Estimation Of Price Spread And Marketing Efficiency Of Brinjal In Different Marketing Channels : A Case Study

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ABSTRACT

Efficient marketing plays an important role in increasing the producer's share in consumer's rupee and maintains the tempo of increased production. In the present study, the cost of cultivation, profit, price spread and marketing efficiency in the marketing of Brinjal in Khurdha district of Odisha were examined during the period from 2011-2012. Primary data were collected from 80 farmers through personal interview method using a specially designed pre- tested schedule. Three market channels were identified in the study area. These were Channel I: Farmer - Commission Agent-Wholesaler- Retailer- Consumer ; Channel II: Farmer- Wholesaler- Retailer- Consumer and Channel III: Farmer- Organized Food Retail Chain-Consumer. The major findings revealed that the producer's share in consumer's rupee was 64.87 percent for Channel III, 49.85 percent for Channel II and 47.69 percent for Channel I. Channel III was found to be the most efficient market both by Shepherd's method and Acharya's method.

Keywords: Price Spread, Marketing Efficiency, Shepherd's Method, Acharya's Method, Brinjal, Market Channel

INTRODUCTION

An efficient market system in the agricultural sector is required to keep pace with agricultural growth, and agricultural growth depends upon the market mechanism. This ensures fair return to the farmers for their efforts. The economic efficiency of the marketing system is generally measured in terms of the price spread of an agricultural commodity. Beside economic efficiency, marketing efficiency also plays an important role in the improvement of the agricultural sector. Marketing efficiency is the effectiveness or competence with which a market structure performs its designated function. An efficient marketing system is an effective agent of change, and an important means for raising the income levels of the farmers and the levels of satisfaction of the consumers.

Marketing plays an important role in determining the levels of income to the producer for his produce. It is the final stage where the farmer converts all his efforts and investments into cash. In modern times, farmers have become highly cost conscious and their financial position depends not only on returns they receive from a particular enterprise, but also on the place from where they are selling their produce for getting a remunerative price (Jyothi and Raju, 2003). There has been a great concern in recent years regarding the efficiency of marketing of fruits and vegetables in India. It is believed that poor linkages in the marketing channels, poor marketing infrastructure and more number of intermediaries are leading to high and fluctuating consumer prices, with only a small proportion of the consumer rupee reaching the farmers (Agarwal and Saini, 1995; Hagar and Hiermath, 1984; Khunt, 1997 ; Pawar and Pawar, 2005; Vagdevi, 1991). There is also substantial wastage, deterioration in quality, and frequent mis-match between demand and supply spatially and over time (Srivastava and Lal, 1989).

OBJECTIVES OF THE STUDY

In light of these issues, the present case study was carried out in Khurdha, Odisha with the following objectives:

1) To study the price spread in different market channels prevailing in the study area.

2) To study the marketing efficiency of different market channels prevailing in the study area.

3) To identify the constraints perceived by the farmers in the study area.

METHODOLOGY

The present case study was conducted at Khurdha district, Odisha. Data was collected during September - November 2011. To estimate the price spread and marketing efficiency of Brinjal in different market channels operating in Bhubaneswar. The primary data were collected from the farmers through the personal interview method using a specially designed pre - tested interview schedule. Information pertaining to yield levels, farm harvest prices of

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vegetables, income, yields, cost of cultivation, costs of marketing, credit, constraints faced by farmers etc., were collected. The data collected from farmers pertained to 2010-11 agricultural year. The sample size was restricted to 80 farmers.

TOOLS OF ANALYSIS

❖ **Tabular Analysis :** Tabular analysis was used to compare socio- economic conditions of farm producers.

❖ **Computation of Cost of Cultivation:** While computing the cost of cultivation for brinjal, explicit and some of the implicit costs were considered. The items included were expenses on seeds, manure, fertilizers, plant protections, labour charges (both hired and family labour), bullock labour (both hired and family). These were valued at prevailing prices in the locality. The actual expenditure incurred in transporting the produce, commission charges, cleaning and packing charges were considered as marketing costs. The costs like depreciation on equipments (other than irrigation equipments) and rental value of land were not considered. Gross returns (quantity of produce * market price) and net returns (gross return less total costs) were calculated.

❖ **Marketing Margins:** The marketing margin was calculated by using the following equation :

$$A_m = P_m - (P_b + M_c)$$

Where,
A_m = margin of the middlemen ;
P_m = selling price of the trader ;
P_b = buying price of the trader ;
M_c = marketing costs borne by the trader.

❖ **Producer's Share in Consumer's Rupee :** The producer's share in the consumer's rupee was calculated by using the following equation :

$$P = (P_F / P_R) \times 100$$

Where,
P= producer's share in consumer's rupee ;
P_F = price received by the farmer ;
P_R = price paid by the consumer.

❖ **Calculation of Marketing Efficiency By Using Acharya's Method :** Marketing efficiency by using Acharya's Method was calculated by using the following equation :

$$MME = FP / (MC + MM)$$

Where,
MME= modified marketing efficiency ;
FP= price received by the farmers ;
MC= total marketing cost ;
MM= net marketing margin.

❖ **Calculation of Marketing Efficiency By Using Shepherd's Approach :** Marketing efficiency by using Shepherd's Approach was calculated by using the following equation :

$$ME = RP / MC$$

Where,
ME = marketing efficiency ;
RP = retailer's sale price or consumer's purchase price ;
MC = total marketing costs.

❖ **Garrett's Ranking Technique:** In order to analyze the constraints faced by the producers at the production and

marketing stage, and also to analyze any other constraints faced by them, the Garrett's ranking technique was used. Garrett's ranking technique gives the change of orders of constraints into numerical scores. The major advantage of this technique as compared to simple frequency distribution is that here, constraints are arranged based on their importance from the point of view of the respondents. Hence, the same number of respondents with two or more constraints are given different ranks (Kumar et al. ,1999). Garrett's formula for converting ranks into percent was given by the following equation :

$$\text{Percent position} = 100 * (R_{ij} - 0.5) / N_j$$

Where,

R_{ij} = rank given for i th factor (constraint) by j th individual ;

N_j = number of factors (constraints) ranked by j th individual.

The relative position of each rank obtained from the above formula was converted into scores by referring to the table given by Garrett (transmutation of orders of merit into units of amount or scores) for each factor ; scores of all individuals were added and then divided by the total number of respondents for the specific factor (constraint). Finally, mean scores for all the factors were arranged in descending order and the ranks were given.

RESULTS AND DISCUSSION

Table 1: Socio - Economic Profile Of The Farmers Selected For The Study (N=80)

Particulars	Frequency	Percentage to total sample size
Educational Level		
Illiterates	15	18.75
Primary school	29	36.25
Secondary school	26	32.50
Graduate	10	12.5
Age of Farmers		
Below 30 years	3	3.75
30- 50 years	45	56.25
Above 50 years	32	40.00
Occupation		
Agriculture	53	66.25
Agriculture + Subsidiary	27	33.75
Source: Survey Data		

❖ **Socio - Economic Profile of the Farm Producers Selected For the Study :** A brief profile of the respondents selected for the study is presented in the Table 1. It was found that a majority of the farmers were literate. Among the total respondents, 36.25 percent had completed their primary level of education, 32.50 percent had completed the secondary level of education and only 12.50 percent of the farmers were graduates. It may be observed from the Table 1 that most of the farmers (56.25 percent) were in the age group of 30-50 years and only 3.75 percent of the farmers were below 30 years of age. It was found that 66.25 percent of the farmers had agriculture as their only occupation, whereas 33.75 percent of the farmers had allied occupations like small business, dairy, poultry etc.

❖ **Existing Pattern of Market Channel in Selected Areas :** In the area taken up for the study, three channels were identified. They were as follows:

Channel-I : Producers → Commission Agents → Wholesalers → Retailers → Consumers

In this channel, producers i.e. the farmers directly sold the produce to the commission agent, the commission agent sold it to the wholesaler, then from the wholesaler, it was sold to the retailer and finally, the retailer sold it to the consumer. This is the traditional system of marketing used by many of the producers (farmers).

Table 2 : Cost of Cultivation Of Brinjal Per Hectare In ₹			
Agronomic Practices	**Channel I**	**Channel II**	**Channel III**
Land preparation	13702.86	13584.00	17335.00
Nursery	4617.14	4024.00	13380.00
Transplanting	2982.85	2544.00	3720.00
Irrigation	5077.71	4968.00	5010.00
Intercultural operation	3105	2888.00	4125.00
Plant care	6052.14	5963.80	11893.75
Harvesting	5862.85	5000.00	7470.00
Marketing	18742.57	12493.50	9735.00
Total	**60143.14**	**51465.30**	**72668.75**
Source: Survey Data			

Channel- II : Producers → Wholesalers → Retailers → Consumers

In this channel, the producers i.e. the farmers sell their produce to the wholesaler, then from the wholesaler, it is sold to the retailer, and finally from the retailer, it is sold to the consumer. This is also a traditional system of marketing used by the producers.

Channel- III : Producers → Collection Centre of Organized Food Retail Chains → Consumers

In this channel, the producers i.e. the farmers sell their products to the organized food retail chains .This is a type of direct selling.

❖ **Cost of Cultivation of Brinjal and Profits :** The Table 2 puts down the cost of cultivation of brinjal per hectare of different farmers categorized by the market that they sell to. The cost of various agronomic practices for farmers supplying to the commission agent (Channel I) and wholesaler (Channel II) was not at par (except the marketing cost). Marketing cost (₹ 18742.57) was highest for farmers whose first buyer was the commission agent (Channel I). Marketing cost incurred by the collection centre farmers was ₹ 9735.00/ha and for farmers supplying to the wholesaler, it was ₹ 12493.50/ha. Farmers selling their produce to the collection centre were spending ₹ 13380.00, ₹ 4125.00 and ₹ 11893.75 on nursery, intercultural operation and plant care respectively. In comparison to organized food retail chain farmers, unorganized retail chain farmers were spending less on nursery, intercultural operation and plant care. The total cost of cultivation was the highest for organized retail chain farmers, which was ₹ 72668.75/ha. The cost of cultivation of brinjal for farmers supplying their produce to commission agents and wholesalers was ₹ 60143.14 and ₹ 51465.30 respectively.

Table 3 : Farmers' Profit For Brinjal						
Market Channel	**Cost of cultivation per hectare (in ₹)**	**Average price received/ quintal (in ₹)**	**Average yield/ hectare (in quintal)**	**Total sale (in ₹)**	**Total profit (in ₹)**	**Profit per Kg. (in ₹)**
I	60143.14	570.00	200	114000	53257.5	2.66
II	51465.30	500.00	200	100000	48534.7	2.42
III	72668.75	668.75	225	150468.75	77800	3.45
Source: Survey Data						

It is evident from the Table 3 that farmers using Channel II were earning a less profit than the other two market channels. Profit for Channel II was ₹ 2.42/kg of the produce. Farmers supplying their produce to organized retail chain's collection centre i.e. Channel III were getting the highest profit (₹ 3.45/kg) than the other two market channels.

❖ **Price Spread In Brinjal :** Based on the detailed data presented in the Table 4, the price spread in all the three marketing channels was worked out. In Channel I, the commission agent's margin was 5.02 percent, the wholesaler's margin was 7.36 percent, the retailer's margin was 5.85 percent and the producer's share in consumer's rupee was 47.69

Table 4 : Price Spread in Different Channels For Brinjal (₹/Quintal)				
Sl. no	**Particulars**	**Channel I**	**Channel II**	**Channel III**
1.	Expenses incurred by farmers			
	a. Labour	8	10	20
	b. Packing, loading and unloading	25	30	45
	c. Commission charge	40	0	0
	d. Transportation	40	35	40
	e. Personal expenses	15	20	15
	Sub total	**128**	**95**	**120**
2.	Producers selling price/Commission agent's purchase price	570	500	668.75
3.	Net price received by the farmer	442	405	548.75
4.	Expenses incurred by the commission agent		-	-
	a. Labour	10	-	-
	b. Packing, loading and unloading	30	-	-
	c. Transportation	55	-	-
	d. Shop rent	25	-	-
	e. Market entry fee	25	-	-
	f. Personal expenses	20	-	-
	Sub total	**165**	-	-
5.	Commission agent's margin	60(5.02)	-	-
6.	Commission agent's sale price	795		-
7.	Expenses incurred by the wholesaler			-
	a. Labour	7	9	-
	b. Packing, loading and unloading	25	35	-
	c. Transportation	35	55	-
	d. Shop rent	20	20	-
	e. Market entry fee	30	30	-
	f. Personal expenses	15	20	-
	Sub total	**132**	**169**	-
8.	Wholesaler's margin	88(7.36)	106(10.56)	-
9.	Wholesaler's sale price	1015	775	-
10.	Expenses incurred by the retailer			
	a. Labour	5	8	30
	b. Packing, loading and unloading	20	25	90
	c. Transportation	35	45	45
	d. Shop rent	15	20	60
	e. Market entry fee	20	20	-
	f. Personal expenses	15	20	-
	Sub total	**110**	**138**	**225**
11.	Retailer's margin	70(5.85)	90(8.97)	137(13.29)
12.	Retailer's sale price/Consumer's purchase price	1195	1003	1030.75
13.	Producer's share in consumer's rupee (%)	47.69	49.85	64.87

Note: Figure in parenthesis is percentage to consumer's purchase price

Source: Survey Data

Table 5 : Marketing Efficiency of Different Channels For Brinjal				
Sl no.	**Particulars**	**Channel I**	**Channel II**	**Channel III**
1.	Retailer's sale price/Consumer's purchase price (₹/quintal)	1195	1003	1030.75
2.	Total marketing cost (₹/quintal)	535	402	345
3.	Total net margins of intermediaries (₹/ quintal)	218(18.24)	196(19.54)	137(13.29)
4.	Net price received by farmers (₹/quintal)	442	405	548.75
5.	Index of marketing efficiency (Ratio)			
	b. Shepherd's method	2.23	2.49	2.98
	c. Acharya's method	0.58	0.67	0.87
Note : Figure in parenthesis is percentage to consumer's purchase price Source: Survey Data				

Table 6 : Constraints Faced By The Farmers				
Sl no.	**Particulars**	**Total score**	**Mean score**	**Rank**
	Constraints At The Production Level			
1	Non availability of inputs	3405	56.75	IV
2	High cost of inputs	4506	75.10	II
3	Non availability of credit	3393	56.55	V
4	Labour scarcity	4861	81.10	I
5	Non availability of technical knowledge	4404	73.40	III
	Constraints At The Marketing Stage			
1	Price fluctuation	4821	80.35	II
2	Distress sale	4070	67.83	IV
3	High transport cost	4374	72.90	III
4	High commission	5100	85.00	I
5	Defective weighing	3318	55.30	VI
6	Lack of information	3553	59.21	V
	Other Constraints			
1	Rejection problem	3642	60.70	III
2	Delay in payment	4587	76.45	II
3	Unnecessary deduction	5064	84.40	I
4	Loss of choice crop	3309	55.15	V
5	Loss of choice of getting higher profits due to contractual arrangement	3480	58.00	IV
Source: Survey Data				

percent. In Channel II, the wholesaler's margin was 10.56 percent, retailer's margin was 8.97 percent and producer's share in consumer's rupee was 49.85 percent. In Channel III, the market margin for organized food retail chain was 13.29 percent and producer's share in consumer rupee was the highest - it was 64.87 percent.

The Table 5 presents the marketing efficiency for brinjal. Net margins of intermediaries were the highest in Channel II (19.54 percent), and it was less in Channel III (18.24 percent). Marketing efficiency was the highest for Channel III i.e. for organized food retail chain both by Shepherd's method (2.98) and by Acharya's method (0.87) followed by Channel II. The Channel II index of marketing efficiency was 2.49 by Shepherd's method and 0.67 by Acharya's method. Channel I had a less efficient market index of marketing efficiency - for Channel I, it was 2.23 by Shepherd's method and 0.58 by Acharya's method.

❖ **Analyses of Constraints Faced By The Farmers :** Different constraints were identified in the present study by using a pre -tested interview schedule, analyzed and ranked as per the preferences of the farmers. Garret's ranking technique was used to combine the ranks assigned by all farmers and to find the final ranks of each attribute. The Table 6 lists the constraints which the farmers were facing. At the production level, labour scarcity was the major constraint followed by high cost of input. At the marketing stage, high commission rate was ranked as the primary constraint. Besides these, unnecessary deduction and delay in payment was the major constraints which the farmers were facing.

SUMMARY

1) Costs of cultivation incurred by the farmers of organized food retail chains were more than those of the traditional retail farmers for brinjal in the study area. It was because farmers of the organized food retail chain were spending more on nursery, intercultural operation and plant protection than what their counterparts were spending on. Another reason for more cost of cultivation was that labour requirement was more for farmers of organized food retail chains.

2) The producer's share in consumer's rupee improved with organized food retail chains. In organized food retail chains, the producer's share in consumer's rupee for brinjal was higher as compared to what is was for traditional market channels.

3) Marketing efficiency for the three marketing channels identified in the study area was calculated by Shepherd's and Acharya's method. It was found that Channel III - i.e. producer- collection centre of organized food retail chain-consumer - was more efficient followed by Channel II - i.e. producer-wholesaler-retailer-consumer. Channel III - i.e. producer-commission agent-wholesaler-retailer-consumer - was found to be the least efficient.

POLICY IMPLICATIONS

1) Institutions should be developed to facilitate direct marketing in the supply chain to enhance producer's share of consumer's rupee and to increase the marketing efficiency.

2) Marginal and small farmers should be encouraged to form cooperatives or Self Help Groups (SHGs) to open their own retail outlet in selected residential localities.

3) Government should facilitate backward linkages with the farmers by promoting agriculture extension activities and input supply arrangements should be forged in collaboration with the private sector.

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