

A Study on Economics of Marketing of Brinjal (*Solanum melongena* L.) in Nadia District of West Bengal

Mridul Mondal^{1*}, Hasrat Ali¹ and Bimal Kumar Bera¹

¹Department of Agricultural Economics, Bidhan Chandra Krishi Viswavidyalaya, Mohanpur, Nadia,
West Bengal, Pin - 741252, India.

Authors' contributions

This work was carried out in collaboration among all authors. Author MM designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors HA and BKB managed the analyses of the study. Author BKB managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

The study on marketing of brinjal conducted in Nadia District of West Bengal discerns that the marketing of brinjal in the study area is completely dominated by the intermediaries depriving farmers to get the remunerative prices for their products and consumers are also paying higher prices. Three dominant marketing channels through which more than 70% of the total production are disposed of have been selected for the present study. Price spread of the three marketing channels taken for the study are estimated to be Rs.675.5/q, Rs.1780.00/q and Rs. 2472.10/q for channel-I, II and III respectively in which the share of net marketing margin retained by the producers /intermediaries for their services 83.65, 67.07 and 62.32 per cent of the price spread in the same sequence, i.e. the amount of price spread increases with the increase in the length of the channel. The producer's share in the consumer's rupee are estimated to be 81.77, 62.37 and 54.41 per cent in the same sequence indicating that the channel-I is the most efficient compared to the remaining two channels and channel-II is more efficient than channel-III. Marketing efficiency measured by applying three available methods, namely, conventional, Shepherd's and Acharya's are recorded to

*Corresponding author: E-mail: mridulmondal002@gmail.com;

be 6.12, 3.18, 2.65; 5.49, 1.66, 1.19 and 4.49, 1.74, 1.20 for the corresponding three methods for all the three channel which reaffirm the previous observation based on producer's share in consumer's rupee. As an efficient marketing system is supposed to safeguard the interest of all involved, a combination of traditional and modern marketing networks equipped with forward and backward linkages may be helpful in protecting the interests of all the competing stakeholders in marketing process.

Keywords: Functional analysis; marketing efficiency; marketing margin; price spread.

1. INTRODUCTION

Agricultural marketing has assumed a special significance in developing countries like India with a view to provide remunerative prices to producers and at the same time, making product available in desired quantity and quality to the consumers at reasonably fair prices. It plays an important role not only in stimulating production and consumption, but in accelerating the pace of economic development also. The market for agricultural commodities being imperfect and dominated by intermediaries, farmers are deprived of getting true value of their product resulting less revenue, even incurring losses in some cases in spite of continuous effort on the part of the both central and state level to make it more efficient. An efficient market acts as bridge between the producer and consumer [1]. Efficient marketing from the view point of both technical and pricing efficiency will ensure the farmers to get true value of their product and consumers to obtain true worth of their money in order maximize social welfare. When pricing is efficient, shortages and surpluses will not exist in different areas of the country at the same time or at different times of the year in the same area. [2] The problem is more conspicuous in case of horticultural crops because of high perishability, seasonality and bulkiness in one hand and production of fruits and vegetables is increasing very fast in recent times on the other hand. The horticulture sector has witnessed a tremendous growth as a result of investment through National Horticulture Mission (NHM) and a number of other programmes [3]. But the marketing of horticultural crops is inflicted often with high marketing cost and low producers' share in the consumers' rupee. In case of brinjal the producers' share in the consumers' price was estimated to be 44 percent and the same was 37 percent under bhindi, 26 percent under tomato, 45 percent under guava and 60 percent under marigold [4]. This could be due to a variety of factors such as number of intermediaries, cost of various market functions rendered by

intermediaries, spread of location of the producers and consumers. Further the degree of perishability, variety and quality, and various market imperfections, market infrastructure etc. also influence the marketing costs and price levels [5]. A systematic analysis of costs and margins of various intermediaries involved in marketing of farm commodities would help to know the extent of margin retain by them in relation to various services rendered and their impact on ultimate consumers. The price spread is one of the measures of market efficiency, as it indicates the increase in the price of a commodity with the change in hands from one intermediary to another in the marketing set up. In this backdrop, the present study has been undertaken to examine the various aspects of marketing of an important vegetable crop, brinjal (*Solanum melongena* L.) or egg plant which is grown extensively throughout the country including the state West Bengal with the specific objective as follows:

- a. To study the various aspects of marketing of brinjal in the study area, and
- b. To work out the relative efficiency of the alternative marketing channels functioning in the study region.

2. METHODOLOGY

Market structure for agricultural commodities, especially for vegetable crops being very disorganized in the study area, farmers disposed of their produce through a number of channels. To identify the number of channels operating in the region, we have selected 50 brinjal growers following Simple Random Sampling without Replacement (SRSWOR) technique from a cluster of three villages belonging to purposively selected Haringhata block of Nadia district of West Bengal. Out of a large number of channels prevailing in the region, we have studied three dominant channels through which about 70 per cent of the total produce of the area is marketed. Relevant information related to various

components of marketing costs and margins are collected from the intermediaries involved in those channels in a well structured schedule through personal interview method. Simple tabular and percentage analysis method is employed to satisfy the stated objectives. The formula applied to estimate the marketing costs and margins at different level of marketing and efficiency are delineated as follows:

2.1 Producer's Price

This is the term used for the net price received by the producer at the time of the first sale or farm gate price denoted by P_f .

2.2 Retailer's Price

The price which the retailer receives after selling the product is termed as retailer's price or consumer's price denoted by P_r .

2.3 Producer's Share in Consumer's Rupee

It refers to the percentage which the producer's price claims to the total price paid by the consumer for the commodity and is calculated by,

$$P_s = (P_f / P_r) \times 100$$

2.4 Marketing Margin

It is the difference between the producer's price as defined above and the total price paid by the consumer for a unit of the commodity. It includes the total expenses and profits retained by the market intermediaries while performing marketing functions.

2.5 Price Spread

It refers to the difference between the price paid by the consumer and the price received by the farmer or producer.

2.6 Marketing Efficiency

Conventional method: Total value added / (Marketing cost + Middlemen's profit).
 Shepherd's method = Consumption's price / (Marketing cost + Middlemen's profit).
 Acharyya's modified marketing efficiency = Net price received by farmers / (Marketing cost + Net margin of the intermediaries).

Or, Price paid by consumers / (Marketing cost + Net margin of the intermediaries) - 1.

3. RESULTS AND DISCUSSION

Marketing of horticultural crops being dominated by intermediaries, a large number of channels are functioning in the region of which we have taken three prominent channels responsible for marketing of nearly 70 per cent of brinjal.

- i. Producers → Consumers.
- ii. Producers → Itinerant traders → Primary Wholesalers → Retailers → Consumers.
- iii. Producers → Primary Wholesalers → Secondary wholesaler → Retailers → Consumers.

4. MARKETING COST, MARKETING MARGIN AND PRICE SPREAD

At the outset, we will discuss the marketing cost incurred by various intermediaries and price spread which is the difference between the price paid by the consumers and the price received by the producers in the respect channel which are presented in Table 1. In channel-i, farmers have earned an additional income of Rs.550/q over and above farm gate price by incurring an extra cost of Rs.107.50/q to meet different expenditures by directly selling to the ultimate consumers. The loss in quantity of the produce appears to be the dominant cost component accounting Rs.60/q (55.81%) followed by transportation charges (19.07%) and subsequently followed by packing (11.16%). The itinerant traders operating between farmers and primary wholesalers in channel-ii have made an expenditure of Rs. 93.20/q for performing various marketing activities.

To earn an amount of Rs.275.20/q and the primary wholesalers in turn have disposed of their commodity to retailers at a price amounting Rs.3875.70/q to receive a net return of Rs.315./q by spending an amount of Rs.242.30/q to make associated payments. Retailers have sold to consumers at a price accounting Rs.4730/q to keep a margin of Rs.630/q by making an investment of Rs.224.30/q for performing related marketing activities. The share of various cost components in the total marketing cost incurred at each stages are more or less similar, i.e. the quantity loss claims the highest share in the total cost followed by transportation, but with the difference in their magnitude. In channel-III, the longest marketing channel operating in the study region, the producers sell directly to primary

wholesaler, instead of itinerant traders, to obtain an additional income of Rs.315.00/q by investing an extra amount of Rs.191.40/q in which the maximum share is claimed by physical loss accounting Rs.150.30/q (78.53%) followed by transportation charges (6.53) and packing material (6.27%). The price spread which measures the total value addition through marketing process are worked out to be Rs.675.5/q, Rs.1780.00/q and Rs. 2472.10/q for channel-I, II and III respectively, i.e. the amount of price spread increases with the increase in the length of the channel because of obvious reason. The producer's share of consumer's rupee is estimated to be 81.77, 62.37 and 54.41 per cent in the same order. The producer's share in consumer's rupee are 92.84, 59.67 and 48.96 percent in case of brinjal marketing in Samastipur district of Bihar [6]. In case of brinjal, cabbage, okra, pea and tomato, the producers' share in consumer's price

was 55.05, 55.90, 70.15, 85.85 and 68.88% respectively under channel-I and in case of channel-II, the producers' share in consumers' price was 59.77, 62.07, 81.76, 92.45 and 73.39% for brinjal, cabbage, okra, pea and tomato respectively in Uttar Pradesh [7] which also substantiate the finding of the present study. The share of the constituents of price spread in the respective channel is presented in Table 2. It reveals that the net marketing margin retained by the producers / intermediaries for their services claims maximum proportion of the price spread ranging from 62.32 (Channel-iii) to 83.65 per cent (Channel-i). Spoilage comes next by contributing 9.13 (Channel-i) to 32.18 (Channel-iii) per cent to total price spread due to high perishability of the crop. This higher proportion of profit retained by the intermediaries may be the result of higher degree of market imperfection and associated risk involved in the marketing of highly perishable vegetable crops.

Table 1. Price paid by the consumers and the price received by the producers

Particulars	Channel-i	Channel-ii	Channel-iii
A. Price received by producers	2950.00	2950.00	2950.00
i. Packing	12.00 (11.16)	--	12.00 (6.27)
ii. Transport cost	20.50 (19.07)	--	12.50 (6.53)
iii. Loading and unloading cost	5.00 (4.65)	----	8.60 (4.49)
v. Spoilage	60.00 (55.81)	----	150.30 (78.53)
v. Weighing	2.00 (1.86)	----	2.00 (1.04)
vi. Misc. cost	8.00 (7.44)	----	6.00 (3.13)
Total cost	107.50 (100.00)	---	191.40 (100.00)
Selling price	3607.50	----	3456.80
Net margin received by producers	550.00	-----	315.40
B. Buying price of Itinerant traders/primary wholesalers	--	2950	3456.80
i. Transport cost	---	11.00 (11.18)	18.60 (7.83)
ii. Loading and unloading cost	---	16.25 (17.44)	10.25 (4.32)
iii. Spoilage	--	5.45 (5.85)	202.55 (85.32)
iv. Weighing	--	55.50 (59.55)	2.00 (0.84)
v. Misc. cost	--	5.00 (2.15)	4.00 (1.68)
Total cost	--	93.20 (100.00)	237.40 (100.00)

Particulars	Channel-i	Channel-ii	Channel-iii
Selling price	--	3318.40	3909.20
Net margin received by primary wholesalers	---	275.20	215.00
C. Buying price of primary/ secondary wholesalers	--		3909.20
i. Transportation cost		23.50 (9.70)	---
ii. Loading and unloading cost	---	10.25 (4.23)	11.80 (4.45)
iii. Spoilage	---	202.55 (83.59)	245.25 (92.53)
iv. Weighing	---	2.00 (0.83)	2.00 (0.75)
v. Misc. cost	--	4.00 (1.65)	6.00 (2.26)
Total Cost	---	242.30 (100.00)	265.05 (100.00)
Selling price	---	3875.70	4494.50
Net margin received by primary wholesalers	---	315.00	320.25
D. Buying price of retailers	---	3875.70	4494.50
i. Transport cost	---	32.50 (14.49)	25.30 (10.65)
ii. Loading and unloading cost	----	11.00 (4.90)	10.50 (4.42)
iii. Spoilage	---	175.20 (78.11)	197.30 (83.04)
v. Misc. cost	---	5.60 (2.50)	4.50 (1.89)
Total cost	---	224.30 (100.00)	237.60 (100.00)
E. Selling price of retailers or consumers buying price	3607.50	4730.00	5422.10
Net margin received by retailers/producers	550.00	630.00	690.00
producer's price in consumer's rupee	81.77	62.37	54.41

Table 2. Functional analysis of marketing channels

Functions	Channel-i	Channel-ii	Channel-iii
Transport cost	20.50 (3.12)	72.25 (4.25)	56.40 (2.28)
Loading and unloading	5.00 (0.76)	26.7 (1.57)	41.15 (1.66)
Spoilage	60.00 (9.13)	433.25 (25.49)	795.40 (32.18)
Net Marketing Margin	550.00 (83.65)	1220.20 (67.07)	1540.65 (62.32)
Miscellaneous	22.00 (3.35)	27.60 (1.62)	38.50 (1.56)
Total / Average	657.50 (100.00)	1780.00 (100.00)	2472.10 (100.00)

Table 3. Estimation of marketing efficiency of marketing channels

Particulars	Channel-i	Channel-ii	Channel-iii
Conventional method	6.12	3.18	2.65
Shepherd's method	5.49	1.66	1.19
Acharyya's Modified Marketing Efficiency	4.49	1.74	1.20

The marketing efficiencies of the three identified marketing channels measured applying all the three available methods, namely, conventional, Shepherd's and Acharya's Modified Marketing Efficiency method are demonstrated in Table 3. It discerns that the marketing efficiency of channel-i, channel-ii and channel-iii calculated by employing conventional method are 6.12, 3.18 and 2.65 respectively, and these values are 5.49, 1.66 and 1.19 when estimated by using Shepherd's method in the same order. The same worked out by employing Acharya's method, are recorded to be 4.49, 1.74 and 1.20 for channel-i, ii and iii respectively. The results shown above clearly indicates that channel-I is the most efficient compared to channel-ii and iii, and channel-ii is more efficient than channel-iii, by all measures with variation in their magnitude. These finding also corroborate the observation made previously in terms of producer's share in consumer's rupee, i.e. marketing efficiency is inversely related to the length of the marketing channel. Channel iii (Farmer- Organized Food Retail Chain-Consumer) was found to be the most efficient market both by Shepherd's method and Acharya's method compared to channel-I (Farmer - Commission Agent-Wholesaler-Retailer- Consumer) and channel-ii (Farmer-Wholesaler- Retailer- Consumer) [8].

5. CONCLUSION

The marketing of brinjal in the study area being completely dominated by intermediaries, farmers are derived of getting remunerative prices for their produce and also consumers are not obtaining true value of their price. The producer's share in the consumer's rupee is estimated to be 81.77, 62.37 and 54.41 % in channel-I, ii and iii respectively and the share of net margin, i.e, profit of the intermediaries are worked out to be 83.65, 67.07 and 62.32 % of the price spread of channel-i,ii and iii respectively. The study clearly points out that the interests of both the producers and consumers can be protected through reduction in the number of intermediaries and to some extent by minimizing the marketing cost, specifically, the loss in quantity through adoption cost reducing of technologies and also by increasing market competition. Hence, the

government intervention is essential to address the problems associated with the marketing of farm commodities. Looking at the perishable nature of the vegetables, effort should be made by policy makers to provide refrigerated vans for movement of vegetables from production place to different consumption centres without deterioration in quality of the produce, to erect cold storage near the market place to keep the produce free from damage and to provide the growers the facilities for adding value to the produce by installing processing facilities for vegetables [6]. At the same time, the interests of large number of functionaries involved in the marketing process to earn their livelihood should also be taken care of. So, a combination of traditional and modern marketing networks equipped with forward and backward linkages may be helpful in safeguarding the interests of all the competing stakeholders in marketing process. The traditional and the modern marketing networks co-exist opening better alternatives for the producers and consumers modern marketing networks have been successful in creating the concept of quality based pricing, thereby enhancing the value of horticultural crop produce marketed along the supply chains [9]. The efficiency of agricultural markets cannot be judged by the structural conduct performance framework or by the marketing margin analysis. For more accurate and dependable assessment both, structural conduct performance framework and marketing margin analysis must be used simultaneously [10].

CONSENT

As per international standard or university standard, participants' written consent has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

- Abbott JC. The development of marketing institutions", in Hermann M. Southworth

- and Bruce F. Johnson, (Eds.). Agricultural Development and Economic Growth, Ithaca, Cornell University Press; 1967.
2. Cummings RW. Pricing efficiency in the Indian Wheat Market, Impex India, New Delhi; 1967.
 3. Singh RP, Toppo A. Economics of production and marketing of tomato in Kanke block of Ranchi district. Indian Journal of Agricultural Marketing. 2010; 24(2):1-16.
 4. Chand R. Estimation of marketing efficiency of horticultural commodities under different supply chains in India, NCAP, New Delhi; 2010.
 5. Neeraj, Chittora Akshay, Bisht Vinita, Johar Vishal. Marketing and production of fruits and vegetables in India. Int. J. Curr. Microbiol. App. Sci. 2017;6(9):2896-2907.
 6. Ahmad Nasim, Mishra RR, Sinha DK, Singh KM. Price spread and vegetables marketing in the hinterlands of Pusa and Tajpur Blocks of Samastipur district of Bihar (India). International Journal of Advances in Agricultural Science and Technology. 2017;4(10):54-66.
 7. Mishra Snehal, Singh Rakesh, Singh OP. Economic analysis of marketing of major vegetables in Varanasi district of Uttar Pradesh, India. Economic Affairs. 2014;59(4):649-652.
 8. Dwibedi SK. Estimation of price spread and marketing efficiency of Brinjal in different marketing channels: A case study. Indian Journal of Marketing. 2013;43(2):50.
 9. NCAP. Estimation of marketing efficiency of horticultural commodities under different supply chains in India. Research Report, ICAR; 2010.
 10. Rit B. Studies on Marketing efficiency of agricultural products in India: A critical evaluation. International Journal of Multidisciplinary Research and Development. 2014;17:205-10.

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