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## Estimation of marketing cost of different channels, market efficiency and price spread of chickpea in Jaipur district

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### Abstract

The global chickpeas market grew from \$13.93 billion in 2022 to \$14.9 billion in 2023 at a compound annual growth rate (CAGR) of 7.0%. Chickpea solely contributes nearly 50% of the Indian pulse production. States like Maharashtra (25.97% contribution to national production), Madhya Pradesh (18.59%), Rajasthan (20.65%), Gujarat (10.10%) and Uttar Pradesh (5.64%) are major chickpea producing states of India. The study was conducted in Jaipur district of Rajasthan which is one of the 50 districts of Rajasthan. Jaipur district comprising 13 blocks among 1 block was selected. i.e., Kotputli block was selected for the study. A list of 4 villages was selected randomly out of them. Analysis of marketing costs was revealed that total marketing costs per quintal of chickpea were highest (Rs 239.00/q) in marketing channel-I than in channel-II (i.e., Rs 225/q) due to more number of middlemen involved in channel I than in channel II. In case of channel-III marketing costs were not incurred by producers because it has a shortest or direct route of produce disposal. It was resulted that absence of intermediaries was found in the channel-III. So, producer's net share in the consumer's rupee was highest (100 percent) in the channel-III followed by channel-II (88.50 percent) and channel-I (85.42 percent). Highest market margins of intermediaries were computed in the channel-I followed by channel-II and no market margin found in the channel-III. Price spread was highest in the channel-I followed by channel-II and no price spread detected in the channel-III.

**Keywords:** Market arrivals, market cost, market efficiency and price spread, and regulated market

### Introduction

In India, chickpeas grow on a wide range of soil types. Black cotton soils, sandy loam soils, and moderately heavy soils are all used to cultivate this crop. The character of soils shouldn't be overly alkaline. P<sup>n</sup> ranges from 5.5 and 70 are ideal for chickpea farming. Chickpeas have a high protein content (23%), total carbs (64%), and dietary fibre content (19%). They are also free of certain anti-nutritional elements. In addition to being a good source of protein, minerals, vitamins, and fibre, chickpeas also contain phytochemicals that may be beneficial to health (Wood & Grusak, 2007) [35]. In India, there were 10.17 million hectares of chickpeas grown, yielding 11.35 million tonnes of output and 1116 kg/ha of productivity. In India, total pulse area and production has been >290 Lha and 238 Lt respectively. Out of the total area >60 Lha is confined to Madhya Pradesh alone, earning a prime status in pulse production commodity contributing a remarkable 21% of the country's pulse area with 25% production, thereby ranking first both in area and production followed by Rajasthan, Maharashtra and Uttar Pradesh with 16%, 15% and 10%. Increasing the income level of farmers can be achieved through the implementation of an effective marketing system. A more optimal pricing for produce is achieved in the economy by well-managed marketing facilities, effective marketing channels, and marketing machinery as opposed to a disorganized approach. As a result, when marketing the chickpea crop, it is necessary to determine marketing expenses, margin, and price spread. Expenses in agriculture are crucial to the farm sector's economic viability and feasibility in the face of ongoing input price increases that have an impact on crop firms' profitability. Crop marketing is still in its infancy in India. Growing output is not the only crucial aspect of marketing development. Farmers always want to act as middlemen between themselves and the consumer in order to enhance their revenue, and they also want to earn a fair price for the produce they grow. Therefore, to ensure profitable transactions and obtain the farmer's part of the consumer's rupee, meticulous planning of food-grain marketing is needed. Research on marketing channels, such as producer-wholesaler-retailer-consumer, is necessary to understand how they behave in the market with regard to fees, commissions, and

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transportation-related issues like price increases. The promotion of food grains is essential for boosting both production and consumption as well as for expanding the economy. It's been said to be the primary multiplier of agricultural growth. The system of agricultural marketing contributes to economic growth in two ways. Farmers always want to receive a fair price for the produce they grow in nations where agriculture is the main source of resources. Consequently, meticulous planning of the sale of wheat, jowar, pigeon pea (tur), and chickpea (gram) is highly crucial for profitable transaction. India boasts a vast food grain sector that is extremely fragmented. Analysis is done on the significance of distribution channels for both the overall national economy and for specific economic operators, or groupings. These kinds of analysis begin with the proportion of large companies and groups, both domestically and globally. This is the case of relationships between different economic operators within value creation chains. This is why earlier concepts of the role and importance of commerce in national economy are losing their importance. An analysis of this phenomenon was conducted by Acharya for gram grains in Rajasthan, and the results showed that there are three points of entry of gram grain in the marketing channel, namely farmer level, wholesaler level (from outside the state), and processor level (also from outside the state). There are 28 marketing channels, village traders appear in 8 channels, grain wholesalers appear in 18 channels, and processors appear in 19 channels. However, as agriculture becomes more commercialized (market-oriented), and farmers and consumers are dispersed across state or even national boundaries, new marketing channels are emerging that cut across state or even national boundaries. There are twenty-eight marketing channels: eight are occupied by village traders; eight are occupied by grain wholesalers; eight are occupied by processors; five are occupied by dal (split) wholesalers; fifteen are used by retailers. Based on the assumption that there were 100 units of farmer surplus entering the marketing channel, 4.24 percent of the surplus from outside the state was entered at the wholesaler and processor level.

#### Data and methodology

The study was conducted in Jaipur district of Rajasthan which is one of the 50 districts of Rajasthan. Jaipur district comprising 13 blocks among 1 block was selected. i.e., Kotputli block was selected for the study. A list of 4 villages was selected randomly out of them. List of all the chickpea growers of each selected village along with their size of operational holding was prepared with the help of patwaris of the concerned villages. All the farmers were categorized into following five standardized size groups. Among them, 10% farmers for each category of operation holdings of each village were categorized into four categories of farmers except large farmers because none of large farmer was found in the study area. Thus, in total 68 farmers were selected from study area. Anaj Goun mandi Samiti, Kotputli was selected purposively as study farmer's sale their produce in this mandi and magnitude of marketing costs, margins and price spread in the marketing of chickpea. Tabulation method is used for analysis of data along with required statistical tools for the interpretation of the results. A list of all the village traders and licensed wholesalers-cum commission agents and retailers involved in the marketing of chickpea in the study area was prepared with the help of the chickpea farmers and official of

Anaj goun mandi samiti, Kotputli. In total, 12 village trader, 23 wholesalers-cum-commission agents and 48 retailers were identified in the marketing of chick-pea from them 10 percent of total intermediaries or at least 5 middlemen were selected randomly for obtaining the required information pertaining to the marketing costs and margins in the marketing of chick pea. Thus 5 village trader 5 wholesalers-cum commission agents and 7 retailers were selected for detailed study. Simple statistical tools like averages, percentages, etc. were employed.

Marketing cost is the actual expenses incurred in bringing the goods and services from the producers to the consumer. It included the transportation charges, packaging cost, commission charges, loading and unloading, mandi fee, weighing charges, etc. The cost incurred either in cash or in kind by the producer and middlemen involved in the sale and purchase of the chickpea till the chickpea reaches in the hands of consumer. The expenditure incurred in kind was converted into cash using appropriate prices, symbolically it can be written as;

$$C = C1 + Cm1 + Cm2 + Cmi$$

Where,

C = Total cost of marketing of the chickpea.

C1 = Cost incurred by the producer.

Cmi = Cost incurred by ith middle-man in the process of buying and Selling the Chickpea,

**Marketing margin:** In the present study marketing margin meant the remuneration that the intermediaries receive for the services rendered by them in moving the goods in the marketing channels. The margin was expressed on the following various measures;

- Absolute marketing margin ( $A_{mi}$ ) =  $PR_i - (P_{pi} + C_{mi})$
- Percent marketing margin ( $P_{mi}$ ) =  $PR_i - (P_{pi} + C_{mi}) / P_{ui} \times 100$
- Mark-up margin ( $M_i$ ) =  $PR_i - (P_{pi} + C_{mi}) / P_{pi}$

Where,

$PR_i$  = Total value of receipts per Qt. (sale price)

$P_{pi}$  = Purchase value of goods per Qt. (purchase price)

$C_{mi}$  = Costs incurred on mark

**Marketing efficiency:** Marketing efficiency was calculated using Acharya's (2004) approach. It is the ratio of price paid by the consumer to the total costs and margins.

$$MME = \frac{RP}{MC+MM} - 1$$

$$RP = FP + MC + MM$$

Where,

MME = The measure of marketing efficiency,.

RP = Price paid by consumer.

MC = Total marketing cost,

MM = Absolute marketing margin,

FP = Price received by grower,

**Price spread:** Price spread here referred to the difference between price paid by consumer and price received by producer for an equivalent quantity of chickpea as a percentage of price paid by consumer. The share of the producer as well as other intermediaries in the consumer's

rupees was computed separately for each marketing channel using following formula;

$$\text{Price Spread} = \frac{P_e - P_f}{P_c} \times 100$$

Where,

$P_e$  = Price paid by the consumer

$P_f$  = Price received by the producer

### Producer's share in consumer rupee

It is the price received by the farmer expressed as a percentage of the retail price. It has been calculated by using following formula;

$$P_s = \frac{PF}{PR} \times 100$$

Where,

PF = Producer's price

PR = Consumer retail price

PS = Producer's share in the consumer rupee.

## Results

### Marketing cost of different channels of chickpea

#### Marketing costs, marketing margin and price spread

Marketing costs *viz.*, transportation charges, loading and unloading charges, weighing charges, mandi fee and commission charges etc. have been incurred by the market intermediaries or agencies including farmers engaged in the marketing of chickpea. The cost of transportation was one of the important marketing costs. This cost varied with the distance between producer's farm point and selling point. In channel-I produce was sold to village traders at producer point who in turn transported it to the mandi for sale through wholesaler-cum-commission agents and retailers to consumers. In channel-II (Chickpea-Producer → Wholesaler-cum-commission agent → Retailer → Consumer) the producer farmers and retailer together incurred. In channel-III (Chickpea-producer → Consumer) the producer farmers sold their produce direct to consumers at farm itself. Loading and unloading charges were important charges in the marketing of chickpea. Loading and unloading charges were borne by producer farmers, village traders and retailers on an average Rs 5 per quintal. In market, Weighmen facilitate the correct weight of produce. Weighman charge was Rs 3 per quintal of produce for weighing the product. This charge was borne by farmers, village trader and retailers. Mandi fee was collected by the AGMS, Kotputli for providing various services in the mandi. The rate of mandi fee was 1.60 percent of the value of the chickpea and this cost was paid by the buyer in mandi (Wholesaler cum commission agent). Commission charges were gained by the commission agent at the rate of 2 percent of the value of chickpea from the buyers (Retailers) of the produce. Table-1 reveals that the total marketing costs were Rs 239.00 per quintal. Among the middlemen, per quintal total marketing costs incurred by producer-farmers, village trader, wholesaler –cum-commission agents and retailers were 34.00 (14.23 percent of total cost), 67 (28.03 percent), 112.00 (46.86 percent) and 25.00 (10.46 percent), respectively, in the study area. It was observed that total marketing costs per quintal was highest (i.e., Rs 112.00) for wholesaler-cum –commission agent and lowest (Rs 25.00) for retailer in marketing of chickpea. Component-wise marketing costs, transportation charges,

commission and mandiffee were found main components which all together accounted for 64.43 percent of total marketing costs in marketing of chickpea. Remaining components like gunny bags, loading and unloading charges, weighing charges and miscellaneous charges together accounted for 35.56 percent of total marketing cost. These results were in authentication with the results reported by Chavhal *et al.* (2014) [3]. The costs spent in chickpea marketing in channel-II are shown in table-2. From this table, it was observed that the total marketing costs incurred in marketing of chickpea per quintal were estimated at Rs 225.00 per quintal. Market intermediaries-wise, per quintal total marketing costs paid by producer-farmers, wholesaler –cum-commission agents and retailers were 79.00 (35.11 percent of total cost), 118.00 (52.44 percent) and 28.00 (12.44 percent), respectively, in the study area. It was analyzed that per quintal total marketing cost was highest (i.e., Rs 118.00) for wholesaler-cum -commission agent and lowest (Rs 28.00) for retailer in chickpea marketing. Commission charge, transportation cost and mandi fee were found main components in marketing of chickpea which all together computed for 71.55 percent of total marketing cost. Remaining components (like plastic bags, loading and unloading charges, weighing charges and miscellaneous charges) were together accounted for 28.45 percent of total marketing cost. There was no marketing costs incurred in channel-III (Producer –consumer) as the produce is directly being sold by the farmer-producer to consumer.

### Market efficiency, market margin and price spread in marketing of chickpea

Price spread or farm retail spread is the difference between the price paid by the consumers and the price received by the producer for an equivalent quantity of farm produce. Sometime this is called as gross marketing margin. The marketing margin refers to the difference between the price received by seller at a particular stage of marketing and the price paid by him at preceding stage of marketing during an earlier period. The producer's net share, total marketing costs, total marketing margins, consumer's price and price spread are given in channel-I table-2. This table shows that chickpea producer obtained Rs 4925.00 per quintal of a price of `Rs 5765.00 per quintal paid by consumer. Consequently, the chickpea-producer's share in consumer's price was 85.42 percent. The marketing costs paid by producer, village trader, wholesaler-cum-commission agent and retailer were 0.59 percent, 1.16 percent, 1.94 percent and 0.43 percent of total price paid by consumer, respectively. Among the intermediaries, marketing costs borne by wholesaler-cum-commission agent were highest followed by village trader, producer and retailer. Thus, total marketing cost of intermediaries was 4.15 percent of total consumer's price. Total margins earned by village trader, wholesaler-cum-commission agent and retailers were 2.01, 5.60 and 1.94 percent of price paid by consumer, respectively. So, total share of market functionaries in consumer's price was 9.56 percent and it was highest for retailer in this channel. The price spread in channel –I was Rs 790.00 per quintal which was 13.70 percent of consumer's price. The producer's net share, total marketing costs, total marketing margins, consumer's price and price spread in channel-II are given in table-2.3. This table reveals that, out of price of Rs 5765.00 per quintal paid by consumer, chickpea producer got Rs 5102.00 per quintal which accounted for 88.50 percent share.

The share of marketing costs paid by chickpea-producer, wholesaler-cum-commission agent and retailer was 1.37, 2.05 and 0.49 percent of total consumer's price, respectively. Total share of wholesaler-cum-commission agent was highest followed by chickpea-producer and retailer. Thus, total share of marketing cost of intermediaries in consumer's price was 3.90 percent. Total margin earned by middlemen, wholesaler-cum-commission agent and retailers was 5.60 and 1.94 percent of price paid by consumer. Wholesaler earned more as compare to retailer. So, total share of market intermediaries in consumer's price was 7.55 percent. Price spread in channel –I was Rs 660.00 per quintal which was 11.45 percent of consumer's price. Table 2.4 depicts that chickpea-producer sold their produce directly to the consumers so there was no

marketing cost incurred by the producers. The price paid by consumer was Rs 5140 per quintal for chickpea and producer got Rs 5140 per quintal, which was 100 percent share of the consumer's rupee. The net price received by farmers in channel-III was highest as compared to channel-I and channel-II. It was resulted that absence of intermediaries found in the channel-III so, producer's net share in the consumer's rupee was highest (100 percent) in the channel-III followed by channel-II (88.50 percent) and channel-I (85.42 percent). Highest market margins were computed in the channel-I followed by channel-II and no market margin found in the channel-III. Price spread was highest in the channel-I followed by channel-II and no price spread detected in the channel-III

**Table 1:** Costs incurred in marketing of chickpea in channel –I (chickpea-producer → village trader → Wholesaler-cum-commission agent → Retailer → Consumer) (Rs/qtls)

Particulars of cost	Producer	Village trader	Wholesaler	Retailer	Total cost
Transport	0	40 (59.70)	79 (70.54)	10 (40.00)	50 (20.92)
Commission	0	0	25 (22.32)	0	79 (33.05)
Mandi fee	0	0	0	0	25 (10.46)
Cleaning	4 (11.76)	4 (5.97)	0	0	8 (3.35)
Cost of plastic bag	22 (64.71)	6 (8.96)	0	0	28 (11.72)
Loading charges	6 (17.65)	4 (5.97)	0	3 (12.00)	13 (5.44)
Unloading charges	0	6 (8.96)	0	3 (12.00)	9 (3.77)
Weighing charges	0	4 (5.97)	0	3(12.00)	7 (2.93)
Miscellaneous	2 (5.88)	3 (4.48)	8 (7.14)	6 (24.00)	20 (8.37)
Total	34 (14.23)	67 (28.03)	112 (46.86)	25 (10.46)	239 (100)

Figures in parentheses are percentage of total marketing cost

**Table 2:** Costs incurred in marketing of chickpea in channel –II (chickpea-producer → Wholesaler-cum-commission agent → Retailer → Consumer) (Rs/quintal)

Particulars of cost	Producer	Wholesaler	Retailer	Total cost
Transport	39(49.37)	0	12 (42.86)	51 (22.67)
Commission	0	82(69.49)	0	82(36.44)
Mandi fee	0	28(23.73)	0	28(12.44)
Cleaning	3(3.80)	0	0	3(1.33)
Cost of plastic bag	20(25.32)	0	0	20(8.89)
Loading charge	5(7.59)	0	3(10.71)	8(3.56)
Unloading charge	5(7.59)	0	3(10.71)	8(3.56)
Weighing Charges	3(3.80)	0	3(10.71)	6(2.67)
Miscellaneous	4(5.06)	8(6.78)	7(25.00)	19(8.44)
Total	79(35.11)	118(52.44)	28(12.44)	225(100)

Figures in parentheses are percentage of total marketing cost

**Table 3:** Price spread in marketing of chickpea in channel –I

S.No.	Particulars	Rs / quintal	Share in consumer's rupee(in percentage)
1	Producer's net share	4925	85.42
2	Cost incurred by		
(a)	Producers	34.00	0.59
(b)	Village traders	67	1.16
(c)	Wholesaler	112	1.94
(d)	Retailer	25	0.43
	Total Cost	239.00	4.15
3.	Margin earned by		
(a)	Village trader	116	2.01
(b)	Wholesaler	323	5.60
(c)	Retailer	112	1.94
	Total margin	551	9.56
4.	Total cost and Total margin	790	13.70
5.	Consumer's price	5765	100
6.	Price spread	790	13.70

Figures in parentheses are percentage of the consumer's price



**Table 4:** Price spread in marketing of chickpea in channel –II

S. No.	Particulars	Rs/ quintal	Share in consumer's rupee(in percentage)
1	Producer's net share	5102	88.50
2	Cost incurred by		
(a)	Producers	79	1.37
(b)	Wholesaler	118	2.05
(c)	Retailer	28	0.49
	Total Cost	225	3.90
3.	Margin earned by		
(a)	Wholesaler	323	5.60
(b)	Retailer	112	1.94
	Total margin	435	7.55
4.	Total cost and Total margin	660	11.45
5.	Consumer's price	5765	100
6.	Price spread	660	11.45

Figures in parentheses are percentage of the consumer's price

**Table 5:** Price spread in marketing of chickpea in channel –III

S. No.	Particulars	Rs / quintal	Share in consumer's rupee (in percentage)
1.	Producer's net share	5140	100
2.	Consumer's price	5140	100

### Conclusions

The total marketing costs of chickpea was highest in channel-I (Rs 239 per quintal) followed by channel-II (Rs225 per quintal) because of more number of intermediaries were involved in channel-I. the channel-III, market intermediaries was not involved in marketing of chickpea, so, there is no marketing cost. In the channel-I, the total marketing costs incurred by the chickpea-producer, village trader, wholesalers-cum-commission agents and retailers were 34.00 (14.23 percent), 67.00 (28.03 percent), 112.00 (46.86 percent) and 25 (10.46 percent), respectively with wholesalers bearing the maximum marketing cost. In the channel-II, per quintal total marketing costs incurred by producers, wholesaler-cum commission agents and retailers were 79 (35.11 percent), 118 (52.44 percent) and 28(12.44 percent), respectively in the study area. The margins earned by different market intermediaries had significant difference. The village trader, wholesaler-cum-commission agents and retailers gained 2.01 percent (116 per quintal), 5.60 percent (323 per quintal) and 1.94 percent (112 per quintal) market margins in channel-I. Among them wholesaler got the higher margins due to sale of chickpea produce at higher prices to the ultimate consumers. In the channel-II, per quintal market margins were 323 (5.30 percent) and 112 (1.94 percent) for wholesaler-cum-commission agent and retailer, respectively. The price spread in channel-I was 790 per quintal, which was 13.70 percent of price paid by consumer. Per quintal price spread in channel-II was 660 and it was 11.45 percent of consumer's price.

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