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## **Are Supermarket Supply Channels More Efficient than Traditional Market Channels?§**

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### **Abstract**

The study on modern retail marketing of high-value agricultural commodities is of inevitable importance in the developing countries like India. The supply of vegetables by farmers to modern retail outlets has brought in a new form of organized marketing based on consumer demand. The study has assessed the marketing system by comparing marketing cost, marketing margins, price spread, producer's share in consumer's rupee, marketing efficiency and marketing constraints of supermarket channels and two traditional marketing channels in the Rangareddy district of Andhra Pradesh. Two vegetables, viz. brinjal and bhendi, have been selected for the study. It has been revealed that the net price received by the farmers and producer's share in consumer's rupee are higher in supermarket channel than in traditional channels. The supermarket channel has been found more efficient than the traditional channels. Rejections of low grade produce, procurement according to indent and lack of knowledge of grading have been identified as the major constraints of supermarket supply farmers. The major constraints expressed by the traditional market supply farmers include middlemen menace, higher distance to the market and high market charges. The study has observed that government intervention is required to create a policy environment that may ensure a mutually beneficial relationship between the farmers and the organized sector. Investment in infrastructure, development of extension activities and linkages with farmers are the important areas where government should give due attention to strengthen vegetable supply channels in the state.

**Key words:** Supermarkets, vegetable supply, traditional market channels, Andhra Pradesh

**JEL Classification:** Q13, Q11

### **Introduction**

India is witnessing expansion in organized retailing through the involvement of large corporate houses. This trend is closely associated with expanding urbanization, growing consumerism and increasing number of upper-middleclass and high-income households. The rise in income levels and health consciousness has led to

increase in demand for high-value agricultural commodities, especially fruits and vegetables.

These organized food retail ventures are involved in procurement arrangements without any contract or commitment, apart from paying a better price to the farmers (Sulaiman *et al.*, 2011). However, some retail initiatives are backed by extension services, including demonstration plots and advice on crop calendars and cultivation techniques and practices, as well as cold chain support and other marketing services (Gulati *et al.*, 2008). Several studies on fresh fruit and vegetable retail chains in India have confirmed the relative advantages to farmers connected with organized retail

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chains. The farmers contracted by retail chains receive higher prices (Dhananjaya and Rao, 2009; Alam and Verma, 2007), higher net profits (Mangala and Chengappa, 2008; Birthal *et al.*, 2005) and incur lower transaction costs (Joseph *et al.*, 2008).

Vegetables provide a regular source of income in the farm business. The development of farm sector depends on not only advancement in farm technology but improvement in market infrastructure also. The market infrastructure for vegetables despite launching of several development plans, is still weak in our country. The producer's share in consumer's rupee is much lower in the traditional marketing due to proliferations by the middlemen. Under this backdrop, the present study was conducted in Andhra Pradesh with the following specific objectives: (a) to examine the existing organizational set-up of vegetable marketing and probe into the marketing channels for disposing off the vegetables, (b) to compare the marketing cost, marketing margins, marketing efficiency of supermarket and traditional marketing channels, and (c) to identify the constraints perceived by the farmers supplying vegetables under modern as well as traditional channels.

## Materials and Methods

For the study conducted in the Rangareddy district of Andhra Pradesh, Shankarpally and Medchal mandals were purposively selected as they are involved in supplying of vegetables to traditional markets as well as modern retail outlets like 'Reliance fresh', 'More', 'Spencers', and 'ITC e-choupal' by setting-up of collection centres in the production regions. The list of villages under each mandal was obtained from the respective Mandal Development Offices and from each mandal six villages were selected, viz. Mahalingapuram, Meenapalli, Mythabkhanguda, Madireddipalli, Yelwarthy, Dhobipet in Shankarpally mandal and Kothagadi, Narayanpur, Timmareddipalli, Nagireddypalli, Rajabolaram, Pudoor in Medchal mandal following the criteria of highest area under vegetables. From these 12 villages, a total of 156 vegetable cultivators were selected based on the operational landholding. These farmers were divided into two groups of 78 farmers each; the first group was of farmers linked to the retail sector and was termed as "Supermarket channel farmers" and the second group consisted of farmers who were not linked to the

retail sector, named as "Traditional channel farmers". Two vegetables, viz. brinjal and bhendi were selected for the study and therefore 39 farmers were selected for brinjal and bhendi covering all the three categories of farmers, viz. small, medium and large. The information (name and address) about the farmers supplying vegetables to supermarkets was collected from the respective collection centres of Reliance fresh, More, Spencers and ITC e-choupal. A sample of 30 intermediaries comprising wholesalers, commission agents and retailers (10 each) was selected randomly from the local markets. The data related to marketing practices were collected using a pre-tested questionnaire designed for the purpose, through personal interview method during the year 2009-10. The collected data were analyzed to ascertain marketing cost, marketing margin and marketing efficiency of the prevailing marketing channels in the study area by using tabular analysis.

## Methodology

For the study, the total marketing cost, price spread, marketing margin of a middleman and producer's share in consumer's rupee were calculated along with computation of marketing efficiency index.

### (a) Total Marketing Cost

The total cost on marketing incurred in cash or kind by the producer and various intermediaries involved in the sale and purchase of the commodity till it reaches the ultimate consumer is computed by Equation (1) :

$$C = C_f + Cm_1 + Cm_2 + Cm_3 + Cm_4 + \dots + Cm_n \quad \dots(1)$$

where, C is the total cost of marketing of the commodity;  $C_f$  is the cost paid by the producer from the time the produce leaves the farm till it is sold;  $Cm_1, Cm_2, \dots, Cm_n$  denote the cost incurred by different middlemen in the process of buying and selling the product; and n is the number of middlemen involved in marketing.

### (b) Price Spread

Price spread is the difference between the price paid by the consumer and price received by the producer for an equivalent quantity of farm produce.

**(c) Marketing Margin of a Middleman**

This is the difference between the total payments (cost + purchase price) and receipts (sale price) of the middle men ( $i^{\text{th}}$  agency).

**(d) Producer's Share in Consumer's Rupee**

It is the price received by the farmer expressed as a percentage of the retail price (i.e., the price paid by the consumer). If  $P_r$  is the retail price, the producer's share in the consumer's rupee ( $P_s$ ) may be expressed as follows:

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

**(e) Index of Marketing Efficiency**

A comprehensive method to measure marketing efficiency, suggested by Acharya and Agarwal (1999), indicates that the ratio of net price received by the farmer to the total marketing cost plus total margin is used as a measure of efficiency. The higher the ratio, the higher is the efficiency or vice-versa.

**(f) Garrett's Ranking Technique**

Constraints perceived by farmers in supply of vegetables to supermarket and traditional market were prioritized by using Garrett's ranking technique in the following manner:

$$\text{Per cent position} = 100 (R_{ij} - 0.50) / N_{ij}$$

where,  $R_{ij}$  is the rank given to the  $i^{\text{th}}$  item by the  $j^{\text{th}}$  individual, and  $N_{ij}$  is the number of items ranked by the  $j^{\text{th}}$  individual.

The percentage position of each rank was converted into scores using Garrett's table. For each constraint, scores of individual respondents were added together and were divided by the total number of respondents for whom scores were added. Thus, mean score for each constraint was ranked by arranging them in a descending order.

**Results and Discussion****Marketing Channels**

Three channels were identified in the marketing of selected vegetables in the study area. These are discussed below.

**Supermarket Supply Channel-I**

**Farmer — collection centre — distribution centre — retail outlet — consumer**

In this channel, vegetables are purchased by the employees of a collection centre as per the indent under the supervision of a quality assessment in-charge. Quality standards for vegetables are defined in respect of their size, weight, colour and appearance. The standardized produce of each member-farmer is pooled and sent to the distribution centre, where it is rechecked and categorized into three grades, viz. A (best), B (medium) and C (low) based on its quality. The packed material is then moved to retail outlets by the operation team. Due to perishable nature of the produce, it is transported within 2-3 hours from a collection centre to the distribution centre from where it is distributed to retail outlets twice a day, at 7 am and at 5 pm. The marketing cost, transportation cost and other labour charges involved to transport the produce from a collection centre to retail outlets are borne by the procuring agencies. From these retail outlets, the leftover stock is taken back to the distribution centre backyard and is sold at low cost or dumped out.

The daily market prices in the Bowenpally (Hyderabad) wholesale market serve as the base price for producers. As the wholesale price varies according to the product quality, producers supplying to the collection centre are paid a model price plus ₹1-2 for the quality of the product. Spot payment to producer-suppliers is a usual practice. The collection centre does not share any price risk. Disputes arising among the farmers or between producers and collection centre, if any, are settled mutually.

**Traditional Market Supply Channel-II**

**Farmer — commission agent (wholesaler) — retailer — consumer**

In this channel the farmers take their produce to the nearby wholesale market in the night by around 10 pm. In the traditional markets, no infrastructure facilities are available for the farmer-producer, to keep his produce for the whole night or till the auction takes place in the early morning at around 3.30-4.00 am where commission agents act as middlemen. In this channel, wholesalers and retailers find it an added advantage and can bid a higher price for grade-I quality

produce. In the existing traditional system of wholesale marketing, the commission agents and traders dominate the supply chain as they are the major price fixers and farmers have to depend on them for credit. Small farmers lack bargaining power, and get a low share in consumer price.

### Traditional Market Supply Channel-III

#### Farmer — commission agent — retailer — consumer

In this existing traditional system of marketing, the operations take place as in channel-II. Since the produce is marketed through commission agents, quality gets no recognition. The commission agents do not take the title to the produce and they merely negotiate on the purchase and/or sale price. In addition the traditional markets are poorly designed with non-existent of infrastructural facilities essential for marketing functions like packing, grading, sorting and cold storage.

The marketing channel starts with the vegetable farmer, passes through commission agent, wholesaler-cum-retailer, retailer and ends with consumer in the traditional marketing, whereas in the supermarket channel the produce is directly transferred from producer to consumer. The details of marketing cost, margins, producer's share in consumer's rupee and marketing efficiency in the selected district pertaining to supermarket channel-I and traditional channels-II and -III of the two selected vegetables have been presented in Tables 1, 2 and 3.

### A Comparison of Marketing Costs, Margins and Marketing Efficiency in Different Channels

#### (a) Brinjal

The total marketing cost incurred by the brinjal cultivators of Rangareddy district, given in Table 1, was more in traditional channels-II (₹ 388/q) and -III (₹ 305/q) than in supermarket channel-I (₹ 105/q). Among different components of marketing cost incurred by growers, transportation cost was maximum in all the three channels. The total expenses incurred by wholesalers in channel-II were ₹ 139/q (8.52%) with transportation cost (₹ 92/q) and spoilage (₹ 12/q) as the major cost components. The net realization by the wholesaler was ₹ 124/q which was 7.60 per cent of consumer's price.

The total expenses incurred by retailers in channels- II and -III amounted to ₹ 84/q (5.12%) and ₹ 120/q (8.63%), respectively. The marketing margins of retailers in channels-II and -III were ₹ 326/q (20.01%) and ₹ 395/q (28.41%). The producer's share in consumer's rupee was highest in supermarket channel-I (54.90%), followed by traditional channels III (41.05%) and II (35.00%). The producer-sellers are deprived of their legitimate share in the prices paid by the consumers due to various costs incurred in the marketing of vegetables and the margin of profit intercepted by the wholesalers and retailers (Gondalia and Patel, 2007). The farmers associated with supermarket channel-I received 13.85-19.90 per cent higher prices for their produce than traditional channel farmers. The transportation cost and marketing costs were lower in the supermarket channel-I than in the traditional channels.

#### (b) Bhendi

The total marketing cost incurred by the bhendi growers of Rangareddy district, depicted in Table 2, was more in the traditional channels-II (₹ 405/q) and -III (₹ 372/q) than supermarket channel-I (₹ 100/q). Among various components of marketing cost incurred by growers, transportation cost occupied the major share in all the three channels. The farmers of supermarket channel-I undertake preliminary cleaning, grading and sorting at their farm level, as reported by Mangala and Chengappa, (2008) also. By shifting the responsibilities of market functions like cleaning, grading, packaging, etc. to farmer-vendors, the collection centres could reduce the transaction costs of the retail chain.

The expenses incurred by wholesalers in channel-II were ₹ 154/q (7.01%) with a margin of ₹ 131/q (5.95%), whereas the total expenditure incurred at retailer's level was higher in channel-III (₹ 128/q) than in channel-II (₹ 89/q). The average margin per quintal of vegetables earned by the retailers was higher in channel-III (₹ 490/q) than in channel-II (₹ 361/q). Among the intermediaries, the marketing margin earned was highest by retailers (Sanjeev *et al.*, 2008). The producer's share in consumer's rupee was highest in the supermarket channel-I (69.11%), followed by traditional channel-III (51.70%) and channel-II (48.18%). Within the two vegetable studies, the producer's share in consumer rupee was higher for

**Table 1. A comparison of price spread in supermarket and traditional market channels for brinjal in Rangareddy district of Andhra Pradesh**

Particulars	(₹/q)		
	Channel- I	Channel- II	Channel- III
Net price received by the producer	700 (54.90)	570 (35.00)	570 (41.05)
Grading	14 (1.09)	9 (0.56)	6 (0.43)
Packing	10 (0.78)	15 (0.92)	7 (0.48)
Loading and unloading	10 (0.78)	12 (0.73)	5 (0.35)
Transportation	56 (4.39)	270 (16.56)	210 (15.10)
Market fees	-	6 (0.36)	6 (0.43)
Weighing	8 (0.62)	5 (0.30)	4 (0.28)
Commission	-	57 (3.50)	57 (4.10)
Spoilage	7 (0.54)	14 (0.85)	10 (0.71)
Sub-total	105 (8.23)	388 (23.80)	305 (21.96)
Producer selling price to wholesaler	-	957 (58.71)	-
Wholesaler purchase price	-	957 (58.71)	-
Packing	-	6 (0.37)	-
Loading and unloading	-	7 (0.43)	-
Transportation	-	92 (5.65)	-
Market fees	-	5 (0.30)	-
Weighing	-	8 (0.51)	-
Commission	-	8 (0.49)	-
Spoilage	-	12 (0.73)	-
Sub-total	-	139 (8.52)	-
Wholesaler margin	-	124 (7.60)	-
Wholesaler selling price to retailer	-	1220 (74.85)	-
Retailer purchase price	-	1220 (74.85)	875 (62.97)
Packing	-	6 (0.36)	9 (0.64)
Loading and unloading	-	8 (0.51)	10 (0.72)
Transportation	-	40 (2.45)	73 (5.25)
Telephone	-	15 (0.89)	15 (1.07)
Spoilage	-	15 (0.89)	13 (0.93)
Sub-total	-	84 (5.12)	120 (8.63)
Retailer margin	-	326 (20.01)	395 (28.41)
Consumer purchase price	1275	1630	1390
Producer's share in consumer's rupee (%)	54.90	35.00	41.05

*Note:* Figures within the parentheses indicate percentages to the respective consumer's price

bhendi supermarket channel-I (69.11%) than brinjal supermarket channel- I (54.90%); it may be attributed to the efficiency of channel and reduction in respective marketing costs.

Marketing efficiency of the selected vegetables was calculated according to Acharya's method and has been presented in Table 3. Acharya's method was found best for interpreting the efficiency. Marketing

efficiency of brinjal and bhendi calculated by Acharya's method was found to be 6.66 and 12.44, respectively for supermarket channel-1, 0.53 and 0.92 in channel-II and 0.69 and 1.07 in channel-III. The marketing efficiency of supermarket channel-I was higher than the traditional channels because of the systematic market arrangements, low marketing costs, better maintenance of quality of produce through cleaning,

**Table 2. A comparison of price spread in supermarket and traditional market channels for bhendi in Rangareddy district of Andhra Pradesh**

Particulars	(₹/q)		
	Channel-I	Channel-II	Channel-III
Net price received by the producer	1244 (69.11)	1060 (48.18)	1060 (51.70)
Grading	12 (0.66)	9 (0.41)	6 (0.30)
Packing	15 (0.83)	11 (0.50)	7 (0.34)
Loading and unloading	11 (0.61)	11 (0.50)	6 (0.30)
Transportation	46 (2.56)	289 (13.12)	271 (13.21)
Market fees	-	7 (0.31)	7 (0.34)
Weighing	9 (0.50)	5 (0.22)	5 (0.24)
Commission	-	60 (2.72)	19 (0.92)
Spoilage	7 (0.43)	1 (0.59)	10 (0.48)
Sub-total	100 (5.55)	405 (18.41)	372 (18.14)
Producer selling price to wholesaler	-	1465 (66.57)	-
Wholesaler purchase price	-	1465 (66.57)	-
Packing	-	7 (0.31)	-
Loading and unloading	-	8 (0.36)	-
Transportation	-	102 (4.62)	-
Market fees	-	5 (0.24)	-
Weighing	-	8 (0.36)	-
Commission	-	8 (0.36)	-
Spoilage	-	15 (0.69)	-
Sub-total	-	154 (7.01)	-
Wholesaler margin	-	131 (5.95)	-
Wholesaler selling price to retailer	-	1750 (79.54)	-
Retailer purchase price	-	1750 (79.54)	1432 (69.85)
Packing	-	7 (0.31)	10 (0.48)
Loading and unloading	-	9 (0.40)	10 (0.48)
Transportation	-	40 (1.81)	77 (3.75)
Telephone	-	15 (0.69)	16 (0.80)
Spoilage	-	17 (0.77)	14 (0.68)
Sub-total	-	89 (4.04)	128 (6.24)
Retailer margin	-	361 (16.40)	490 (23.85)
Consumer purchase price	1800	2200	2050
Producer's share in consumer's rupee	69.11	48.18	51.70

Note: Figures within the parentheses indicate percentages to the respective consumer's price

grading, sorting and packing operations carried out by the institutional arrangements.

### Constraints Perceived by Supermarket and Traditional Market Vegetable Farmers in Channels

The Garrett's ranking technique was employed to rank the constraints perceived by vegetable farmers in marketing with supermarket and traditional market

(Table 4). With supermarket, 'rejection of low grade produce', the most significant constraint (with 74.01 Garrett score), was followed by 'procurement according to indent' and 'lack of knowledge about grading'. The least important constraint was 'high transportation cost'. With traditional markets, 'middlemen menace', the most important constraint (with 76.94 Garrett score), was followed by 'more

**Table 3. A comparison of marketing efficiency in supermarket and traditional market channels for brinjal and bhendi in Rangareddy district of Andhra Pradesh**

Particulars	(₹/q)					
	Channel-I Supermarket		Channel-II Traditional market		Channel-III Traditional market	
	Brinjal	Bhendi	Brinjal	Bhendi	Brinjal	Bhendi
Consumer purchase price	1275	1810	1630	2200	1390	2050
Total marketing cost	105	100	611	648	425	500
Market margins	-	-	450	492	395	489
Price received by farmer	700	1244	570	1060	570	1060
Value added by marketing system (1-4)	575	566	1060	1140	820	990
Index of marketing efficiency by Acharya's method	6.66	12.44	0.53	0.92	0.69	1.07

*Note:* Index of Marketing was computed by using Acharya's method because it gave best results.

**Table 4. Ranking of constraints perceived by vegetable farmers in marketing through supermarket and traditional market channels**

Constraints	Supermarket		Traditional market	
	Mean scores	Garette ranking	Mean scores	Garette ranking
Middlemen menace	29.32	11	76.94	1
More distance of market	39.03	8	73.03	2
High cost of packing material	52.95	4	24.14	9
Inadequate price	34.69	9	57.83	4
Lack of credit	52.95	5	54.34	5
Lack of market information	49.38	6	36.68	7
High transport cost	31.94	10	48.39	6
Rejection of low grade products	74.01	1	6.36	10
Lack of knowledge of grading	65.97	3	26.37	8
High market charges	47.56	7	65.37	3
Procurement according to indent	73.27	2	5.76	11

distance of the market', 'high market charges' and 'inadequate price'.

The study revealed that there were some constraints specific to supermarket while there were some constraints concerning to the traditional market. At the collection centre, the rejection percentage was high because the farmers were not accustomed to producing a quality product in a scientific manner and this has led to changing of their cultivation practices. The collection centre procures limited quantities according to their indent and this leads the farmers to depend on the local traders and wholesalers to dispose of their remaining produce.

In the case of traditional marketing, farmers have to depend on middlemen who charge high commission rates for disposing of their produce, travel long distances to market their produce, and have limited access to credit.

## Conclusions

The study has revealed that the net price received by vegetable farmers associated with supermarket is high for the two selected vegetables (brinjal and bhendi) and the marketing cost incurred at the producer's level is higher in the traditional channels than in supermarket channel. It could be inferred from the study that the perishable nature of the vegetables,



lack of proper storage facilities and disorganized marketing system in the traditional channels take away a lion's share of retailer's margin and higher proportion of marketing cost. The marketing efficiency has been found to be higher in supermarket channel-I than in the traditional channels which implies that super marketing system works with a higher efficiency in view of the perishable nature of the crop. Efforts should be made to explore cheaper and efficient transportation facilities including establishment of collection centres at different convenient places so as to minimize the transportation cost which would indirectly help the ultimate consumer also.

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