was the highest for the *Aratdar* (283.4%) because they did not need to purchase the product they handle (Table 11).

**Table 12:** Marketing Margin of Cauliflower Traders (Tk. per 100 kg)

Traders	Purchase price	Sale price	Gross marketing margin	Marketing cost	Net marketing margin	ROO (%)
<i>Bepari</i>	1345.5	1680.0	334.5	213.8	120.7	<b>7.7</b>
<i>Aratdar</i>	-	-	117.6	31.0	86.6	278.9
<i>Paiker</i>	1657.0	1880.0	223.0	131.5	91.5	5.1
Retailer	1890.0	2302.6	412.6	185.5	227.1	10.9

It was revealed that the net marketing margin was the highest for the retailer (Tk. 227.10/100 kg) and the lowest for the *Aratdar* (Tk. 86.56/100 kg). But ROO was the highest for the *Aratdar* (278.87 %) because they did not need to purchase the product they handle (Table 12).

**Table 13:** Marketing Margin of Tomato Traders (Tk./100 kg)

Traders	Purchase price	Sale price	Gross marketing margin	Marketing cost	Net marketing margin	ROO (%)
<i>Bepari</i>	1207.7	1550.0	342.3	213.8	128.5	9.0
<i>Aratdar</i>	0	0	108.5	31.0	77.5	249.6
<i>Paiker</i>	1550.0	1800.0	250.0	131.5	118.5	7.0
Retailer	1845.0	2197.5	352.5	185.5	167.0	8.2

Table 12 showed that the net marketing margin was the highest for the retailer (Tk. 167.00/ 100 kg) and the lowest for the *Aratdar*(Tk. 77.46/100 kg). But ROO was the highest for the *Aratdar*(249.55 %) because they did not need to purchase the product they handle.

**Table 14:** Marketing Margin of Bean Traders (Tk./100 kg)

Traders	Purchase price	Sale price	Gross marketing margin	Marketing cost	Net marketing margin	Return on operating capital ROO (%)
<i>Bepari</i>	1900.2	2281.3	381.1	213.8	167.3	7.9
<i>Aratdar</i>	0	0	159.7	31.0	128.6	414.4
<i>Paiker</i>	2150.0	2440.0	290.0	131.5	158.5	7.0
Retailer	2255.0	2722.5	467.5	185.5	282.0	11.6

It is evident that the net marketing margin was the highest in case of retailer (Tk. 282.00 /100 kg) and the lowest in case of *Aratdar* (Tk. 128.63/ 100 kg). But ROO was the highest for the *Aratdar* (414.40 %) because they did not need to purchase the product they handle (Table 14).

### Marketing system of fruits

It was found that the highest portion of fruits was handled by the *Aratdar* (659553kg) which was followed by *Bepari* (297146 kg), *Paiker* (283460 kg) and Retailers (50526 kg).

**Table 15:** Average Volume of Fruits Handled Per Month

Traders	Volume of vegetables			Total
	Pineapple	Banana	Citrus	
<i>Bepari</i>	15964	151182	130000	297146
<i>Aratdar</i>	51339	252143	356071	659553
<i>Paiker</i>	17720	230140	35600	283460
Retailers	4150	35016	11360	50526

Table 16 showed that total cost of *Bepari*, *Aratdar*, *Paiker*, and Retailer was Tk. 49.85, Tk. 14.31, Tk. 54.77 and Tk. 82.22 per 100 pieces, respectively. *Bepari*, *Paiker*, and retailers incurred the highest cost of transportation. It is also found that *Aratdar* incurred the highest cost in wastage (Table 16).

**Table 16: Marketing Cost of Fruits Traders**

Cost items	Tk./ 100 pieces							
	<i>Bepari</i>		<i>Aratdar</i>		<i>Paiker</i>		Retailer	
	<i>Taka</i>	%	<i>Taka</i>	%	<i>Taka</i>	%	<i>Taka</i>	%
Transportation	15.5	31.2	0	0	15.7	28.6	19.9	24.2
<i>Aratdar's</i> Commission	11.9	23.9	0	0	0	0	0	0
Storage	0.6	1.1	2.8	19.5	3.7	6.7	4.7	5.7
Wastage	5.5	11.1	4.5	31.1	7.2	13.2	8.8	10.6
Wages & salaries	2.3	4.5	2.1	14.9	3.7	6.7	8.7	10.5
Market toll	1.8	3.7	0.8	5.5	4.2	7.7	2.9	3.5
Rent and electricity	1.9	3.8	1.4	9.9	4.3	7.8	12.5	15.2
Loading & unloading	5.8	11.7	0.8	5.8	2.9	5.3	2.9	3.5
Grading	0.7	1.3	0.3	2.3	7.3	13.3	7.8	9.5
Mobile phone	1.8	3.7	0.6	3.9	1.4	2.5	5.3	6.4
Security	0.2	0.4	0.4	2.8	0.7	1.2	2.6	3.2
Personal expenses	0.5	0.9	0.6	4.3	3.1	5.7	4.7	5.7
Others	1.4	2.8	0	0.0	0.8	1.4	1.6	1.9
Total	49.9	100.0	14.3	100.0	54.8	100.0	82.2	100.0

It is evident that the net marketing margin was highest for the *Bepari* and the lowest for the *Aratdar* (Tk. 89.44/100 pieces). But ROO was the highest for *Aratdar* (Tables 16, 17 & 18).

**Table 17: Marketing Margin of Pineapple Traders (Tk. /100 pieces)**

Traders	Purchase Price	Sale Price	Gross marketing margin	Marketing cost	Net marketing margin	ROO (%)
<i>Bepari</i>	1445.0	2075.0	630.0	49.9	580.2	38.8
<i>Aratdar</i>	0	0	103.8	14.3	89.4	625.0
<i>Paiker</i>	2090.0	2276.0	186.0	54.8	131.2	6.1
Retailer	2195.0	2748.0	553.0	82.2	470.8	20.7

**Table 18: Marketing Margin of Banana Traders (Tk./100 pieces)**

Traders	Purchase Price	Sale Price	Gross marketing margin	Marketing cost	Net marketing margin	ROO (%)
<i>Bepari</i>	110.0	262.0	152.0	49.9	102.2	63.9
<i>Aratdar</i>	0	0	16.0	14.3	1.7	11.8
<i>Paiker</i>	250.0	345.0	95.0	54.8	40.2	13.2
Retailer	350.0	550.0	200.0	82.2	117.8	27.3

**Table 19:** Marketing Margin of Citrus Traders (Tk. /100 pieces)

Traders	Purchase Price	Sale Price	Gross marketing margin	Marketing cost	Net marketing margin	ROO (%)
<i>Bepari</i>	280.0	431.0	151.0	49.9	101.2	30.7
<i>Aratdar</i>	0	0	21.6	14.3	7.2	50.6
<i>Paiker</i>	425.0	618.0	193.0	54.8	138.2	28.8
Retailer	616.0	863.0	247.0	82.2	164.8	23.6

### Constraints in Production and Marketing

The reasons that impede the achievement of expected output are defined as problems or constraints. This section deals with the problems faced by the respondents in the research areas in the production and marketing of agricultural commodities. Based on their discernment about the constraints they met, a constraint facing index (CFI) was calculated in mathematical form according to the extent or severity of the constraints. This mathematical demonstration can help the policymakers for further investigation.

**Table 20:** Constraint Facing Index of Group Farmers Regarding Production and Marketing

Type of constraints	Constraint items	The level of the constraints				Score	Rank
		High (3)	Medium (2)	Low (1)	Not at all (0)		
Quality Seed	Unavailability	86	79	46	29	462	6
	High price	91	78	49	22	478	2
	Lack of certification	72	84	48	36	432	9
Pest Control	Physical damage	88	50	61	41	425	10
	Lack of training	60	59	77	44	375	15
	High price	71	93	66	10	465	5
Intercultural operation	The high cost of labor	67	82	57	34	422	11
	Natural Calamity	96	68	37	39	461	7
	Lack of capital	92	90	48	10	504	1
	Poor quality of fertilizer	86	81	53	20	473	4
Processing and Marketing	Lack of storage facility	79	79	58	24	453	8
	Low price in the peak season	60	74	64	42	392	12
	Lack of transportation facility to a distant place	48	73	89	30	379	14
Extension facility	Lack of training facilities on improved technology	87	80	56	17	477	3
	Inactive extension workers	63	51	97	29	388	13
	No information on pest forecasting	48	73	81	38	371	16

Constraint facing index (CFI) is a mathematical problem ranking index. It is defined by a set of objects whose state satisfies some problems or shortcomings. It represents the entities of a constraint in a homogeneous collection of finite limitations over variables. The respondents of the research areas were requested to provide their feedback on 16 selected problems. After computing the CFI scores, the constraints were ranked in descending order. The computed CFI score of the 16 problems ranged from 371 to 504 for group farmers and 339 to 481 for non-group farmers (against a possible range from 0 to 720) which were arranged in rank order according to their CFI scores as shown in Tables 24 and 25.

**Table 21:** Constraint Facing Index of Non-Farmers Regarding Production and Marketing

Type of constraints	Constraint items	The level of the constraints				Score	Rank
		High (3)	Medium (2)	Low (1)	Not at all (0)		
Quality	Unavailability	69	74	65	32	420	9
Seed	High price	84	72	46	38	442	6
Pest Control	Lack of certification	77	63	60	40	417	10
	Physical damage	80	59	79	22	437	7
	Lack of training	77	69	81	13	450	4
Intercultural operation	High price	49	87	70	34	391	12
	The high cost of labor	53	49	88	50	345	15
	Natural Calamity	58	71	67	44	383	13
	Lack of capital	94	68	63	15	481	1
Processing and Marketing	Poor quality of fertilizer	80	58	71	31	427	8
	Lack of storage facility	82	77	62	19	462	2
Extension facility	Low price in the peak season	56	67	97	20	399	11
	Lack of transportation facility to a distant place	65	53	76	46	377	14
	Lack of training facilities on improved technology	82	76	49	33	447	5
	Inactive extension workers	88	70	55	27	459	3
	No information on pest forecasting	49	58	76	57	339	16

In case of group farmers, lack of capital/ credit obtained the rank 1<sup>st</sup> constraint with CFI score of 504 which was followed by the high price of seed (ranked 2<sup>nd</sup> with CFI score 478) and lack of training facilities (ranked 3<sup>rd</sup> with CFI score 477). The lowest extent constraint for group farmers was lack of information on pest forecasting (ranked 16<sup>th</sup> with CFI score 471) (Table 20). In case of non-group farmers, lack of capital/ credit was the ranked as 1<sup>st</sup> as the highest extent constraint also with CFI score 481 which was followed by lack of storage facility (ranked 2<sup>nd</sup> with CFI score 462) and laxity of the extension agents (ranked 3<sup>rd</sup> with CFI score 459). The lowest extent constraint for non-group farmers was lack of information on pest forecasting (ranked 16<sup>th</sup> with CFI score 339) (Table 21).

Agricultural marketing covers the services involved in moving an agricultural product from the farm to the consumer. Numerous interconnected activities are included in doing this, such as planning production, growing and harvesting, grading, packing, transport, storage, agro- and food processing, distribution, and sale. The limited infrastructure for perishable of fruits and vegetables is the significant constraints in consumption. Storage facilities are particularly necessary for fruits and vegetables (Ali & Tsou 1997). Rahman et al. (2016) revealed that infrastructure developments helped farmers to get better prices for their production. This study conducted to give the importance of growing interest in agricultural marketing. Agricultural marketing activities include market information development, marketing extension, training in marketing, and infrastructure development. It also involves understanding customer needs and effectively positioning and selling products and services in the marketplace.

## CONCLUSION

Despite the current opportunity for upgrading the marketing systems of crops, no effective strategies have been taken yet to develop this sector. This study analyzed the present situation, opportunities, and constraints of market chain and marketing systems of Sylhet district. The market of food grain, vegetables, fruits, and spices are inadequate as compared with the demand according to the Food and Agriculture Organization (FAO)/World Health Organization's (WHO) standard. The vegetables were not able to store their products in the peak season for future use and marketing that could be helpful to the uniform distribution of horticultural crops throughout the year and the reason. The respondents identified the lack of proper storage facilities as the topmost constraint in the marketing system. Therefore, cross-national research on crop production, marketing, and processing is essential, including different collaborators from Government, Non-Government Organizations, and Public Universities. The horticulture based agro-industrial sector cannot meet the demand of the whole population all the year round. Moreover, due to the lack of quality inputs, high price, and the uncertainty of returns from sells, farmers are not interested in producing more vegetables on a full scale. It is essential to establish horticultural crop-based industries to encourage farmers. Cost-benefit analysis indicates that production of horticultural crops is economically viable for the country.

## RECOMMENDATIONS

- Re-structuring of Market Management System and updating regulatory and institutional setup
- Reduction of postharvest loss at harvesting stage, transportation, storage, and marketing stages
- Low cost and user-friendly techniques of post-harvest management such as pre-cooling method, curing, blanching, drying and preservation
- Developing low-cost storage techniques especially for horticultural
- Increasing investment for the development of market infrastructure



- Linking growers to super shops should be officially encouraged and facilitated to reduce the costs of intermediation
- Modern packaging system for perishable products should be adopted.
- The feasibility of direct farm-to-market programs should also be analyzed and justified by research organizations, extension services, and universities.

## REFERENCES

- Alam, MA 2011, 'An Analysis of Consumption Demand Elasticity and Supply Response of Major Foodgrains in Bangladesh', *Thesis of International Master of Science in Rural Development*, Ghent University, Belgium.
- Alam, MJ 2010, *Export Marketing of Vegetables in Bangladesh*. Bangladesh. Bangladesh Academy for Rural Development.
- Ali, M. & Tsou, CS 1997, 'Combating micronutrient deficiencies through vegetables-a neglected food frontier in Asia', *Food Policy*, vol. 22, pp. 17–38
- BBS 2007, 'Statistical Yearbook of Bangladesh', *Bangladesh Bureau of Statistics*, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka.
- Begum, MEA & Haese, LD 2010, 'Demand and supply situations for major crops and food items in Bangladesh', *Journal of Bangladesh Agricultural University*, vol. 8, no. 1, pp. 91- 102.
- Fazlur, 2008, 'Agricultural Marketing System in Bangladesh', *Consultancy Report*, Ministry of Food, Dhaka.
- Hossain & Arangzeb, 2009. 'Marketing and Economic Development', Bangladesh, Bangladesh Academy for Rural Development, Comilla.
- Hossain, M., Naher, F & Shahabuddin, Q 2005, 'Food Security and Nutrition in Bangladesh: progress and determinants', *Journal of Agricultural and Development Economics*, vol. 2, no. 2, pp. 103-132.
- Hossain, MA & Hossain, MN 2013, 'Some Observations over Supply Chain: With Reference to Vegetables Market of Bangladesh', *Journal of Business Studies*, vol. 34, no. 2, pp. 67-81.
- Hossain, MA 2016, 'Value chain analysis of potato in selected areas of Bogra and Munshigonj districts of Bangladesh', *MS thesis*, BRAC University.
- Huq, ASMA & Arshad, FM 2010, 'Demand Elasticities for Different Food Items in Bangladesh', *Journal of Applied Science*, vol. 10, no. 20, pp. 2369-2378.
- Islam & Ahsan, 2009, *Development of an Effective System for Vegetable Marketing in Bangladesh*. Bangladesh. BARC, Agricultural Economics and Rural Sociology Scientific Paper, no. 7, pp. 27- 35.
- Islam, AHMS 2010, 'Protection, Comparative Advantage, Welfare in the Rice sector in Bangladesh: Theory and Empirical Evidence', *A submitted IMRD thesis to the department of agricultural policy*, Humboldt University, Berlin, Germany.
- Islam, M, Alam, M, & Uddin, M 2019, 'Supply Chain Optimization for Farmer-Bepari System of Agricultural Products in Bangladesh', *Asian Research Journal of Mathematics*, vol. 13, no. 1, pp. 1-13.

- Miah, MTH 1987, 'Appraisal of Deep and Shallow Tubewell Irrigation Projects in the Tangail District in Bangladesh', *M.Sc. Thesis*, University of New England, Armidale, Australia.
- Pandit, JC & Basak, NC 2013, 'Constraints faced by the farmers in commercial cultivation of vegetables', *Journal of Bangladesh Agricultural University*, vol. 11, no. 2, pp. 193-198.
- Pervez, AKMK, Uddin, ME, Shah, AA, Prodhan, FA & Sheikh, MM 2019, 'Fuzzy-Likert scale based assessment of marketing risk faced by the hybrid rice growers of Bangladesh', *Economics of Agriculture*, vol. 66, no. 1, pp. 9-22.
- Pervez, AKMK, Gao, Q & Uddin, ME 2016, 'The management of agricultural risk in Bangladesh: a proposed process', *Asian Journal of Agricultural Extension Economics & Sociology*, vol. 12, no. 1, pp. 1-13.
- Rahman, S, Kazal, MMH & Alam, MJ 2016, 'Competitiveness, profitability, input demand and output supply of maize production in Bangladesh', *Agriculture*, vol. 6, no. 2, pp. 21.
- Siddique, MAK 2018, Supply chain management processes of some selected agricultural commodities in Bangladesh: Efficiency, constraints and a proposed model', *PhD thesis*, University of Dhaka.
- Singha, U & Maezawa, S 2019, Production, marketing system, storage and future aspect of potato in Bangladesh', *Reviews in Agricultural Science*, vol. 7, pp.29-40.