RESEARCH ARTICLE

A study on marketing of cauliflower in middle Gujarat, India

PALAKBEN H. PATEL AND R.S. PUNDIR

ABSTRACT : The study was carried out to estimate the price spread and marketing efficiency in the marketing of cauliflower in different channels by using different tools such as price spread, marketing costs, marketing margins and marketing efficiency. As cauliflower is a market oriented crop, on an average about 93 per cent of production was marketed, while negligible portion was utilized for other purposes. The producer to wholesaler-cum-commission agent to retailer to consumer was the major marketing channel as more that 50 per cent of cauliflower moved through this route. The total cost in marketing of cauliflower per quintal was Rs. 337.85 which was 43.19 per cent of the consumers' rupee. Amongst it the highest marketing cost was observed in retailers which accounted for as (Rs.129.25) followed by wholesaler-cum-commission agent (Rs.70.63) and growers (Rs.19.35) per quintal. Results also indicated that commission was the major marketing cost possessed by wholesaler-cum-commission agent while retailer possessed damage cost. The margins in cauliflower marketing amounted to Rs. 224.99 per quintal which was 28.76 per cent of consumers' rupee. The producer's share in consumer's rupee was 43.19 per cent. The marketing efficiency was lower than unity (0.77).Market information and provision of logistic support need to be made available to the cauliflower growers to improve existing marketing system. Further, promotion of vegetable co-operatives or vegetable producers' co-operatives can go a long way to make the existing marketing system of cauliflowers more efficient and farmers centric.

KEY WORDS : Cauliflower, Marketing costs, Margin, Marketing efficiency, Marketing channel

INTRODUCTION

Vegetable growing is the most remunerative enterprise as it is adopted by small and marginal holders with high production in short duration. Being a source of farm income it creates impact on the agricultural development and economy of the country. Vegetables are cheap source of minerals, vitamins and high calorie. There is a lot of demand for fresh vegetables and their processed products both in domestic as well as in export markets which can earn valuable exchange for India.

Marketing costs and margins assume particular importance in predominating agricultural country like India where agricultural price policy aims at safeguarding interest of both farmers and consumers. In this regard,

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Address of the Correspondence : **R. S. PUNDIR,** Agribusiness Economics and Policies, International Agribusiness Management Institute, Anand Agricultural University, ANAND (GUJARAT) INDIA   Email: rspundir@aau.in

Address of the Coopted Authors : PALAKBEN H. PATEL, Gujarat Life Science Pvt. Ltd., 9-B Krishna Estate, Gorwa, VADODARA (GUJARAT) INDIA

economic analysis of horticultural produces assumes great significance. Thus, the present study covers the economics of cauliflower production and marketing to identify the problems faced by the cauliflower cultivators.

Furthermore, factors like seasonality, bulkiness and perishability associated with cauliflower crop make its market more complicated. Hence, an efficient marketing system ensuring remunerative price motivates the farmers for higher investment and production like other vegetable. Various marketing function are involved in the movement of cauliflower from the point of production to point of its ultimate consumption.

EXPERIMENTAL METHODS

Selection of market functionaries :
For the study of marketing aspects of cauliflower, Anand and Kheda markets were selected. An estimate of marketing cost and price spread in marketing of the cauliflower was made after analyzing the possible marketing channels. From these marketing channels, five market functionaries from each category were selected for both Anand and Kheda markets. Thus, 10 functionaries each of wholesaler and retailers were selected.

Marketing analysis :
Price spread :
The producer's share, marketing costs and margins of middleman in marketing of cauliflower were worked out by using the formulae given by Acharya and Agarwal (2003).
Producer's share in consumer's rupee :

$$P_S = \frac{P_F}{P_C} \times 100$$

where,
P_S = Producer's share in consumer's rupee,
P_F = Price of the produce received by the farmer, and
P_C = Price of the produce paid by the consumer.

Marketing margins of middlemen :
The absolute and percentage margin of middlemen involved in marketing were estimated as under:
Absolute margin of ith middleman = $P_{Ri} - (P_{Pi} + C_{mi})$

$$\text{Percentage margin of } i^{th} \text{ middleman} = \frac{P_{Ri} - (P_{pi} + C_{mi})}{P_{Ri}} \times 100$$

where,
P_{Ri} = Sale price of the ith middleman,
P_{Pi} = Purchase price of the ith middleman, and
C_{mi} = Cost incurred on marketing by the ith middleman.

Total cost of marketing :
The total cost incurred on marketing of cauliflower by the farmers and intermediaries involved in the process of marketing was computed as:

$$C = C_F + C_{m1} + C_{m2} + \ldots\ldots\ldots\ldots. C_{mn}$$

where,
C = Total cost of marketing
C_F = Cost incurred by the producer in marketing of cauliflower
C_{mn} = Cost incurred by the ith middleman in marketing of cauliflower.

Marketing margin for the adopted marketing channel was worked out by comparing the prices prevailing at successive stages of marketing. Since used prices were related to a particular point of time and as such concurrent margins were worked out.

Modified measure of marketing efficiency :
It was computed by employing the following formula suggested by Acharya and Agrawal (2003).

$$MME = [RP / (MC + MM)] - 1$$
$$RP = FP + MC + MM.$$

where,
MME = Modified measure of marketing efficiency,
RP = Prices paid by the consumer,
MC = Total marketing costs,
MM = Net marketing margins and
FP = Pieces received by the farmer.
The higher the ratio, more will be the marketing .... *vice-versa.*

EXPERIMENTAL RESULTS AND ANALYSIS

The results obtained from the present investigation as well as relevant discussion have been summarized under the following heads :

Marketing cost and price spread :
Considering the perishable nature, bulkiness and seasonal nature of cauliflower, the profitability depends upon how marketing of these vegetable is undertaken by

the producers. Therefore, different aspects of marketing *viz.*, disposal pattern, marketable surplus and agency through whom sold, place of sale, time of sale, marketing costs and margins etc. were analyzed and the results are presented here.

Utilization pattern :

It is evident from the Table 1 that the total production of cauliflower on sampled farms was 29875.00 quintals. Of this; on farm utilization was 6.10 per cent. The quantity utilized as damaged accounted for 1.40 per cent, for relatives 3.15 per cent, wage purpose 0.92 per cent and home consumption was 0.62 per cent.

The marketable surplus of cauliflower varied from 91.12 per cent on marginal farms to 95.05 per cent on large farms. As expected, the marketable surplus increased in absolute as well as in percentage terms with the increase in farm size.

Agency-wise sale of cauliflower :

Like other crops, the profitability of vegetable crops depends upon how marketing is undertaken by the producers. Agency through whom it is sold, place of sale and time of sale are some of the important factors which

influence the net price received by the farmers. The farmer's decisions with respect to agency for sale of cauliflower influenced by number of factors such as mode and transportation facilities available, distance and location of markets, price of the produce, transportation cost, marketable quantity and economic conditions of the farmers (Table 2).

The total marketed surplus of cauliflower was observed to be 28033.70 quintals. Out of this, the major share of 55.36 per cent was sold through wholesalers-cum-commission agents, followed by wholesalers (32.28 %) and village merchants (12.34%) by sample cauliflower growers. So, details of cost, margin and price spread were studied for producer to wholesaler cum commission agent to the retailers to the consumer. The quantity sold to wholesaler-cum-commission agents ranged from 58.20 per cent on large farms to 45.21 per cent on marginal size cauliflower farms.

Marketing cost incurred by the cauliflower growers:

Marketing charges paid by the cauliflower growers for different components are furnished in Table 3.

The per quintal marketing cost of cauliflower ranged

Sr. No.	Particulars	Category of farm				Total
		Marginal	Small	Medium	Large	
1.	Total production	2433.00 (100)	5895.00 (100)	8004.00 (100)	13525.00 (100)	29857.00 (100)
2.	**On farm uilization**					
	Home consumption	37.60 (1.54)	57.60 (0.97)	40.30 (0.37)	51.00 (0.38)	185.50 (0.62)
	Wage prpose	26.75 (1.09)	74.00 (1.25)	68.10 (0.63)	108.50 (0.80)	277.35 (0.92)
	Damage	35.45 (1.45)	86.70 (1.47)	130.00 (1.22)	165.50 (1.23)	415.65 (1.40)
	Other	116.20 (4.77)	241.20 (4.09)	238.90 (2.24)	345.00 (2.55)	941.30 (3.15)
	Total (a to d)	216.00 (0.87)	459.50 (7.79)	477.30 (4.48)	670.00 (4.95)	1822.80 (6.10)
3.	Marketable surplus	2217.00 (91.12)	5435.50 (92.20)	7526.70 (94.03)	12855.00 (95.05)	28034.20 (93.89)

Table 1 : Pattern of utilization of cauliflower on the sample farms (Qty. in quintal)

Note : Figures in parenthesis indicate per cent to total production

Marketing agency	Category of farm				Total
	Marginal	Small	Medium	Large	
Village merchants	711.50 (32.09)	841.50 (15.48)	734.00 (9.76)	1173.50 (9.12)	3460.50 (12.34)
Wholesaler- cum-commission agent	1002.50 (45.21)	2719.00 (50.02)	4317.80 (57.36)	7482.40 (58.20)	15521.70 (55.36)
Wholesaler	503.00 (22.69)	1875.00 (34.49)	2474.40 (32.88)	4199.10 (32.66)	9051.50 (32.28)
Total marketed surplus	2217 (100)	5435.50 (92.20)	7526.20 (94.03)	12855.00 (95.05)	28033.70 (93.89)

Table 2 : Disposal pattern of cauliflower under different agencies (Qty. in quintal)

Note : Figures in parentheses indicate per cent to total marketed surplus

from Rs.16.91 on marginal farms to Rs. 20.57 on large sized farms. Thus, the marketing cost was relatively more on larger group of farms compared to smaller farms. Moreover, overall marketing cost for cauliflower was Rs. 19.35 per quintal. Among the various marketing costs, transportation cost ranked first with 32.82 per cent. The next important cost components were packing charges, loading and unloading cost and weighing charge, cleaning charge and damage and other cost. Total marketing cost per quintal was found more on large farm (Rs. 20.57) as compared to marginal size farms (Rs. 19.57) due to variation in the quantum of marketed surplus on various categories of farm.

Marketing cost incurred by wholesaler-cum-commission agent :

The details about marketing cost incurred by wholesaler-cum-commission agent in the marketing of cauliflower are depicted in Table 4. The table brought to the fore that the total marketing cost borne by wholesaler-cum-commission agent for cauliflower was Rs. 70.63 per quintal.

Among the various cost components, commission charges accounted for about 41.57 per cent of total marketing cost, followed by spoilage (19.94%), loading and unloading cost (14.16%), cleaning and grading and cost (8.49%), packing cost (5.66%), market fee (5.54%),

Table 3 : Marketing cost incurred by the cauliflower growers					(Rs. / qtl.)
Particular	Category of farm				
	Marginal	Small	Medium	Large	Overall
Weighing cost	2.00 (11.82)	1.87 (9.90)	1.90 (10.30)	1.96 (9.52)	1.93 (9.98)
Cleaning and grading	0.94 (5.56)	1.48 (7.84)	1.50 (8.14)	1.47 (7.14)	1.44 (7.45)
Packing charges	4.00 (23.68)	3.81 (20.16)	3.79 (20.57)	4.90 (23.82)	4.32 (22.32)
Loading and unloading charges	3.86 (22.85)	4.00 (21.16)	3.82 (20.72)	4.86 (23.62)	4.17 (21.55)
Transportation cost	6.53 (38.66)	6.31 (33.39)	6.29 (34.12)	6.38 (31.01)	6.35 (32.82)
Damage and other cost	1.56 (9.23)	1.41 (7.46)	1.13 (6.13)	1.00 (6.36)	1.15 (5.94)
Total marketing cost	16.91 (100.00)	18.90 (100.00)	18.43 (100.00)	20.57 (100.00)	19.35 (100.00)

Figures in parentheses indicate percentage to total

Table 4 : Marketing cost incurred by wholesaler-cum-commission agent			
Sr. No.	Particulars	Cost (Rs./qtl.)	Per cent to total cost
1.	Cleaning and grading	6.00	8.49
2.	Weighing charges	2.00	2.83
3.	Loading and unloading charges	10.00	14.16
4.	Packing charges	4.00	5.66
5.	Market fee	3.91	5.54
6.	Commission	29.36	41.57
7.	Damage/spoilage	14.08	19.94
8.	Others	1.28	1.81
	Total marketing cost	70.63	100.00

Table 5 : Marketing cost incurred by retailers			
Sr. No.	Particulars	Cost (Rs./qtl.)	Per cent to total cost
1.	Loading and unloading charges	5.00	3.88
2.	Transportation cost	23.33	18.11
3.	Packing cost	15	11.64
4.	Damage/spoilage	53.62	41.62
5.	Others	31.88	24.75
	Total marketing cost	129.27	100.00

weighing charges (2.83%) and other cost (1.81%). The higher marketing cost might be due to higher commission charges incurred by wholesaler as a buyer while buying from distance markets.

Marketing cost incurred by retailers :

Generally, retailers operating in selected APMCs market area purchase vegetables from wholesaler-cum-commission agents as well as from wholesalers and sell to consumers through their retail shops. The results on costs incurred by retailers in the marketing of cauliflower are presented in Table 5. Retailers incurred Rs. 129.27 as total marketing cost per quintal.

Among different items of expenditure, the maximum share was noticed for spoilage (41.62 % to total marketing cost). The other important components were the cost of transportation (18.11%), packing (11.64%) and the cost of loading and unloading (3.88% to total cost).

Cost of production, marketing cost and net returns from cauliflower :

The cost of production, marketing, sale price and net returns from cauliflower are presented in Table 6. Theper quintal average cost of production of cauliflower was observed to be Rs. 218.0. It ranged from Rs. 260.22 per quintal on marginal farm size groups to Rs. 210.91 on large size group of the sampled farms. Thus, on an average total cost (cost of production plus cost of marketing) incurred by cauliflower producers was Rs. 237.37 per quintal.

The average price received by sample cauliflower growers was Rs. 357.20 per quintal. Among the various categories of vegetable growers, large farmers received higher price as compared to other farm groups. The reason for it was large farmers sold their marketable surplus in distance markets, where they fetched higher prices. Further, it was also found that on an average net return per quintal of cauliflower growers was Rs.119.83 per quintal. Increasing trend was observed on different

category of farms when the comparison was made on the basis of net return from cauliflower production.

Cost, margin and price spread in marketing of cauliflower :

Price spread includes cost of performing various marketing functions and margins of different agencies associated in the marketing process of the commodity. The extent of price spread helps policy makers in devising suitable policies for increasing marketing efficiency either by way of reducing the marketing costs or eliminating unwanted middlemen from the marketing process by both. The marketing costs, margins and price spread in marketing of cauliflower through major channel have been presented based on the data collected from farmers and market functionaries. The channels identified in the study area were :

Channel I: Producer– local merchants–consumers
Channel II: Producer- wholesaler–cum-commission
          agent–retailer – consumer
Channel III: Producer–wholesaler–retailer–consumer

On an average about 55.36, 32.28 and 12.34 per cent of total cauliflower moved in studied area through Channel II, III and I, respectively. Thus, more than 50 per cent of cauliflower moved through producer to wholesaler-cum-commission agent to retailers to consumer. As such, details of cost, margin and price spread were studied for channel II only. The costs incurred and margins earned by various market functionaries as well as price spread in marketing of cauliflower through channel II are given in Table 7.

The total margin earned by different functionaries was Rs. 224.99 per quintal of cauliflower. It was higher at retailers' level (Rs. 144.14 per quintal) compared to wholesaler (Rs. 80.85 per quintal), constituting 10.33 per cent and 18.44 per cent of consumer's price, respectively. The marketing cost incurred by different functionaries was Rs. 219.23 per quintal of cauliflower, accounting for 28.03 per cent of the consumers' price. Out of total

Table 6 : Cost of production, marketing cost and net returns from culiflower						
Sr. No.	Category of farm	Total cost of production	Marketing cost	Total cost•	Sale price	Net return
1.	Marginal	260.22	16.91	277.13	312.41	35.28
2.	Small	229.22	18.90	248.12	354.34	106.22
3.	Medium	214.30	18.43	232.73	367.24	134.51
4.	Large	210.91	20.57	231.48	369.80	138.32
5.	All farm	218.02	19.35	237.37	357.20	119.83

•Total cost is the sum of cost of production and marketing cost

marketing cost, the highest cost (16.52%) was incurred by retailers, followed by wholesaler-cum-commission agent (9.09%) and producer (2.47%). Further, it was observed from the table that producer's share was 43.19 per cent of the price paid by cauliflower consumers.

Table 7 indicates that the price spread (marketing cost + marketing margins) was higher (56.80%) compared to producer's share in consumer's price in the marketing of cauliflower (43.19%). It can be inferred from the study that the perishable nature of vegetables, lack of proper storage facilities at reasonable charges and unorganized marketing system in the study area resulted into lion's share of retailer's margin and higher proportion of marketing cost. The results of this study are in corroboration with the findings of Jadav *et al.* (2011); Kumar *et al.* (2008); Verma (2004) and Prasad (2001).

Marketing efficiency :

Efficiency of marketing for an agricultural produce in general is assessed by the size of share which producer-farmer obtains in the price paid by the consumer. These results were further substantiated by working out market efficiency as suggested by Acharya (2003).

The marketing efficiency for cauliflower has been worked out by considering Acharya's modified formula and the results are presented in Table 8.

In case of cauliflower the total marketing cost and marketing margins involved in the selected marketing channel (Channel II) was Rs. 444.22 per quintal. Considering this with producer's net price per quintal, the modified marketing efficiency was lower than unity (0.77). This was due to higher marketing costs and margins incurred by wholesalers and retailers. The marketing cost was found to be Rs. 219.23/qtl and margins Rs. 224.99/ qtl. Kumbhar *et al.* (2014) worked on the economics of production and marketing of guava, Pallewar *et al.* (2014) on wheat and the results found were more or less similer to the present investigation.

Conclusion and policy suggestions :

On an average marketable surplus on sample farms was 93.89 per cent of total cauliflower production and, as expected, its proportion increased with the increase in size of farms. While the quantity damaged accounted for 1.40 per cent, wage purpose 0.92 per cent and home

Table 7 : Cost, margin and price spread in marketing of cauliflower

Sr. No.	Particulars	Rs./qtl.	Per cent to consumer's price
1.	Producer's net price	337.85	43.19
2.	Cost incurred by		
	Producer	19.35	2.47
	Wholesaler-cum-commission agent	70.63	9.09
	Retailer	129.27	16.52
	Total	219.23	28.03
3.	Margins of		
	Wholesaler-cum-commission agent	80.85	10.33
	Retailer	144.14	18.44
	Total	224.99	28.76
4.	Price spread (cost + margins)	444.22	56.80
5.	Retailer's sale price/ consumer's purchase price	782.07	100.00
6.	Producer's share in consumer' rupee (%)	43.19	

Table 8 : Marketing efficiency of cauliflower

Sr. No.	Particulars	Cauliflower
1.	Consumer's price (Rs./qtl.)	782.07
2.	Producer's net price (Rs./qtl.)	337.85
3.	Marketing cost (Rs./qtl.)	219.23
4.	Marketing margin (Rs./qtl.)	224.99
5.	Marketing efficiency	0.77

consumption was 0.62 per cent.

About 55 per cent of cauliflower was moved through Wholesaler- cum-commission agent to retailers to consumers. It was major channel for cauliflower.

The total marketing cost incurred by cauliflower growers amounted to Rs.19.35 per quintal. Of this the major share was of transportation cost (32.82%), followed by the cost of packing (22.32%), loading and unloading cost (21.55%) and weighing cost (9.98%).

The share of marketing cost and margins of intermediaries in consumer's price was 28.03 per cent and 28.76 per cent, respectively. The percentage of price spread in consumer's price was 56.80 per cent. Thus, the producer's share in consumer's rupee was 43.19 per cent only.

As for the policy suggestions, market information and provision of logistic support need to be made available to the cauliflower growers to improve existing marketing system. Production and marketing techniques need to be integrated to reduce the losses. Also, in view of changing economic environment and strengthening farmers bargaining power, promotion of Vegetable co-operatives or vegetable producers' co-operatives can go a long way to make the existing marketing system of cauliflowers more efficient and farmers centric.

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