

Spatial Price Differences of Vegetables: The Role of Middlemen in Bangladesh

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ARTICLE INFO

Article History:

Received: 19th December 2021

Accepted: 27th March 2022

Keywords:

Spatial,
Price,
Difference,
Middlemen,
Vegetables.

JEL Classification:

D2,
D3,
D4.

ABSTRACT

Purpose: Bangladesh is basically an agricultural country because of suitable water, soil and weather. Agriculture plays a significant role in our economy for employment, value addition and food safety. Thus, the aim of the study is to explore the influence of middlemen for spatial price differences of vegetables in Bangladesh.

Methodology: The study is descriptive in nature where both primary and secondary information has been collected to perform the survey. Dhaka, Comilla and Chittagong; these three areas have been used for conducting survey.

Findings: The study has found that the price fluctuates significantly from one place to another as middlemen have involvement in the distribution process of vegetables. Moreover, they have more negotiation power when the distance is huge between the growers and customers. This lengthy process is depriving the consumers to get the fresh vegetables within reasonable price.

Practical Implications: This study would be useful for the authority to judge the situation. The concerned specialists might take necessary steps to help our customers getting fresh vegetables within reasonable price.

Originality: The study has provided a deep insight on how distance increases the price of vegetables by comparing two areas: Dhaka and Chittagong. Also, the study has attempted to specify the volume of profits made by the middlemen in each stage of supply chain process.

Limitations: The paper collected information from the middlemen involved in delivering vegetables from Comilla to Dhaka and Chittagong. Moreover, it investigated the condition of few vegetables. Including more areas and vegetables might be helpful to get accurate result.

1. Introduction

According to Britannica, Vegetable is any type of plant life or plant product, namely “Vegetable Matter.” Vegetable usually refers to the fresh edible parts of assured herbaceous plants—roots, leaves, stems, fruit, flowers or seeds. These plant fractions are either taken fresh or arranged in several ways, typically as a spicy, rather than sweet food. Virtually, important vegetables were cultivated among the early civilizations of either the “Old” or the “New World” and have long been pointed for their nutritional significance. Maximum fresh vegetables are short in calories and have water more than 70 percent, with only 3.5 percent protein and 1 percent fat. Vegetables are superior sources of minerals, especially iron and calcium, and vitamins, largely A and C. Almost all vegetables are wealthy in “dietary fibre and antioxidants.” The agricultural sector is playing a major role in our economy. This sector has been trying to meet the fundamental right of people from the beginning. Majority of Bangladeshi people are directly and indirectly engaged in the agricultural

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sector. In the past, jute and paddy were the common agricultural commodities of Bangladesh. But, the scenario has been changing gradually. Now-a-days, vegetables are contributing significantly in our economy. Over the last decade, Bangladesh has witnessed a revolution in agriculture; especially in vegetables. Currently, our farmers cultivate around 200 types of vegetables. In Bangladesh, the consumption of vegetables has been increasing day by day due to awareness, availability, moderate price and so on.

A good number of vegetables are produced in our country. Some could be found all over the year such as potato, onion, chilli, snake gourd, banana flower, peas, kohlrabi, green leaves etc. Some could be found only in the summer season such as pumpkin, bitter gourd, teale gourd, ash gourd, okra, yard-long bean, spinach etc. Other could be found in the winter season. They are: cabbage, cauliflower, chinese cabbage, turnip, radish, pea, hyacinth bean, tomato and so on. All of these vegetables are important for nutritional security of Bangladesh. These vegetables contain potassium, fiber, magnesium, folic acid, vitamin which are necessary for physical growth and fitness.

In Bangladesh, the weather, water and soil are suitable for all types of vegetables. But, some places are more favorable for the production of vegetables. These areas include Jessore, Bogra, Shirajganj, Rajshahi, Dohar, Keraniganj, Savar and so on. Everyday, huge amount of agricultural products are distributed from these areas to different markets. Shyam Bazar, Karwan bazar, Shani Akhra bazar are some wholesale markets in Dhaka City wherefrom retailers collect their regular supplies. People of city dwellers purchase vegetables from these retailers operating businesses in different forms. Price of vegetables varies from place to place because of some unavoidable factors such as transport, nature of middleman, seasonal variation, fluctuating demand and supply and so on.

Few types of vegetables are being exported since long past. In 2019, the export revenue of vegetables increased by 11.65% compare to previous year. Earlier, Bangladesh used to import potato from different countries. But, the scenario has been changing gradually. During the year 2018-19, Bangladesh exported around 25 thousand tons of potato only to Russia. Unfortunately, the per capita consumption of fruits and vegetables is around 211 gm/day, which is not sufficient on the ground of health reason. Currently, Bangladesh is producing around 10923 metric tons of vegetables per year. Because of poor management system and seasonal issue, a huge amount of vegetable gets wasted every year. The amount of postharvest loss of vegetables has been estimated from 23.6% to 43.5% which costs around crore taka. Moreover, local people don't get vegetables properly within available price. So, this study has focused the impact of middlemen activities for price fluctuations in Bangladesh.

2. Literature Review

Agricultural products are typically produced over a widespread spatial region and are expensive to transport compared to their whole value (Paul et al., 2001). These characteristics yield a complex set of spatial price linkages which are often studied to gain insights into the performance of markets (Paul et al.,2001). The perishable nature and seasonal supplies of vegetables cause brutal price fluctuation over space and time in Bangladesh (Sabur, 1990). They go up to very high stages in the incline season that makes it complicated for the deprived consumer to incorporate vegetables in diet (Sabur, 1990). Spatial price difference is partly owing to be short of economic and scientific

storeroom and quick carrying facilities and partially for market imperfection (Sabur, 1990). Poor market Structure is a reason for spatial price difference of vegetables in Bangladesh (Mahmoud et al, 2005).

In Bangladesh, vegetable supply chain is facing problems for unacceptable safety, inappropriate storeroom facilities, hygiene standards, ineffective transport arrangements, higher operational cost and insufficient capacity of supply (Hasan & Naim, 2018). Because of lack of assistance at the manufacture level, farmers can't cultivate sufficient vegetables (Hossain & Hossain, 2013). Again, cultivated vegetables do not efficiently reach to end consumers (Hossain & Hossain, 2013). In our country, vegetable supply chain is not effective for which growers are always deprived of income. They face three challenges: financial, environmental and less bargaining power (The Daily Star, 2008). The agricultural marketing system is unproductive because of the diverse territories, scattered place of manufacture areas, natural calamities and relatively poor situation of infrastructure (Asian Productivity Organization, 2007).

The barriers of improving marketing performance are predominance of various marketing proceeds, poor communications, lack of government support and absence of private investment (Malakar, 2006). Bangladesh is not yet well organized because communication system for linking in different areas is not strong and transportation system is at a standstill (Islam and Ahsan, 2009). Vegetables sector in our country are still not so attractive for which the attention of the public sector and the private sector is less (Elias, 2007). Few market information is one of the causes for not receiving the appropriate price by the farmers (Fazlur, 2008). Because of unproductive and aggressive predicting, our vegetable sector is facing wastage (Mamun., 2016). In Bangladesh, the mediators in vegetable market are very organized. So, they govern and compel the growers to sell the vegetables at a lower price (Karim & Biswas, 2016).

Long middlemen chain for vegetable market has always been a concern in our country as it ultimately increases transaction cost (Sarker & Sasaki, 1997). Although, excessive rain and late harvesting are the causes for price increase, but the role of middlemen is controversial in our country (Molla, 2020). They take advantage and earn at least 2-3% from total cost when a gap between demand and supply exists in market (Molla, 2020). Farmers are helpless as they have to look after their cultivation for which they can't go to the customers or retailers directly (Jamaluddin, 2017). As a result, growers face no significant difference if production is massive or few (Hossain, 2018).

Thus, a number of studies have been conducted on the vegetables of Bangladesh. Mostly, they explored the overall supply chain procedure, their limitations, complexities in public and private sectors, natural calamities and so on. Unfortunately, very few of them focused the activities of middlemen for creating spatial price differences. Thus, the objective of the study is to find out the role and effect of middlemen in creating spatial price fluctuations of vegetables in Bangladesh.

3. Research Objectives

The major objective of the research is to discover the role of middlemen in constructing spatial price disparities. Apart from this, there are several specific objectives which are given below:

- a) To identify the supply chain process of vegetables followed by the middlemen.

- b) To detect the amount of profit earned by the middlemen involved in the supply chain process of vegetables.
- c) To investigate how the final customers are being deprived from receiving fresh vegetables within rational price.

4. Research Design

The study has adopted descriptive approach where it intends to explore the problems involved in creating price fluctuation of several vegetables. The cause of spatial price differences used here is significant influence of middlemen who are active in different stages of distribution process. Potato, cauliflower, bitter gourd, radish, cabbage, bottle gourd, brinjal, okra and pointed gourd had been selected because they are very well-known vegetables all over the country.

For primary information, purposive sampling technique and open-ended questions have been utilized in the study. Moreover, the activities of middlemen, existing distribution process and the changes of prices in each of the stages of these areas have been observed intensely. Comilla, Dhaka and Chittagong; these three areas had been chosen to conduct the survey. For secondary information, published articles from journals and newspapers, internship reports and documents from websites have been noticed properly.

The following table has shown the details of sample used for conducting the research:

Table 1. Sample distribution

Individuals	Number of Samples
Growers	15
Local Wholesalers	10
Divisional Wholesalers	10
Regional Wholesalers	10
Retailers	10
Customers	20
Total	75

Source: Author compilation.

5. Analysis of the Study

5.1 Distance among the Selected Areas

The table given in the following shows the distances between Comilla to Dhaka and Chittagong. From Comilla to Dhaka, vegetables are carried by crossing 111.8 km which is 146.2 km from Comilla to Chittagong. Thus, we can say transportation system should be strong enough to maintain the supply chain and marketing of vegetables.

Table 2. Distance from Comilla to Dhaka and Chittagong

Production Area	Destination of Sell	Distance	Time to Reach
Comilla	Dhaka	111.8 km	2 Hours 31 Minutes
Comilla	Chittagong	146.2 km	2 Hours 54 Minutes

Source: Author collected.

5.2 Spatial Price Differences

The table given below shows the spatial price difference which is one of the major reasons for imperfect market in Bangladesh. In Comilla, the prices of selected vegetables are reasonable than that of Dhaka and Chittagong. The reason is, Comilla is producing the vegetables where, middlemen have no or very few influence in creating price discrimination. On the other hand, customers of Dhaka and Chittagong are facing spatial price difference. Moreover, price of vegetables in Chittagong are a bit higher than Dhaka. It means, middlemen are gaining profit which deprives the growers and customers.

Table 3. Price Paid by the Customers in Comilla, Dhaka and Chittagong

Vegetables	Comilla	Dhaka	Chittagong
Potato	10-15	20-25	25-35
Cauliflower	20-22	30-35	35-40
Radish	15-20	25-30	30-40
Cabbage	20-24	22-30	35-40
Bitter Gourd	25-30	30-35	35-45
Brinjal	30-32	40-42	40-50
Bottle Gourd	30-32	35-45	45-55
Pointed Gourd	20-25	35-40	40-45
Okra	25-28	30-45	40-50
*Estimated from Survey Data (Per kg) *Price= In Taka *Price Paid by the End Customers			

From the table given above, we could measure the gap between what customers pay in the produced area of vegetables (Comilla) and what customers pay in the other selling points (Dhaka and Chittagong). It could be observed that price of all the selected vegetables increase as the distance between increases. For that reason, customers of Dhaka are facing less difference than that of Chittagong.

Equation: *Spatial Price difference = Payment by the customers in Dhaka/Chittagong- Payment by the customers in Comilla* (1)

The reason for paying more money by customers in Dhaka and Chittagong is lengthy supply chain process. This long process involves a number of middlemen who individually keeps a margin of profits. It ultimately increases the price of vegetables which are paid by the customers. Moreover, as the distance increases, the number of middleman also increases. As a result, spatial price differences have been created beyond any border.

Table 4. Price Difference between Produced Areas (Comilla) and Other (Dhaka and Chittagong)

Vegetables	Comilla	Difference in Dhaka	Difference in Chittagong
Potato	0	10-15	15-25
Cauliflower	0	10-15	15-20
Radish	0	10-15	15-20
Cabbage	0	2-8	15-20
Bitter Gourd	0	5-10	10-20
Brinjal	0	10-12	10-20
Bottle Gourd	0	5-15	10-25
Pointed Gourd	0	15-20	20-35
Okra	0	5-10	20-25
<i>*Estimated from Survey Data (Per kg)</i> <i>*Price= In Taka</i> <i>*Price Paid by the End Customers</i>			

Source: Author Collected.

5.3 Supply Chain Process of Vegetables from Growers to Customers (Within Comilla)

In Comilla, growers are selling their products to the traders. The traders are directly connecting to the customers. That means, traders are the only middlemen engage in supply chain process in this area. As a result, trader's income is not very significant. Comilla is the production area for vegetables, so customers are getting vegetables within reasonable prices. Moreover, growers are also gaining a certain amount of profit.

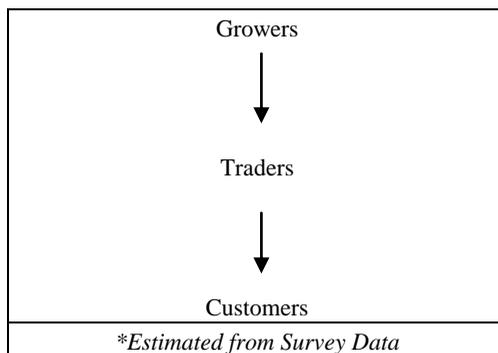


Figure 1. Distribution Process of Vegetables within Comilla.

Income of traders in Comilla can be measured by the following equation:

$$\text{Traders' Income} = \text{Customers' Payment} - \text{Growers' Selling Price} \quad (2)$$

Table 5. Traders’ Income in Comilla

Vegetables	Customers’ Payment	Growers’ Selling Price	Traders’ Income
Potato	10-15	9-10	5-6
Cauliflower	20-22	12-15	7-8
Radish	15-20	10-15	5-10
Cabbage	20-24	10-12	10-14
Bitter Gourd	25-30	14-15	11-16
Brinjal	30-32	18-22	12-14
Bottle Gourd	30-32	20-22	10-12
Pointed Gourd	20-25	10-14	10-15
Okra	25-28	8-12	17-20
<i>*Estimated from Survey Data (Per kg)</i> <i>*Price in Taka</i>			

Source: Author collection

5.4 Supply Chain Process of Vegetables from Growers to Customers (From Comilla to Dhaka/Chittagong)

Farmers normally produce the vegetables and bring their vegetables to the local wholesalers. Some farmers sell their vegetables to both local wholesalers and retailers to gain more profits. Local wholesalers purchase vegetables from farmers and sell those to the divisional wholesalers. Local wholesalers have to think the current market price and demand condition of their vegetables. Divisional wholesalers buy vegetables and provide those to the regional wholesalers. These regional wholesalers supply vegetables to the retailers who are attached with the end customers.

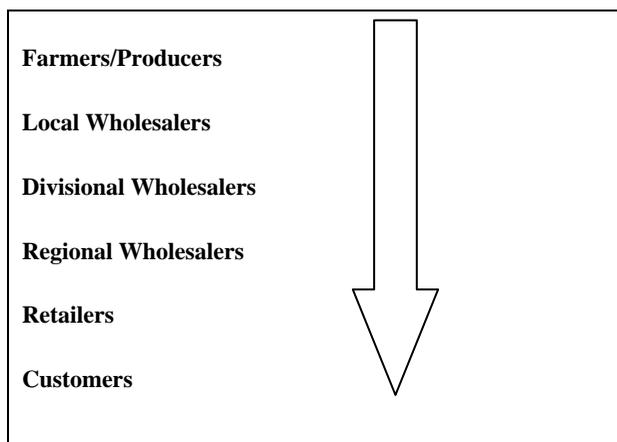


Figure 2. Supply Chain Process of Vegetables from One District to another (Karim and Biswas, 2016)

5.5 Profit Margin Gained by the Middlemen

From growers to retailers, all the middlemen gain profits from the products. For that reason, price of vegetables rises in each of the stage of supply chain. As a result, customers are paying more than they should actually pay.

Table 6. Profit Margin of Vegetables for Each Middlemen

Middlemen	Profit Margin
Farmer	3-4%
Local Wholesaler	10-30%
Divisional Wholesaler	5-7%
Regional Wholesaler	10-12%
Retailer	15-20%
<i>Estimated from Survey Data (Per kg)</i>	

Source: Authors collected.

From the chart, we can observe that the lowest amount of profit has been gaining by the growers. On the other hand, local wholesalers have the dominance in the market which helps them to gain the highest amount of profits. After the local wholesaler, retailer and regional wholesaler are earning sufficient amount of profits. Comparatively, divisional wholesaler has less dominance in this field.

6. Findings and Discussions of the Study

Influence of middlemen has created the major impact on the market inadequacy of agricultural commodities in our country. Local wholesaler, divisional wholesaler, regional wholesaler, retailer—all of them try to control the overall market. Most often, they make syndicate and dominate the price of vegetables. So, in some areas, price of selected vegetables increases beyond any border. All the mediators have a propensity to gain high returns without preserving any margin. As a result, growers are becoming powerless day by day and customers are giving more price to get fresh vegetables.

The increasing demand in domestic market has created challenges as well as opportunities for many people. So, proper supply chain process should be kept on for overcoming the challenges as well as taking the chances. If the supply chain procedure has a single gap, the whole chain will be shattered and vegetable markets will suffer. Moreover, price of vegetable fluctuates on the basis of time, place and season in Bangladesh. It is very usual when the demand of vegetables is high, price will also increase at that moment. Another issue is, price of our agricultural commodities has been determined through the bargaining among buyers and sellers. Efficient supply chain practice is necessary here for confirming the sensible price fluctuation and make vegetables reasonably available to all the customers around the country.

The existing supply chain procedure of vegetables should be moderated according to the nature of the products. For instance: some vegetables are more perishable which should be reached to the customers within a tiny period of time. Reduction of middlemen could be a possible solution in this issue which will ultimately remove transportation related expenses. Moreover, small farms could use direct marketing for trading their vegetables. It will save their time, expense as well as increase their profits. Another crucial fact for increasing the efficiency of distribution is demand forecasting. If forecast meets actual scenario, then wastage would be lessened and price would not be fluctuated notably from place to place. Also, accurate information as well as communication are unavoidable for the stakeholders to forecast demand of vegetables.

7. Limitations of the Study

The study had some limitations that can't be avoided. The paper collected some of its information from the middle men engaged in supplying vegetables from Comilla to Dhaka and Chittagong. So, their knowledge, perception, belief, thought and willingness might have an impact on the output of the study. Moreover, it investigated the condition of few vegetables and only three areas because of time and budget shortage. Considering more vegetables and places would have given appropriate result. As the price of vegetables fluctuates from time to time, approximate value at the time of conducting research had been used in the analysis part.

8. Implications of the Study

The study has primarily investigated and identified that the middlemen have been making the price significantly different from one area to another. As a result, the vegetable market of our country is not perfect. Government as well as concerned authority could take necessary ideas by going through this study. They could take effective steps to control the influence of middlemen for providing vegetables within reasonable price difference in different areas.

Funding Information

The paper is a modified version of a project funded by University Grants Commission of Bangladesh in 2018.

References

- Asian Productivity Organization, (2007). Marketing System for Agricultural Products. Retrieved from: <http://www.apo-tokyo.org/> [Accessed on March 3, 2020]
- Fazlur. (2008). Agricultural Marketing System in Bangladesh. *Bangladesh. Consultancy Report*, Ministry of Food. Dhaka.
- Hasan, A. H. R., & Naim, S. J. (2018). The Vegetable Supply Chain of Bangladesh: Is it Capable to Meet the Requirements of International Trade. *Journal of Business Studies*, 2, 173-184.
- Hossain, M. A., & Hossain, M. N. (2013). Some Observations over Supply Chain: With Reference to Vegetables Market of Bangladesh. *Journal of Business*, 34(2), 67-81.
- Hossain, E. (2018). Farmers, consumers suffer as middlemen pocket profits. *New Age Bangladesh*. Retrieved from: <http://www.newagebd.net/article/57783/farmers-consumers-suffer-as-middle-men-pocket-profits>
- Islam and Ahsan, (2009). Development of an Effective System for Vegetable Marketing in Bangladesh. *Bangladesh. BARC, Agricultural Economics and Rural Sociology Scientific Paper*, 7, 27- 35.
- Jamaluddin, S. (2017). Vegetable farmers not getting fair price. *The Financial Express*. Retrieved from: <https://thefinancialexpress.com.bd/public/views/opinions/vegetable-farmers-not-getting-fair-price-1513264580>
- Karim, R. and Biswas, J. (2016). Value Stream Analysis of Vegetable Supply Chain in Bangladesh: A Case Study. *International Journal of Managing Value and Supply Chains*, 7 (2), 41-60.
- Mahmoud, C. S., Hossain, I. and Shively, G. (2005). Vegetable Market Integration in Bangladesh. *The Bangladesh Development Studies*, Vol. XXXI (3), 137-156.
- Mamun, M. Z., Iftekhar, A., Hossain, M. S. and Ahmed, M. (2016). Supply chain management of fresh vegetables in superstores: A case study of Bangladesh. Retrieved from: <http://lib.ewubd>.

edu/article_index/supply-chain-management-fresh-vegetable-superstores-case-study-bangladesh

- Molla, M. A. M. (2020). Boom in Vegetable Farming: Middlemen mint money. *The Daily Star*. Retrieved from: <https://www.thedailystar.net/backpage/middlemen-mint-money-1521010>
- Paul L., Fackler, Barry K., Goodwin. (2001). Spatial price analysis. *Handbook of Agricultural Economics, I*, 971-1024
- Press Release, Mymensingh, (2010). Vegetable market building project costs increased. *The Daily Star*. Retrieved from: <http://www.thedailystar.net/newDesign/index.php>
- Sabur, S. A. (1990). Production and Price Behavior of Vegetables in Bangladesh. *Bangladesh Journal of Agricultural Economics, 13* (1), 81-91
- Sarker, A. L. and Sasaki, T. (1997). Role of Middlemen in Marketing System—The Case of Potato and Banana Marketing in Bangladesh, 147-152. Retrieved from: https://www.jstage.jst.go.jp/article/fmsj1963/37/2/37_147/_pdf