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Interference of Middlemen onVegetable Price: With Reference to Brinjal Marketing Channel in Bangladesh

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Abstract: This paper makes an attempt to visualize the interference of market intermediaries in pricing and supply chain of vegetable in Bangladesh with reference to Brinjal marketing channel. The study was conducted in Saver upazilla under Dhaka district from the month of August to September in 2016. Data was collected from the stakeholders (farmer, arathder, bepari, wholesaler, and retailer) of marketing channel and used to calculate their cost and net margin. It shows the existing supply chains of Brinjal between Dhaka and Saver. It also calculated farmers share on consumer price in each supply chain. The study deeply focused on identifying reasons for not getting fair price by farmers and tried to find out some probable solutions to overcome those barriers.

Keywords: Price, middlemen, supply chain, farmers share, cost, net margin.

Introduction:

Bangladesh is highly dependent on agriculture for food security and employment of labor force. Vegetable is important for nutritional, financial, and food security in Bangladesh. However, the availability of vegetable is only about 1/5th of the recommended requirement of 200 g/person/day. (Source: Banglapedia). Brinjal (Eggplant) is an important vegetable and source of cash income for resource-poor farmers in Bangladesh. There are different varieties of Brinjals are grown in most of the district of Bangladesh. Currently, 7.8 percent of the land under vegetable crops, 64,208, hectares is dedicated to growing about 340,000 metric tons of Brinjal per annum. (Source: Feed the Future South Asia Eggplant Improvement, 2016). Appropriate marketing channels and the market actors are important in timely delivery of vegetables from the producers to the consumers. But there is no proper systematic channel in the markets for which price of vegetables fluctuates. Farmers most of the time, donot get the fair price. Effective Supply Chain Management can reduce the fluctuation of price of vegetables and ensure the reasonable price for the producers of vegetables. At present, Bangladesh's agricultural marketing system is often accused in the popular press of being inefficient. In the case of vegetables, aratdar, bepari and wholesaler have been found to be critical players in the market. Their margin was between 17-18% of the retail value and their return on working capital was found to be exceptionally high (NFPCSP 2011). High marketing costs often stem from poor transportation networks (Hossain*et al*. 2006). The vegetable supply chain in our country is not effective where growers of vegetables are always deprived of profit. Growers in this chain face three challenges: financing crop production; poor yields; and losses due to the elements which reduce their bargaining power significantly (The Daily Star, 2009). Asian Productivity Organization (2007) on "Marketing System for Agricultural Products" indicated that the agricultural marketing system of Bangladesh is inefficient because of the different territories, scattered location of production areas, natural disasters and relatively poor condition of infrastructure. The report suggested that two approaches should be adopted. First approach is the establishment of regulated markets which are setup to regulate the conduct of market functionaries, promote grading and standardization of products, collect and disseminate of information. The second approach is the establishment of central wholesale markets which will provide facilities for assembling large volume of products which are properly stored, graded and packed to facilitate their auctioning.

Objectives of the Study

The overall objective of the study is to know how intermediaries involved in the Supply Chain andpricing ofBrinjalin Bangladesh. The specific objectives of the study include –

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- To analyze the current vegetablesmarketing channel in Bangladesh;
- To assess the level of interference of middlemen on Brinjal price;
- To identify major constraints of supply chain of Brinjal;
- To identify the probable ways to ensure better pricing and supply of Brinjal.

Methodology

Nature of the Study:

This is an Exploratory Research, because the main objective of this research is to know the level of interference of middlemen on pricing of Brinjaland explore the existing vegetable supply chain operating in Bangladesh.

Area of data collection: Data of farmers was collected from Birulia and Akran village of Saver Upazilla of Dhaka district. Researchers collected data from Saver because;a large number of farmers are involved with Brinjal production there and convenient for them to collect data.Data from bepari, wholesaler and retailer were collected from both Saver and Dhaka (Karwanbazer and Mirur-1 bazer). Data from arathderwas collected from Dhaka (KarwanBazer and Mirpur-1 Bazer).

Method of Data Collection:

Data were collected from both primary and secondary sources.

Collection of Secondary Data

For this study, secondary data have been collected from different books, journals, reports of BBS, BARI, BIDS, BARC etc. and also from online sources.

Collection of Primary Data

The target population of the study has been divided into five groups. The name of five groups is Farmers/ Producers, Aratdar, Bepari, Wholesalers and Retailers. For this study, thirty(30) farmers, ten(10) bepari, ten (10) wholesaler, and ten (10) retailers have been selected as respondents of different categories of samples. No statistical formula has been used to determine the size of those samples. Rather personal judgment is used to determine the size of the sample. Here judgmental sampling technique has been applied to select respondents in different categories. The primary data have been collected from the target population by using structured questionnaire. The questionnaire has been furnished with some open ended and some close ended questions.

Data Enumerator and Data Analysis

Data have been collected with proper care by researcher. Data obtained fromquestionnaire and interviews have been tabulated and summarized and then they areentered into a database system using Microsoft EXCEL.

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Parameter Studied:

Profitability of Growers: The following profit equation was used to assess the profitability of production of the selected vegetables. **Π =P.Q - (TVC+TFC)** Where Π = Profit of producer per kg per year P = Per kg price of vegetables Q = Quantity of vegetables TVC = Total variable cost TFC = Total fixed cost	**Gross Returns of Producers** The following equation has been used to estimate gross return (GR): **GR = ΣP. Q** Where GR = Gross return from product P = Price of vegetables Q = Quantity of vegetables
Gross Profit of Producers The following equation was used to assess the gross margin. **GM = TR - VC** Where GM = Gross margin TR = Total return VC = Variable cost	**Net Profit Received by Producers** Net profit received by farmer is expressed by the following formula: **NPf = GPf - MCf** Where, **NPf**= Net profit received by farmers **GPf**= Gross price received by farmers **MCf**= Marketing cost of farmers
Marketing Profits of Intermediaries The net marketing profits of the intermediaries (after physical losses) are calculated by the following formula: Net marketing profit = Sales price - (Purchase price + Marketing cost)	**Price Spread** Price spread = Price paid by consumers - Price received by the growers **Growers' Share** Growers' share (%) = (Pr*ice received by the growers/Consumers ' price)* x100

Result and discussion:

Existing Supply Chain of Vegetables in Bangladesh:

Number of Markets:

There are broadly four types of market in the existing supply chain of vegetable in Bangladesh. These are:

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Rural Primary Markets:

Primary market is held once or twice in a week and it usually deals with commodities which are required by the local rural people. Here, vegetables are directly sold to the local consumers. The initial markets at village level are the haats, in which the trade is characterized by direct sales of small amount of produce by growers to village traders or retail sales to rural consumers.

Assembly and Secondary Markets:

These are larger markets where larger amount of produce are disposed of either by growers themselves or by village traders. These markets are often located within larger settlements and operating on a periodic basis for assembly purposes. They may operate as daily retail markets, serving nearby urban populations.

Terminal Markets:

Urban wholesale, wholesale/retail and retail markets are located near to large consumption areas. For the retail markets permanent retailers predominantly handle the transactions. In the wholesale markets transactions are by wholesalers or commission agents and only larger growers and marketing cooperatives are likely to bring produce. It is the central or wholesale markets from where distribution starts.

Other Markets:

In case of horticultural marketing, channels other than through markets exist, including direct on-farm sales and, the use of pre-harvest contractors who purchase the produce while it is still on the trees and arrange for harvesting, packaging and transport to wholesale outlets.

Number of intermediaries in marketing channel of vegetables in Bangladesh

There are five categories of middlemen from producer to ultimate consumer. They help to reach vegetables from growers to consumers. They are faria, bepari, aratdar, wholesaler and retailer.

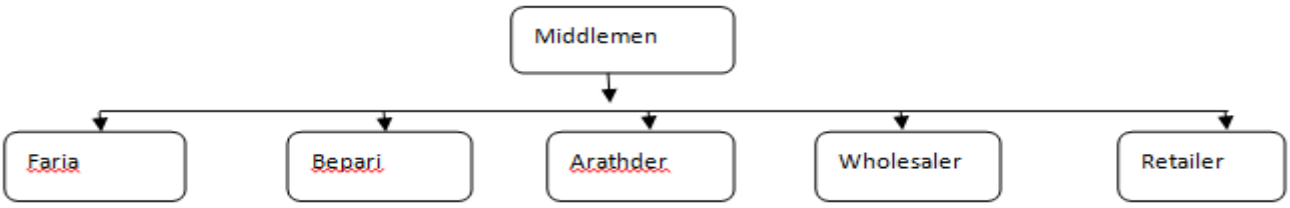

Fig 1: Different categories of Middlemen

Faria: Small traders who dealt in product within three or four local markets and handle a small volume of products. They purchase product from farmers and sold that either to the beparies or the consumers. They are usually landless labor or small farmers having no full time work on the farm (Tasnoova et al, 2006).

Beparies: Professional traders who purchase agricultural products from farmers or farias in the local market or village. This group handles larger volume of products then farias. Beparies sell their products to Arathder.

Arathder: Arathder serves as a fixed commission agent who have fixed establishment and operate between bepari and retailers and charge a fixed commission for giving storage facilities.

Retailers: Retailers are the last link of marketing channel. They purchase products from beparies or wholesalers and sell them to the consumers.

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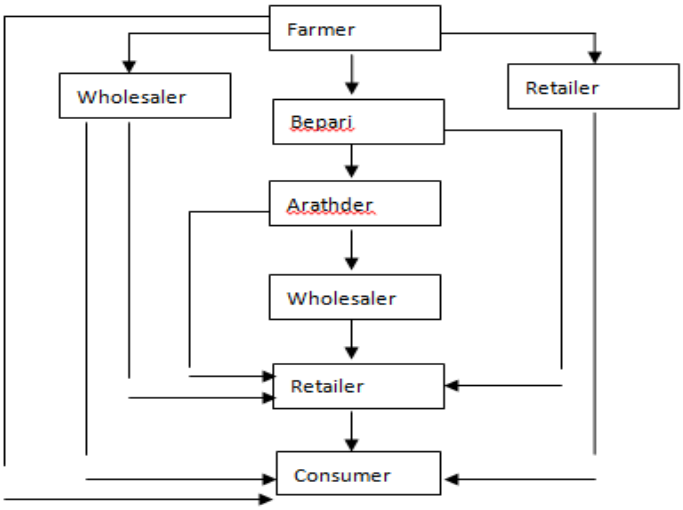

Figure 2: Existing supply chain of Brinjal in Saver to Dhaka
Source: Field Survey

Table 1: Cost of production of Brinjal (per hector):

Particulars	**Unit**	**Total**	**Price/unit**	**Total amount**
Family labor	No.	24.7	350	8645
Hired labor	No.	185.25	350	64837.5
Total labor cost				**73482.5**
Land preparation cost				12350
Seed/Seedling cost				12510.11
Fertilizers:				
Urea	kg	275	20	5500
TSP	kg	247	20	4940
Gypsum	kg	61.75	25	1543.75
MoP	kg	37.05	30	1111.5
Manure (20 kg/ Basket)	No.	123.5	100	12350
Total fertilizer cost				**25445.25**
Irrigation cost				21955.56
Pesticide cost				42790
Total variable cost				**188533.42**
Land use cost				24700
Interest on operating expenses (10% according to BD krishi Bank)				4713.34
Total cost				**217946.76**
Total production (kg/ha)		14820		
Price (Tk./kg)			22.58	
Total return (Tk./ha)				**334635.6**
Gross Margin (Tk./ha)				**146102.18**
Net return (Tk./ha)				**116688.84**

Source: Field Survey

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In Saver, huge amounts of Brinjal are produced round the year. The farmers usually cultivate indigenous variety and their production is comparatively lower than Hybrid variety. Human labor is important for Brinjal production. Total cost per hectare for family andhired labor were Tk. 8645 and Tk. 64837.5 respectively.Farmer used different types of fertilizer, among them Urea, TSP, MP and manure were popular. Total cost per hectare for fertilizer was Tk. 25445.25 which was 11.67% of the total cost. Pesticide and insecticide cost was Tk. 42790 and irrigation cost was Tk. 21,955.56.Total variable cost per hectare for producing Brinjal was Tk. 188533.42. Total interest on operating capitalfor a vegetable season was Tk. 4,713.34and land use cost was Tk. 24700. It is evident from the table thattotal cost per hectare for producing Brinjal was Tk. 217946.76. From the basis of farmer's data totalproduction per hectare of Brinjal was 14820 kg. The average price for per kg Brinjal was Tk. 22.58. Here the average price is considered for whole season. It is interesting that farmers get higher price for their Brinjal, if farmer harvest early in the season and farmers get lower price for their Brinjal for pick season. It is found from the study that farmer's average total return was Tk. 334635.6. Gross margin and net return per hectare were Tk. 146102.18 and Tk. 116688.84respectively.

Table 2: Marketing cost of Brinjal Farmer

Items of Cost	**Cost/kg**	**% of Total Cost**
Transportation	0.75	31.25
Packaging	0.65	27.07
Wastage	0.96	40
Depreciation (Basket)	0.04	1.67
Total	**2.4**	**100**

Source: Field Survey

The costs for marketing of Brinjal producers has been calculated and presented in Table. The calculated marketing cost was Tk. 2.4 per kg (Table 2). The major cost was due to the cost for wastage (40). Transportation cost is comparatively low for famers because most of the targeted farmers lived near to the wholesale market. They normally used Rikshaw, Van and Bicyle to carry their produces.

Table 3: Net margin of Brinjal farmer (Tk. /kg)

	Sales price (TK/Kg)	Cost (Tk./kg)	Marketing cost (Tk./kg)	Net Margin (Tk./kg)
Farmer	22.58	14.70	2.4	5.48

Source: Field Survey

From the table 3, it is seen that net margin per kg Brinjal for farmers is Tk. 5.48

Marketing Cost of Intermediaries

Table 4: Marketing costs ofbepari for Brinjal trade

Items of cost	**Cost (Tk./kg)**	**% of Total Cost**
Transportation	1.5	35.71
Loading/Unloading	0.55	13.09
Arathder commission	1.11	26.42
Wastage	0.86	20.47
Depreciation (gunny sack)	0.18	4.28
Total	**4.2**	**100**

Source: Field survey

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The costs for marketing of Brinjal for bepari has been calculated and presented in Table 4. The calculated marketing cost was Tk. 4.2/kg (Table 4). The major cost was incurred for transportation (35.71%). Another major cost for bepari was arathder commission (26.42%). Wastage (20.47%) of perishable Brinjal also incurred a large portion of marketing cost.

Table 5: Marketing costs ofArathder for Brinjal trade

Items of Cost	Cost (Tk./kg)	% of Total Cost
Rent	0.40	38
Unloading	0.41	43.15
Electricity Bill	0.05	5.26
Staff Salary	0.07	7.37
Security Guard	0.02	2.11
Total	**0.95**	**100**

Source: Field survey

The marketing cost of arathder was Tk. 0.95 per kg. The highest cost incurred on labor for unloading (43.15%). Rent of arat was also another major cost (38%).

Table 6: Marketing costs of Wholesalers for Brinjal trade

Items of Cost	Cost (Tk./kg)	% of Total Cost
Transportation	0.95	27.14
Loading/Unloading	0.50	14.29
Cost for place at Arat	0.3	8.58
Arathder commission	1.00	28.57
Wastage	0.65	18.57
Depreciation (gunny sack)	0.1	2.86
Total	**3.5**	**100**

Source: Field survey

Marketing cost of wholesalers per kg Brinjal is Tk. 3.5. Arathders commission (28.57%) and transportation (27.14%) were incurred the highest cost. Wastage and loading/unloading also incurred large portion of cost.

Table 7: Marketing costs of Retailers for Brinjal trade

Items of Cost	Cost (Tk./kg)	% of Total Cost
Transportation	1.77	32.18
Rent	1.10	20
Loading/Unloading	0.65	11.82
Electricity Bill (including generator)	0.20	3.6
Cleaner	0.050	0.91
Wastage	1.5	27.27
Security Guard	0.030	0.54
Packaging (Shopping Bags)	0.080	1.45
Depreciation (Bamboo Busket)	0.060	1.09
Depreciation (Weighing Machine)	0.050	0.90
Total	**5.5**	**100**

Source: Field survey

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Retailers incurred highest marketing cost among five stakeholders and it was Tk. 5.5 per kg. The major cost was incurred for transportation (32.18%). Another major cost for retailers was wastage (27.27%). Rent (20%) and loading/unloading (11.82%) also incurred a significant portion of marketing cost.

Different Supply Chain Management System used in Brinjal Marketing:

Marketing channels and market actors of Brinjalat SaverUpazilla have been observed. Marketing channels and market players vary with production locations.The actors in Saver-Dhaka channel is growers, bepari, aratdar,wholesalers, retailers and consumers. The Bepari purchasesBrinjal from an assemble markets.Bepari mainly sells to wholesaler through arathder. From Saver to Dhaka channel, there is no or very little existence of faria. Another trading system has been observed in Saver to Dhaka marketing channel that, the arathders provide money to the bepari to bring produces and to keep it to his Arat. Then the commission agents make necessary arrangement to sell Brinjal to wholesalers or faria and earned a commission (1 taka/Kg) from them. Beside this, the arathders also earned commission from Beparies at (5-10) % on their sales value. The beparies do not have any chance to sell their Brinjal directly to the buyers. All of the targeted farmers sold their products to the Bepari in the local assembled market.

Supply Chain 1:

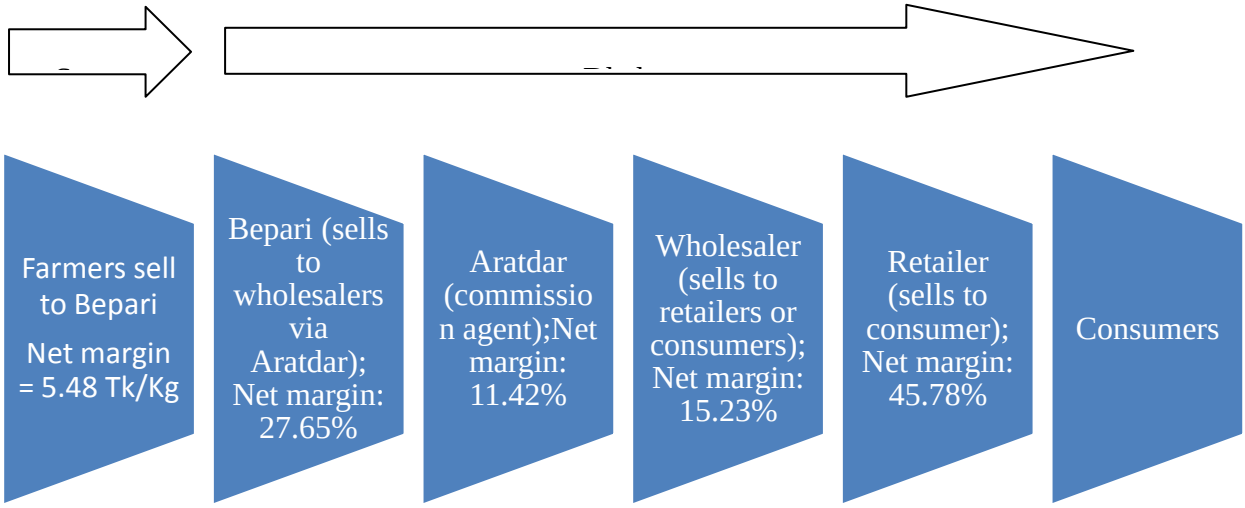

Fig 3: Marketing channel of Brinjal(Saver to Dhaka) with percentage of net margins of the market intermediaries.

Table 8: Marketing margin of Brinjal intermediaries

Intermediary	Purchase price (Tk./kg)	Sales price (Tk./kg)	Gross margin (Tk./kg)	Marketing cost (Tk./kg)	Net (Tk./kg)
Bepari (Saver)	22.58	30.5	7.92	3.2	4.72
Arathder (Dhaka)			2.9	0.95	1.95
Wholesalers (KarwanBazer and Mirpur-1 Bazer)	28.75	35.25	6.5	3.9	2.6
Retailers (karwanBazer, Mirpur and Agargoan)	33.20	45.75	12.55	4.75	7.8

Source: Field Survey

From the figure-3 and table-8, it is found that retailers hold the highest net profit 7.8 Tk./kg where farmers got 5.48 Tk./kg.

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Percentage of Net Margins of the Intermediaries:

Table 9: Value addition by intermediaries

Intermediary addition	Net margin (Tk./kg)	% of value
Bepari	4.72	27.65
Arathder	1.95	11.42
Wholesaler	2.6	15.23
Retailers	7.8	45.70
Total	17.07	100

Source: Field survey

In this table, the Cost margin analysis revealed that the highest net margin was received by the retailers of Dhaka city (45.78%) followed by bepari (27.65%) and wholesalers (15.23%). In contrast, the lowest net margin was received by arathder (11.42%).

Supply Chain 2:

The another existing marketing channel between Saver to Dhaka is drawn below: Some wholesalers directly purchased products from farmers from local wholesale market of Saver and sell them to retailers. 40% of respondents (farmers) directly sold to wholesalers.

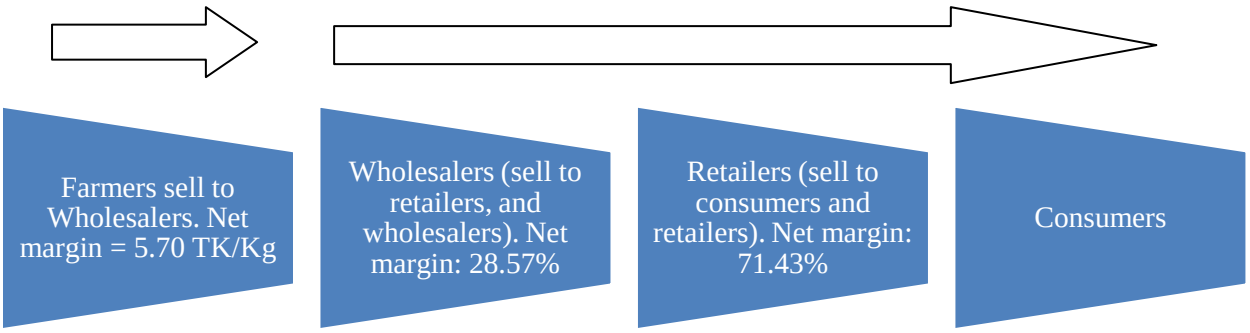

Fig 4: Marketing channel of Brinjal Saver-Dhaka

Table 10: Marketing margin of Brinjal intermediaries

Marketers	Purchase price	Sales value (TK/KG)	Gross margin (TK/KG)	Marketing cost (TK/KG)	Net margin (TK/Kg)
Wholesalers (Saver)	23.25	30.25	7	3.5	3.5
Retailers (Dhaka)	29.50	43.75	14.25	5.5	8.75

Source: Field Survey

In supply chain 2, farmers' profit margin is 5.70 Tk. /kg which is higher than Supply chain 1. In figure it is seen that 71.43% net margin is carried out by retailers.

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Supply Chain 3:

Half of the targeted farmers sold their produces directly to the retailers. In this supply chain farmers get higher net margin per kg Brinjal than previous two chains. They sold their products to the local or urban retailers and they got higher price than the price when they sold to bepari or wholesaler.

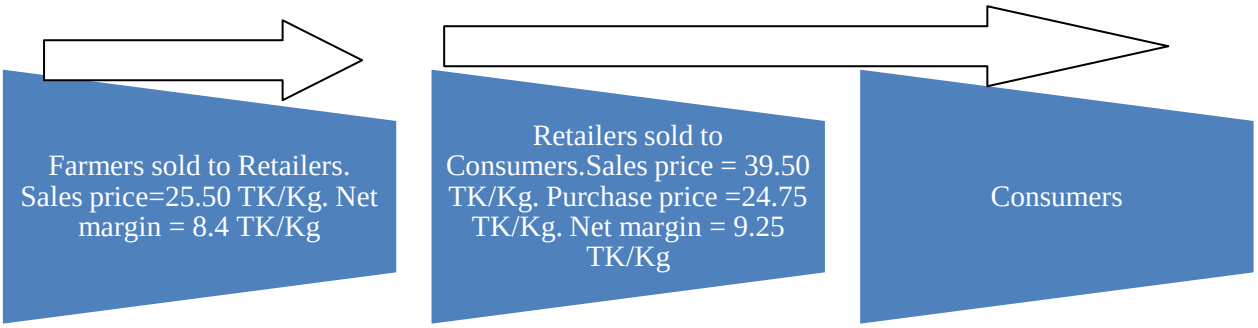

Fig 5: Marketing channel of Brinjal Saver-Dhaka with only one intermediary (Retailer).

Supply Chain 4:

All of the targeted farmers sold their produces directly to the consumers. Farmers directly sold produces to the consumers and they got the highest margin. Here, their margin is high because they mostly sale to the neighbors, relatives and other local people and their marketing cost is minimal.

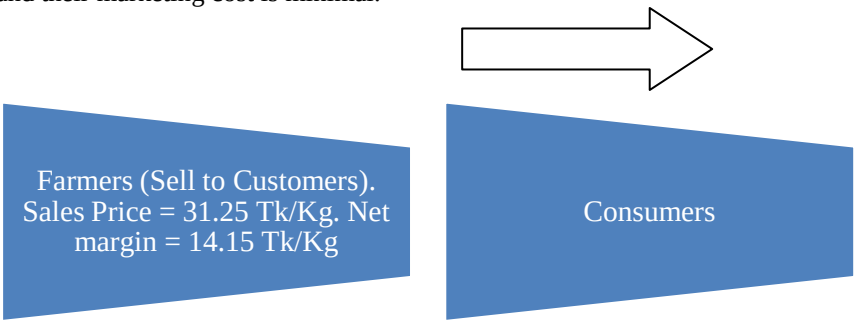

Fig 6: Marketing channel of Brinjal

Price spread:

Table 11: Price spread and growers share in marketing channel starting from Saver to Dhaka

Existing supply chain of Brinjal	Price received by farmers (Tk./kg)	Price paid by Consumers (Tk./kg)	Price spread (Tk./kg)	Farmers Share (%)
1. Farmers to Bepari to Arathder to Wholesaler to Retailer to Consumer	22.58	45.75	23.17	49.36
2. Farmers to Wholesaler to Retailer to Consumer	23.25	43.75	20.5	53.14
3. Farmers to Retailer to Consumer	25.50	40.50	15	62.96
4. Farmer to consumer	31.25	31.25	0	100

It is seen from the table-11 that, lower the number of intermediaries, higher the farmers share on consumer's price and it is 100% when farmers sold their produces directly to the consumers. In supply chain-1, number of middlemen was highest and farmers had lowest share (49.36%) on consumer's price. Interference of redundant middlemen made supply chain lengthy, charged higher price and deprived farmers from their actual share on consumers price.

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Problems of farmers in the marketing of Brinjal:

Table: Farmers opinion about problems

Items	Extent of opinion (%)		
	1	**2**	**3**
Presence of redundant commission agent and wholesalers	20	60	20
Unauthorized toll and commission throughout the channel		20	80
Presence of syndicate and price control	80	20	
Lack of market information		40	60
Lack of credit	20	50	30
Lack of cold storage	50	40	10
High transportation cost		30	70
Poor market infrastructure	30	50	20
Lack of integrated wholesale market	20	60	20
Farmers dependency on traders or commission agent for credit	10	30	60
Poor monitoring of govt. authority	40	50	10
Lack of knowledge and skill	20	80	
Lack of specialized training	20	50	30
Seasonal fluctuation of price	70	30	
Perishability of produces	80	20	

Note: 1= severe problem, 2= problem, 3= not a problem

Source: Field survey

In the above table sixty percent of respondents thought "presence of redundant commission agent and wholesalers" as a problem and twenty percent thought as severe problem. But twenty percent respondents thought it as a no problem. They thought middlemen helped them to sell their produces. Eighty percent of respondents thought "Presence of syndicate and price control" as a severe problem and recognized as one of the major cause for not getting fair price all the time. Half of the respondents considered "Lack of credit" as a problem. Most of them did not know how to apply to get loan. Farmers usually sold their produces at local wholesale market and that's why high transportation cost is not a problem for them. Eighty percent respondents believed "Lack of integrated wholesale market" and "Lack of knowledge and skill" as problems and perishability of produces as severe problem. Half of the respondents considered lack of cold storage as a severe problem, because they could not store their produces at the pick time and compelled to sell at minimal price. Forty percent and seventy percent of respondents said "Poor monitoring of govt. authority" and "Seasonal fluctuation of price" as severe problem respectively.

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Probable way to ensure better pricing system for farmers:

- To ensure a smooth, fair and profitable marketing channel, it is essential tointegrate all activities of involved participantslike farmers, intermediaries, banks, NGOs etc. Farmers have to form an association (including farmers, local authority) which will deal withother stakeholders and this will help them to improve their bargaining power.
- At pre-harvesting level, farmers will collect loan from existing banks and NGOs. Thefarmers' association will facilitate loan collection and repayment. Then the dependencyon local loan lenders will decrease who charge higher and also the tendency of farmers tosell vegetables after cultivation as early as possible to repay the loan of local lenders toget rid of high interest will also decrease.
- Govt. should make credit available to farmers. He should take policies to encourage both public banks to provide loan to poor farmers and monitor them strictly.
- During harvesting and post-harvesting time, the farmers' association will also arrangetraining and supervision with the help of NGO and GO to ensure scientific cultivation practice improve production and reduce post harvest loss.
- After post harvesting, the farmers' association will contact with various middlemenincluding urban retailer and supermarkets to supply the harvested vegetables. Then it willnegotiate with them about the price of harvested vegetables and it will collect andwarehouse those vegetables.
- To avoid the presence of redundant intermediaries in the marketing channel, Govt. can organize integrated wholesale market.
- The existence of too many intermediaries (who are currently receiving surplus from vegetable value chain without adding any value) in the vegetable value chain is a major source of inefficiency in this sector. One effective way of solving this problem could be addressed by encouraging contract farming in vegetable sector, where the poor producer will be able to receive better price of their product. The government could encourage contract farming by Agro-companies, NGOs and Exporters through policy support. As a result both vegetable growers and others in the efficient value chain would be benefited from greater access to market and competitive price. In addition Government can provide training to the farmer how to preserve with simple techniques like using warm water.
- To receive better price, vegetable producer can form cooperation and sell their produced vegetable through auction market, which could ensure better price like CDP auction market in Khulna. The government or local authority can encourage developing community marketing place and collection centers to reduce the role of middlemen as Supply Chain Development Model.
- Todisseminate information to all farmers, farmers association will disburse information to variousradio channels, NGOs and mobile telecommunication companies who will inform theinformation to farmers by their various programs and means. They will disburse theinformation as performing their social responsibilities. By getting this information,farmers will be able to cultivate those vegetables demanded by consumers and will not beexploited by middlemen in terms of price. Farmers will also know about new markets andexport potentiality of vegetables.

Conclusion

The land and climate of Bangladesh are suitable for cultivation of vegetables and nowadays Bangladeshi farmers produce plenty of these. But the farmers do not get the benefits of these huge productions. They get a small share of consumer price, though they should get major portion of it. In our country farmers has less bargaining power and the marketing channel is dominated by market intermediaries. The price of produces is largely fixed by them and they enjoy more benefits than farmers. The number of middlemen in existing vegetable supply chain is large for which the end consumers have to pay higher price because of adding mark up in the grower's selling price. As thevegetable growers have not enough market information, middlemen exploit them in terms of price. . Reduction of the number of middlemen is possible by developing a farmers' association which will perform many activities which are now performed by middlemen. Govt. can take initiatives to establish integrated wholesale market or auction market. Contract farming can be an easy and effective way to reduce the interference of middlemen on produce price. Again for the development ofmarketing system, both private and public investments are needed to come forward.

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