Comparative study of marketing efficiency and marketed surplus of cauliflower through different marketing channels in Punjab, India

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ABSTRACT
The present study was undertaken in Hoshiarpur and Amritsar districts of Punjab, India. The study based on primary data, which was collected during the period 2015-16 through questionnaire.Total sample of 120 different sized cauliflower growers from eight villages were collected. In order to evaluate the marketing efficiency of cauliflower vegetable, 10 wholesalers and 15 retailers were selected randomly from each district market. The study identified three marketing Channels viz; I: Producer-wholesaler-retailer-consumer, II: Producer-retailer-consumer and III: Producer-consumer. The producer's share in consumer's rupee was highest in marketing Channel-III (Apni Mandi) because of direct sale to consumers by producers. Major share of marketed surplus was sold through channel I (71.16%) it was followed by channel II (24.61%) and channel III (4.23%). A comparative analysis of marketing efficiency shows that the marketing efficiency was much higher in channel III (29.01) than that of channel II (1.57) and channel I (1.11) in Hoshiarpur. Contrary to Hoshiarpur market the Amritsar market is less efficient with 27.13 marketing efficiency in channel III, it was followed by channel II (1.43) and channel I (0.96).The channel-III was observed comparatively profitable than other channels (channel-I and channel-II). However, the quantity handled through this channel was very low. In marketing of cauliflower serious problem faced by the growers was wide fluctuation in prices (96%), absence of minimum support prices (92%) high transportation cost (77%) while 68 per cent farmers opined that they do not get remunerative prices. Other problem reported were high cost of packing material (63 %) and late payments (46 %).
Keywords: Cauliflower, Marketed surplus, Marketing efficiency, Marketing Channels and Punjab

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INTRODUCTION
Cauliflower is mainly a *Rabi* season crop, but it can also be cultivated in the summer season with hybrid varieties. The production of vegetables including cauliflower is increasing day by day in India. Among all the vegetables produced in the country, cauliflower leads with a key share in terms of total cropping area and production. It grows in almost all the states of India but ample amount of it produced in Delhi, West Bengal, Haryana, Tripura, Orissa, Punjab, Manipur, etc. Cauliflower is grown on many diverse types of soil, but does best in a rich, well-drained soil with a high moisture-holding capacity. High humus content in the soil will offer better aeration and water penetration. If a soil is low in organic matter, stable or green manures can be provided. Well-drained, sandy loam soils are suitable to early varieties, whereas loamy and clay loam soils are suited to late ones because they are to some extent tolerant of poor drainage. Good soil preparation is important when planting cauliflower. The best way to determine soil

conditions is to have a soil test performed. Cauliflower is also known for being high in antioxidants and is also often eaten as part of a weight loss diet because it contains very few calories and carbohydrates [12].

India is the second largest producer of vegetables after china with a production of 169 millionmetric tonne from 10.10 million hectares with productivity of 16.73 MT/hectares during 2015-16 [2]. In case of Punjab, area under cauliflower was 5.45 thousand hectares with a production of 128.09 thousand tonne in 2004-05 which further increased to 13.82 thousand hectares with a production of 248.45 thousand tonne during 2014-15. This level of production can provide only 210 grams of vegetables per capita per day as against the recommended dietary allowance of 300 grams vegetables per capita per day [13]. Agriculture in Punjab experienced many changes since the beginning of Green Revolution. Agriculture gradually shifted from subsistence to commercialized one. Surge in production due to high yielding varieties made wheat-paddy rotation quite general in Punjab. During the preliminary few years of Green Revolution, the economy of Punjab flourished with this rotation. But as the time have passed wheat-paddy rotation had resulted in various difficulties like over-exploitation of the groundwater resources, depletion of soil fertility and higher susceptibility of crops to the outbreak of various insect-pests and diseases [11]. The extreme use of fertilizers for increasing yield also affected the natural fertility of the soil. The diversification of agriculture was much needed to get rid fromthese problems. Now, our cropping system has been stretched where further increase in productivity seemed to be limited which leads to increasing cost of inputs resulted in lessening profitability. The plight of nearly 3.16 lakh marginal and small farmers in the light of overall changing scenario is becoming more vulnerable [3]. Thus, to improve income, employment status and save natural resources from further degradation, diversification from grain crops to high-value crops like vegetables has emerged as an important strategy for agricultural growth [9].

As the Indian population is growing, the demand for fresh vegetables is also increasing. India is the world's major producer of many vegetables but still there is anenormous gap between per capita demand and supply. Annually, per capita demand in India was 87.51 kg during 2010 and probablyit will increase to 102 kg in 2020. To bridge the gap of demand there is anessentiality to shift some more area from crop farming to vegetable farming [8]. So, the vegetable production seems to be the developing sector for diversification in Punjab agriculture that would deliver remunerative return and employment mainly to those farm households dwelling around the cities with small land holdings. Women are also profited as the vegetable production engages relatively higher women labour in various operations. Joshi *et al* [5] also recommended vegetable cultivation as a means of crop diversification in Punjab.Vegetables like cauliflower were recommended by many studies as alternate to this scenario [10].

The level of success from vegetable crops depends upon how marketing is undertaken by the farmers. There is a strong economic benefit in producing vegetables as compared to the traditional crops, but absence of price assurance has been the major impediment. Transportation costs and marketing margins of both retailers and wholesalers were identified as the major reasons for high marketing costs of vegetables, unfavorably affecting the profitability of such crops [6, 7]. At the same time cauliflower being high value crop has got marvelous scope to rise the income of farmers. It is essential to make an in-depth economic analysis of the cauliflower vegetable.

MATERIAL AND METHODS

Current study was done in Hoshiarpur and Amritsar districts which had the distinction of the maximum and moderate area under cauliflower cultivation in Punjab respectively. The peripheries of both districts were selected for the selection of cauliflower growers due to consumption of vegetable in suburbs. The ready market for the disposal of vegetable was also one of the chief factors for the selection of periphery for the study. Random sampling technique with probability proportional to size was used for this study. A list of villages growing cauliflower around the radius of 15 km of both districts were prepared with the help of officers of market committee and Deputy Directors Horticulture, of these districts. Four villages, cultivating cauliflower were nominated randomly from each district. From these nominated villages, 15 cauliflower growers from each selected village spread over three size categories were chosen at random in probability proportional to size of the farm. Thus, in all, 120 cauliflower cultivators from the eight nominated villages constituted the

total sample.In order to examines the marketing of cauliflower vegetable, 10 wholesalers and 15 retailers were selected randomly from each district market.

Marketable surplus: Marketable surplus is that amount of the produce which can be made accessible to the non-farm population. Marketable surplus is the residual left with the producer after meeting his obligation for family consumption, farm requirements for seeds and feed for cattle, payment to labour in kind, payment to land lord and other social and religious obligations. This may be expressed as:

$$MS = P - C$$

Where MS = Marketable surplus

P = Total production

C = Total requirements (family consumption, farm needs, payment to labours and payment for social religious work)

Technique used for marketing efficiency

Several techniques were used for marketing efficiency analyses.

Producer's share in consumer price

This was the percentage of the net price received by the producer-seller to the price paid by the consumer or selling price of retailer.

$$PSCR = \frac{PNP}{SPR} \times 100$$

Where, PSCR is producer's share in consumer rupee

PNP is net price received by cauliflower grower

SPR is selling price of retailer (price paid by consumer)

Price spread

It refers to the distribution of price paid by consumer i.e. difference between the price paid by the consumer and price received by the producer. This spread consists of marketing costs and margins of the intermediaries i.e. P_1-P_2

Where, P_1 is price at one level or stage in the market

P_2 is price at another level.

Marketing efficiency

Marketing efficiency is the ratio of market output (satisfaction) to marketing input (cost of the resources used in the marketing). Larger the value of this ratio means the improved marketing efficiency and lower value denotes reduced efficiency. Improvement in the marketing is either due to reduction in costs for the same level of satisfaction or increase in the satisfaction of marketing services for the given marketing costs.

Acharya's approach

Marketing efficiency was calculated by Acharya's index of marketing. It is the ratio of the net price received by farmer to the sum of total marketing costs and margins of different intermediates [1].

Acharya's equation is

$$ME = FC / (MC+MM)$$

Where,

ME = Index of Marketing efficiency

FC = Price received by farmer

MC = Total marketing cost

MM = Net marketing margin

RESULTS AND DISCUSSION

Marketable surplus

Per farm production and marketable surplus of cauliflower is given in following Table 1.1,which revealed that, total production of cauliflower was 103.62q. The quantity utilized on farm was observed to be only 3.73 per cent (3.87q.) and the marketable surplus was as high as 96.27 per cent. From the overall quantity retained on farm, 0.59 q. was utilized for family consumption. Out of total production losses due to spoilage at farm level to the tune of 1.81 per cent (1.88q.) and quantity of produce given to relatives and friends was 1.33 per cent (1.38q.). Among different groups the per farm estimated quantity of marketed surplus was 102.25 q. (97.34%) in small groups, in medium group it was 97.75q. (95.36%) and similar trend was observed in large group 95.50q. (95.38%). Results were in line with the analysisof marketed surplus by Joshi (2012). This indicated that as size of farm increased,

the quantity of marketed surplus have also increased corresponding to area under cauliflower cultivation. On group wise analysis, it is observed from that total consumption was maximum in case of large farmers (4.62 %), which followed by medium (3.67 %) and small farmers (3.02 %).

Table 1.1: Marketable surplus of cauliflower (Qtl/acre)

Sr. No.	Particulars	Group			Overall
		Small	Medium	Large	
A.	Quantity consumed a) Family consumption	0.68 (0.64)	0.60 (0.59)	0.51 (0.51)	0.61 (0.59)
	b) Gift to relatives and friends	1.30 (1.23)	1.48 (1.44)	1.65 (1.64)	1.38 (1.33)
	c) Losses due to spoilage	1.21 (1.15)	1.68 (1.64)	2.48 (2.47)	1.88 (1.81)
	Total consumption (Farm and family)	3.19 (3.02)	3.76 (3.67)	4.64 (4.62)	3.87 (3.73)
B.	Marketed surplus	102.25 (97.34)	97.75 (95.36)	95.50 (95.38)	99.75 (96.27)
	Total production (A+B)	**105.44 (100)**	**102.51 (100)**	**100.14 (100)**	**103.62 (100)**

(Figures in the Parentheses indicate percentage to the total production)

Marketing efficiency

Following marketing channels has found to be operational in marketing of cauliflower.
Channel-I. Producer-wholesaler-retailer-consumer
Channel-II. Producer-retailer-consumer
Channel-III. Producer-consumer

Marketing efficiency in Hoshiarpur market

The marketing efficiency has been worked out with Acharya method and presented in following Table 1.2. It was observed that the total marketing costs in channel-Iincurred by different market intermediaries wasRs.323.62/q and total net margin of different intermediaries wasRs.626.38/q. Marketing efficiency calculated came at the tune of 1.11.

Table 1.2:Marketing efficiency in Hoshiarpur market

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Channel-I(Producer-wholesaler-retailer-consumer)		
Sr. No.	**Particulars**	**Rs. /Qtl**
1.	Retailer's sale price/ Consumer's purchase price	2000.00
2.	Total marketing costs	323.62
3.	Total net margin of intermediaries	626.38
4.	Net price received by farmer	1050
5.	Marketing efficiency	1.11
Channel-IIProducer-retailer-consumer)		
1.	Retailer's sale price/ Consumer's purchase price	1800.00
2.	Total marketing cost	330.04
3.	Total net margin of retailer	369.96
4.	Net price received by farmer	1100.00
5.	Marketing efficiency	1.57
Channel-III(Producer-consumer)		
1.	Producer's sale price/ Consumer's purchase price	1500.00
2.	Total marketing cost	50.00
3	Net price received by farmer	1450.00
4	Marketing efficiency	29.00

Marketing efficiency for channel-IIshows that the total marketing cost was Rs.330.04/q and total net margin of the retailer was Rs.369.96/q. Marketing efficiency was 1.57 which was higher as compare to channel-Ibecause of less intermediaries'operations.In channel-III, marketing cost was only Rs.50.00/q which was very low as compare to other channels. This was due to the absence of intermediaries. Marketing efficiency calculated for this channel was 29.0, which was highest among the other channels.

Marketing efficiency in Amritsar market

It was clearly stated from the following Table 1.3, that the total marketing costs incurred by different market intermediaries in channel-IwasRs.292.98/q and total net margin of different intermediaries wasRs.681.94/q. and due to the high number of intermediaries the Marketing efficiency was tuning atthe rate of only 0.96 which was quite low.

Marketing efficiency for channel-IIshowed that the total marketing cost was Rs.293.28/q and total net margin of the retailer was Rs.406.72/q. Marketing efficiencymounted at 1.43 which was higher as compare to channel I and less as compare to channel II in Hoshiarpur market. In channel III, it was revealed, total marketing cost was only Rs.48/q. Absence of intermediaries were the cause for this low cost. Marketing efficiency calculated for this channel was 27.13, which was also highest as compared to other channels in Amritsar market.

Table 1.3:Marketing efficiency in Amritsar market

Channel I(Producer-wholesaler-retailer-consumer)		
Sr. No.	Particulars	Rs./Qtl
1.	Retailer's sale price/ Consumer's purchase price	1900.00
2.	Total marketing costs	292.98
3.	Total net margin of intermediaries	681.94
4.	Net price received by farmer	928.08
5.	Marketing efficiency	0.96
Channel II(Producer-retailer-consumer)		
1.	Retailer's sale price/ Consumer's purchase price	1700.00
2.	Total marketing cost	293.28
3.	Total net margin of retailer	406.72
4.	Net price received by farmer	1000.00
5.	Marketing efficiency	1.43
Channel III(Producer-consumer)		
1.	Producer's sale price/ Consumer's purchase price	1350.00
2.	Total marketing cost	48.00
3	Net price received by farmer	1303.00
4	Marketing efficiency	27.13

Comparative analysis of marketing efficiency

An efficient marketing system is an effective agent of change and asignificant means of floating the income levels of the farmers and the levels of satisfaction to consumers. It can be harnessed to improve the quality life of masses. A comparative analysis of marketing efficiency which ispresented in the Table 1.4expressed that the marketing efficiency was much higher in channel-III than that of channel-II and channel-I, in Hoshiarpur market and almost same results were observed from the Amritsar market. The marketing efficiency for the Hoshiarpur market is good as compare to the Amritsar in all channels due to the slightly better market functions. Higher marketing margins were taken away by the market intermediaries in the channel I and channel II resulted in the poor efficiency in the marketing of cauliflower.

Table 1.4: Comparative analysis of marketing efficiency over different types of marketing channels in Hoshiarpur and Amritsar markets

Sr. No.	Channel	Hoshiarpur market		Amritsar market	
		Price spread (Rs/q)	Marketing efficiency	Price spread (Rs/q)	Marketing efficiency
1.	Channel-I	950.00	1.11	971.60	0.96
2.	Channel-II	700.00	1.57	700.00	1.43
3.	Channel-III	50.00	29.01	48.00	27.13

Problems faced by the cauliflower growers in marketing

It could be seen from the table 1.5 that, in marketing of cauliflower serious problem faced by the growers was wide fluctuation in prices which was opined by 96 per cent of farmers. Another major problem next to it was absence of minimum support prices which was expressed by 92 per cent farmers. High transportation cost was reported by 77 per cent producers. While 68 per cent farmers opined that they do not get remunerative prices. Other problem reported were high cost of packing material (63 %) and late payments (46 %).

Table 1.5: Marketing related problems faced by cauliflower growers, Punjab

Sr. No.	Problems	No. of respondents	Per cent
1.	Non availability of market information	33	27
2.	Wide fluctuation in prices	115	96
3.	High transportation cost	92	77
4.	Late payment	32	27
5.	Absence of MSP	110	92
6.	Remunerative prices are not received	85	68
7.	High cost of packing material	76	63
8.	Lack of packing material	55	46

CONCLUSIONS

With respect to the analysis carried out to examine the market, the Channel-III were observed comparatively profitable than other Channels (Channel-I and Channel-II). The results showed that the producer's share in consumer's rupee was the highest in Channel-III and it was lowest in Channel-I for both markets. The marketing margin was maximum in Channel-I followed by Channel- II. The Apni mandi (Channel- III) is the most profitable for the farmers and consumers as well but the sale through this channel was much low. Marketing efficiency was far batter in Apni mandi than the others due the absent of the intermediaries. There should be urgent need to address the problem faced by the grower in the marketing and cultivation of cauliflower. Promotion of Channel- III among the producers and consumers is required to promote this way of marketing. Market functions in Amritsar were poor than that of Hoshiarpur which clearly indicated through the market efficiency results.

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