An inquiry of the nature and causes of price variation in vegetable marketing system of Bangladesh

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ABSTRACT

The study was conducted to examine the nature of vegetable price variation from farmers to different traders through different marketing channels and identified some factors that were causes for vegetable price variation. On the basis of vegetable trader, five marketing channels identified which responsible for transporting vegetables from farmer to consumer. This study pointed out that the maximum price variation chain is Farmer → Wholesaler → Agent → Retailer → Consumer. This study also explored that price variation has a positive relationship with the increase of trader's number and several times price variation executed in retailers' level. Sometimes new trader arrivals in retail level which depends on the nature of vegetable deterioration. The majority farmers and traders remarked that price variation is occurred due to high input cost, high transportation cost, and traditional marketing system.

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Introduction

Bangladesh is an agriculture based country where 40.62 % labor force employed in the agriculture sector (BER, 2018) and about 63.37 % people are living in rural areas (World-Bank, 2018). In rural area, a large portion of people were engaged either in homestead vegetable production or in commercial vegetable production (Islam & Noor, 2018). About 4.69 % agricultural land was under vegetable production (BBS, 2016).

Vegetables that are produced by farmer afterward it are engaged in marketing by farmer and traders. Vegetables marketing as well as production are labor intensive and create employment opportunity. It is important for both vegetable farmers' and traders' income. Vegetable farmer produces vegetables and hands over to different type of traders with low price; such vegetables finally reach to the consumer through different types of vegetable traders, but traders' charges high price for vegetable trading, so a big amount of price is varied during vegetable marketing from farmer to consumer.

Several studies (Ahkter, 2006; Chowdhury, 1996; Hossain, 1997) have been conducted earlier to highlight the costs and returns of different vegetable production and problems and prospect of vegetable cultivation. But the number of studies about the vegetable price variation in vegetable marketing is very limited. That is why this study has been conducted to find out a quantitative analysis of the nature and causes of price variation of vegetables during marketing.

Two vegetables; Cauliflower and Bean were selected for this study. Basically this study is descriptive where necessary data were picked from both primary and secondary sources.

The secondary information were cited from author own articles (i.e. Islam & Noor, 2018 and Islam & Noor, 2019), where data were picked up from farmer and different type of traders of Narsingdi district and different locations of Dhaka city and the period of data collection was from February 2015 to March 2015.

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An analytical technique that is Price variation = [(Sale price-purchase price) ÷ (purchase price)] x 100 was used in this study.

Conceptual Framework and An Analytical Approach

Market Participants

Islam & Noor (2019) reported that farmers produce vegetables by using different types of inputs i.e. ploughing, planting, fertilization, irrigating, weeding, pest/disease controlling, harvesting and post-harvest handling and sells vegetable to different traders. Intermediate collectors are one kind of traders who sometime create a link between farmers and other traders; intermediate collectors mainly involved in buying vegetables from farmer in small volume and supply them to retailers. Some time they sell vegetables to consumers. Wholesalers are another kind of traders who involve of buying vegetables from intermediaries and vegetable farmers in larger volume and supplying them to agents/arotdar, sometime to retailers. Wholesalers transport vegetables from farmers to Agents. Agents (Arotdar) are another type of traders who buy vegetables from wholesalers and sell them to retailers and street vendors; they store vegetables usually maximum three days and some time store cold storage. Retailers buy vegetables from different types of traders, sometimes from farmer then transport to retail shops and then display with grading and finally sell to consumers. Street vendors are another kind of traders who purchase vegetables from arotdar and sell to consumers; usually moving from one place to another place and sell the vegetables to consumers with comparatively low price than retailers. Stale vegetable collectors are another kind of traders whose trade among retailers and consumers; they purchase stale vegetable from retailers with low price and then sell to consumer with high price.

Marketing Channels of Bean

Marketing channel is the substitute route of products flow from producers to consumers (Khol et al, 1980). Islam & Noor (2019) identified that, in the study areas Bean was moved from producer to consumer in five different marketing channels (shows in Table 1). Channel-I is local marketing channel which constituted with farmer, local retailer and local consumer. Channel-II constituted with farmer, intermediate collector and consumer; the intermediate collectors purchase bean from farmers and bring it to urban area then sell it to the urban consumer. Channel-III constituted with farmer, intermediate collector, retailer and consumer; the intermediate collectors collect vegetable (Bean) from farmers and sell to urban areas retailers and urban retailers sell it to consumer. Channel-IV constituted with farmer, wholesaler (piker), agent (arotdar), retailer and consumer. Channel-V constituted with farmer, wholesaler (piker), agent (arotdar), street vendor and consumer. It noted that first chain was rural (local) marketing channels and rest marketing channels were urban.

Table 1: Marketing channels of Bean

Channel-I	Vegetable Farmer→ Local Retailer→ Local Consumer
Channel- II	Vegetable Farmer→ Intermediate Collector→ Consumer
Channel-III	Vegetable Farmer→ Intermediate Collector → Retailer → Consumer
Channel-IV	Vegetable Farmer→ Wholesaler → Agent →Retailer→ Consumer
Channel-V	Vegetable Farmer→ Wholesaler → Agent → Street Vendor → Consumer

Source: Islam & Noor, 2019

Marketing Channels of Cauliflower

In the study areas, Cauliflower was moved from producer to consumer in five different marketing channels (Islam & Noor, 2019) which shows in Table 2.

Channel- I constituted with farmer, local retailer and local consumer; retailer directly purchases cauliflower from farmer then sells it to rural areas consumer.

Channel- II constituted with farmer, intermediate collector, retailer and consumer.

Channel- III constituted with farmer, wholesaler, agent, retailer and consumer.

Channel- IV constituted with farmer, wholesaler, agent, street vendor and retailer.

Channel- V constituted with retailer, stale vegetable collector and consumer; the stale vegetable collector purchases stale cauliflower from retailer and then sells it to consumer.

The stale vegetable collector collected stale vegetable at a price that price was below the market price and they sold such stale cauliflower to the consumer with a near market price, sometime they sold it to consumer at market price.

Table 2: Marketing channels of Cauliflower

Channel-I	Vegetable Farmer→ Retailer→ Consumer
Channel- II	Vegetable Farmer→ Intermediate Collector→ Consumer
Channel-III	Vegetable Farmer→ Wholesaler → Agent →Retailer→ Consumer
Channel-IV	Vegetable Farmer→ Wholesaler → Agent → Street Vendor → Consumer
Channel-V	Retailer→ Stale vegetable collector→ Consumer

Source: Islam & Noor, 2019

Purchase and sale price of Bean and Cauliflower of farmer and Different traders

Since farmers are the starting point of the marketing, so farmers have only sale price.

Islam & Noor (2018) and Islam & Noor (2019) mentioned that the mean sale price of bean at farmer's level was Tk.28.53 (per kilogram) and Tk.8.6 (per piece) for cauliflower; the wholesalers' purchase price of bean and cauliflower was on average per kg at Tk.28.53 and per piece at Tk.8.6 respectively and sale price of wholesaler was on average per kg at Tk.34.83 for bean and per piece at Tk.15.7 for cauliflower; the purchase price of intermediate collectors on average per kg at Tk.28.53 for bean and per piece at Tk.8.6 for cauliflower and the sale price was on average per piece at Tk.18.6 for cauliflower and per kg at Tk.33.9 for bean but when intermediate collector directly sold bean to consumer then demanded extra sale price that was Tk. 37.3 per kg bean ; the purchase price of agents (arotdars) was on average per kg at Tk.34.8 for bean and per piece at Tk.15.7 for cauliflower and the sale price of bean was on average per kg at Tk.53.83 and the sales price of cauliflower was on average per piece at Tk.21.70; retailers' purchase prices in Dhaka city, Tongi bazaar and Narsingdi pasdona bazaar were on average per kg at Tk.53.83, Tk.33.9, and Tk.28.5 for bean and per piece at Tk.21.7, Tk.18.65 and Tk.8.6 for cauliflower respectively and sale prices of bean were on average per kg at Tk.81.37, Tk.72.5 and Tk.38.25 and sale prices of cauliflower were on average per piece at Tk.32, Tk.27.5 and Tk.23.7 respectively; street vendors' purchase price was on average per kg at Tk.53.8 and per piece at Tk.21.7 for bean and cauliflower respectively and sale prices were on average per kg at Tk.64.75 for bean and per piece at Tk.27.13 for cauliflower; stale vegetable collector purchased cauliflower on average per piece at Tk.15.5 and the sale price was on average per piece at Tk.25.50.

Nature of Price Variations in Different Marketing Channels of Bean

The nature of price variations of bean in different marketing chains is represented in Table 3.

In channel-I, the retailer added value (including cost and profit) per kg Tk.9.72; about 34 % price was varied by retailer. In channel-II, the intermediate collector added value per kg Tk.8.77. about 30 % price was varied by intermediate collector.

In channel-III, the intermediate collector added value per kg at Tk.5.30 and the retailer added value per kg at Tk.38.60. In this chain, the intermediate collector varied 18.8 % price and retailer varied 113.86 % price.

In channel-IV, the wholesaler, agent and retailer added value (including cost and profit) per kg at Tk.6.29, Tk.19.01 and Tk.27.54 respectively. About 22 %, 54.57 % and 51.16 % prices were varied by wholesaler, agent and retailer level respectively.

In channel-V, after purchasing bean, the wholesaler, agent and street vendor added price (including cost and profit) per kg at Tk.6.29, Tk.19.01 and Tk.10.92 respectively. About 22 %, 54.57 % and 20.28 % prices were varied respectively by wholesaler, agent and street vendor.

Table 3: Nature of Price Variations in Different Marketing Channels of Bean

Marketing Channels of Bean		Trader					
	Farmer	Intermediate Collector	Wholesaler/piker	Agent/Arotdar	Retailer	Street Vendor	Final Price
Channel-I							
Sale price (per kg)	28.53				38.25		38.25
Price addition					9.72		
% of Price variation					34%		
Channel-II							
Sale price (per kg)	28.53	37.3					37.3
Price addition		8.77					
% of Price variation		30%					
Channel-III							
Sale price (per kg)	28.53	33.9			72.5		72.5
Price addition		5.3			38.6		
% of Price variation		18.8%			133.86%		
Channel-IV							
Sale price (per kg)	28.53		34.82	53.83	81.37		81.37
Price added			6.29	19.01	27.54		
% of Price variation			22%	54.57%	51.16%		
Channel-V							
Sale price (per kg)	28.53		34.824	53.83		64.75	64.75
Price addition			6.29	19.01		10.92	
% of Price variation			22%	54.57%		20.28%	

Source: Author's estimation

Nature of price variations in different marketing chains of cauliflower

The nature of price variations of cauliflower in different marketing chains is represented in Table 4.

In channel-I, about 176 % price was varied by retailer; this was local marketing channel where only retailers executed price variation.

In channel-II, after purchasing cauliflower, the intermediate collector added price (including costs and profit) per piece Tk.10.05 and the retailer added price per piece Tk.8.85; the intermediate collector varied about 117 % price and 47.45 % price was varied by retailer.

In channel-III, the wholesaler added price (including costs and profit) per piece Tk.7.12, the agent added price per piece Tk.6.03 and the retailer added price per piece Tk.10.25; about 83%, 38.40 % and 47.12 % prices were varied by the wholesaler, agent and retailer respectively.

In channel-IV, after purchasing cauliflower, per piece at Tk.7.12, Tk.6.03 and Tk.5.37 prices (including costs and profit) were added by the wholesaler, agent and street vendor respectively; in this channel, about 82.80 %, 38.40 % and 24.68 % prices were varied by the wholesaler, agent and street vendor respectively.

In channel-V, the stale vegetable collector purchased stale Cauliflower from retailer at 30 % to 40 % discounted price and then sold it to the consumer at a price such price was near the market price; generally this sale price was always four to ten taka less from market price, some time they sold this cauliflower at market price, this channel didn't present in Table 4.

Table 4: Nature of Price Variation in Different Marketing Channels of Cauliflower

Marketing Chain of Cauliflower	Trader					
	Farmer	Intermediate Collector	Wholesaler/Picker	Agent/ Arotdar	Retailer	Street Vendor
Channel-I						
Sale price	8.6				23.75	23.75
Price addition					15.15	
% of Price variation					176%	
Channel-II						
Sale price	8.6	18.65			27.5	27.5
Price addition		10.05			8.85	
% of Price variation		116.86%			47.45%	
Channel-III						
Sale price	8.6		15.71	21.75	32	32
Price addition			7.12	6.03	10.25	
% of Price variation			82.79%	38.40%	47.12%	
Channel-IV						
Sale price	8.6		15.71	21.75		27.12
Price addition			7.12	6.03		5.37
% of Price variation			82.79%	38.40%		24.68%

Source: Author's estimation

Causes of Price Variations from Farmers to Retail level

During survey, farmers and traders were asked about the causes of price variations at different trading levels and their comments are represented in Table 5.

It was found that 45 % farmers said price variation took place due to high input cost; farmers reported that they purchased inputs in high price eventually their vegetable production cost increased therefore they sold vegetable in the market with high price as a result high price variation is apparent in the market, about 34 % farmers said that price variation took place for traditional marketing system, 10% farmers thought that high transportation cost (farmer's transportation cost indicates the cost that farmers bear to transport vegetables from home to market) responsible for price variation; farmers reported that they paid high price to transport vegetable and they added this transportation cost with sales price eventually vegetable price goes up therefore price variation is placed in market and 10 % farmers thought that price variation was happened due to political instability.

On the other hand, about 46 % traders said that high price variation occurred due to existing traditional marketing system, approximately 41 % traders said that high price variation exist from farmers to retail levels due to high transportation cost; vegetable traders reported that every trader (i.e. intermediate collector, wholesaler, retailer, street vendor and stale vegetable collector) individually incurred high transportation cost during vegetable trading. Therefore, vegetable costs increased, which in turn increased the vegetable price. About 14 % traders said that high price variations occurred due to political instability; during political unrest the owners of carriers (i.e. Truck, Motor van) charged high rent for transporting vegetables.

Table 5: Causes of Price Variation between Farmers to Retail level

Issues	Farmer	Trader
	(%)	(%)
1 High Transportation Cost	10	40.54
2 Political Instability	10	13.51
3 High input cost	45	0
4 Marketing System	35	45.94

Source: Field survey

Conclusions

Like any other vegetables, bean and cauliflower are perishable as well and needs immediate marketing. This study suggests five major marketing channels for both beans and cauliflowers marketing. The marketing channel “Farmer → Wholesaler/ Piker → Agent/Arotadar → Retailer → Consumer” is liable for maximum price variation of both Bean and Cauliflower. Price variation has positive relationship with trader’s number; if number of traders’ increases price variation also increases. Considering different marketing channel, it was found that maximum price variation occurs sometime at intermediate collector level, sometime at whole seller level but several time in retailers level. It’s important that new trader arrival in retail level depends on nature of vegetable rotten condition i.e. if vegetable being aseptic condition for some days then have a possibility to arrive new trader in retail level like stale vegetable collector. Both farmers and traders mentioned some causes of price variations; majority farmers and traders remarked that price variation was occurred due to high input cost, high transportation cost and traditional marketing system. Due to the existence of different marketing channels, the prices of the products under consideration vary grossly. As a result, the consumers at urban area have to purchase these products with high price. It implies the unwanted surplus generation process in the making among different traders in-between the growers and the consumers.

Some recommendations are suggested on the basis of the findings to decrease price variation in vegetable marketing; ensuring good quality seeds, fertilizer and insecticide at reasonable price through government and private channels, set up modern cold storage facility, improving transportation facilities, removing extortion during transportation, transforming traditional supply chain to commercial supply chain through the expansion of vegetable based agro industry that can be helped to decrease price variation. In addition, farmer’s organization may establish to face the middle men involvement which helps to decrease price variation in vegetable marketing system of Bangladesh. Finally, this paper will help to reader to conduct further research about vegetable market development, supply chain, farmers’ and consumers’ right, vegetable business development etc.

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References

- Akhter, F. (2006). *Economics of some selected winter vegetables production in an area of Trishal upazila in Mymensingh district*. Mymensingh, Bangladesh: BAU, Department of Agricultural Economics.
- BBS. (2016). *Yearbook of Agricultural Statistics*. Dhaka: Bangladesh Bureau of Statistics, Government of the People's Republic of Bangladesh.
- BER. (2018). *Bangladesh Economic Review*. Dhaka: Ministry of Finance, Government of the People's Republic of Bangladesh.
- Chowdhury, S. (1996). Growth and Instability of Area and Production of Some Selected Winter Crops in Bangladesh. Mymensingh, Bangladesh.: BAU, Department of Agricultural Economics.
- Hossain, M.M. (1997). *A comparative economic analysis of some selected high yielding varieties of winter vegetables in an area of Bangladesh*. Mymensingh, Bangladesh: BAU, Department of Agricultural Economics
- Islam, M. M., & Noor, T. R. (2018). Economics of Selected Winter Vegetables i.e. Bean and Cauliflower: A Study in Rural Bangladesh. *Scholars Journal of Economics, Business and Management (SJEEM)*, 5(4): 306-314. <https://doi.org/10.21276/sjebm.2018.5.4.4>
- Islam, M. M., & Noor, T. R. (2019). Multi-Layer Profit Sharing and Equity Aspects in Select Winter Vegetable Marketing System: An Inquiry from Bangladesh. *Growth with Equity: Perspective of Bangladesh* (Vol. 1 & 2, pp. 288-309). LAP LAMBERT Academic Publishing. ISBN-978-613-9-99776-3.
- Kohls, R. L. and J. N. Ohl. (1980). *Marketing of Agricultural Products*, (5th edition), Macmillan Publishing Co. Inc., New York.
- World-Bank. (2018). *Trading Economics*. Retrieved 2020, from www.tradingeconomics.com