# An Economic Analysis of Cabbage Marketing in Rajasthan

**Subhita Kumawat,**[*] **Poonam** †**, Mukesh Kumar Yadav** ‡**,**
**Mukesh Nitharwal**[**]**, Shishram Dhaka**[**]**, Harphool Singh**[***]**,**
**Champalal Khatik**[****] **and Mudasser Ahamad Khan**[*****]

ABSTRACT

This study analyzes the marketing cost, margin and price spread of cabbage crops in Rajasthan state using multistage random sampling design. The study covered 120 cabbage cultivators from Nagaur and Sikar districts of Rajasthan State. For marketing aspects, five functionaries from each category of cabbage marketing were randomly selected from kuchaman city and Sikar markets. The total marketed surplus of cabbage was observed at 1610.56 quintals. Out of this, a major share of 44.18 percent was sold through wholesalers- cum commissions agents, followed by wholesalers (28.01 per cent), retailers (20.62 per cent) and village traders (7.19 per cent) to cabbage growers. Among the different marketing costs borne by the grower, transportation cost ranked first and commission charges was highest for wholesalers cum commission agents. Among the various costs borne by the retailer, the maximum share was observed for spoilage. The total margin was higher at a retailer's level than at the wholesale level, representing 11.41 per cent and 2.73 per cent of the consumer price, respectively. Marketing cost incurred by various functionaries was to Rs.210.18 per quintal of cabbage, which represented 25.49 per cent of the consumer price. The producer's share was 60.36 per cent of the price paid by cabbage consumers. It was proposed to sell cabbage to direct consumer, malls, catering etc. to have higher share in consumer rupees.

Keywords: Cabbage, Efficiency, Marketing cost, Margin, Price spread

JEL: Q11, Q13, R14, R32, R38

I

INTRODUCTION

Vegetables provide high production within a short time period, so it mainly takes over small land ownership. It is the basic source of farm income for small and marginal farm households. It creates an impact on the development of agriculture and the country's economy by providing a significant share of farmer's income. Vegetables are a low-cost and high calorie source of minerals, vitamins, and other nutrients. There is a lot of demand for vegetables both for domestic fresh and processed uses as well as export markets that can earn valuable foreign exchange for India. Vegetables play a vital role in human diets by supplying essential vitamins, minerals, and roughage. They are usually deficient in other food items, except for fruits. Vegetables are valuable reservoirs of proteins, carbohydrates, and essential vitamins crucial for maintaining optimal health and rectifying nutritional deficiencies. In this capacity, they bring diversity to one's diet, playing a pivotal role in a well-balanced dietary routine that elevates both taste and nutritional quality. Moreover, vegetables offer an assortment of energy-rich options and guarantee a substantial supply of protective nutrients. They not only enhance the dining experience in enticing salads but also contribute to overall health through the menu rich in nutrition, revitalising energy levels and vigour during challenging workweeks. India's soil and agro climatic

* Department of Agricultural Economics, ** Department of Entomology, *** Department of Agronomy, **** Department of Plant Breeding and Genetics, and *****Department of Plant Pathology, respectively, Sri Karan Narendra Agriculture University, Jobner, Rajasthan, †Department of Horticulture, RCA, MPUAT, Udaipur, Rajasthan, ‡ Senior warehouse manager, RSWC, Jaipur.

conditions are ideally suited for growing produce throughout the year. In addition to fruits, vegetables offer the only complete food supplying all the nutrients and supplemental fibers.

Cabbage (Brassica oleraceae var. capitata L.), one of India's most popular winter vegetable crops, is remunerative under irrigated conditions, particularly during the rabi season, and is gaining in popularity among vegetable growers in Rajasthan state. Cabbage is primarily employed as a culinary and health article. It is also used in curries, pickles etc. It may be used to feed livestock and poultry. Cabbage can be utilized as a salad, boiled vegetable, or dehydrated vegetable. Cabbage is a main cruciferous vegetable crop in India. It has been much more profitable than the other regular *rabi* crops in Rajasthan. Cabbage cultivation has more than made up for the other minor crops' losses in Rajasthan. Cabbage cultivation is becoming more popular because of its short lifespan, easy cutting, and good returns. Despite being perishable, small farmers adopt cabbage cultivation due to considering all factors. With the cultivation of crops such as cabbage, it is also essential to understand the cost and returns relationship. Knowing the cost and returns of cabbage can help farmers decide whether they are in benefit or not. The information on prices and availability of credit help banks determine the scale of financings for crop loans and repayment schedules. Likewise, data pertaining to the cultivation/production expenses and the feasibility of utilizing existing resources are just as vital in order to optimize production. In addition, marketing strategies concerning produce must be considered. Although not as crucial as other aspects, these considerations nonetheless matter. At present, market information of any crop, particularly economically viable, is taking more attention. Keeping this context, this study on 'An economic analysis of cabbage marketing in Rajasthan' was undertaken with the following specific objectives: (i) To estimate marketing cost and margin in cabbage producing areas of Rajasthan state and (ii) To compute price spread and marketing efficiency in cabbage marketing of Rajasthan state.

II

METHODOLOGY

*Study Area and Respondents*

From Rajasthan, Nagaur and Sikar districts were chosen purposively. Then, two tehsils from each section, i.e., Nawn and Kuchaman city from Nagaur and Luxmangarh and Fatehpur from Sikar, were chosen based on the concentration of cabbage cultivation. After, three villages were selected randomly from each selected tehsil. Hence, a total of 12 villages were chosen for the study. Further, ten cabbage growers were selected at random from each of the selected villages ensuring proportionate representation of the four strata, i.e. marginal up to 1.00 ha, small >1.00 to 2.00 ha, medium >2,00 to 4.00 ha and large > 4.00 ha. Thus, all 120 growers (43 marginal, 39 small, 21 medium and 17 large growers) were the final sample for the study. A sample of 5 functionaries of each type associated with cabbage marketing spread over two main markets, i.e., Kuchaman city and Sikar, was selected to study the marketing channels, marketing cost, margin, and price spread.

III

ANALYTICAL TOOLS USED

*Marketing Cost, Margin and Price Spread*

The share of producer and price spread, including marketing costs and margins of middleman in cabbage marketing, were worked out using the formulas Acharya and Agarwal (2003).

*Producer's Share in Consumer's Rupee*

$$PS = \frac{PF}{PC} \times 100$$

Where,

PS = Producer's Share in Consumer's Rupee
PF = Price of the producer received by the farmer
PC = Price of the produce paid by the consumer

*Marketing Margins*

The total margin, including absolute and percentage margin of intermediaries involved in cabbage marketing, were estimated as under:

Absolute margin of i-th middleman = *PRi – (PPi + Cmi)*
Percentage margin of i-th middleman = $\dfrac{PRi - (PPi + Cmi)}{PRi} \times 100$

Where,

PRi = Sale price of the i-th middleman
PPi = Purchase price of the i-th middlemen
Cmi = cost incurred on marketing by the i-th middleman

*Total Cost of Marketing*

The total marketing cost of farmers and intermediaries computed as:
*C = CF + Cm1 + Cm2 + ………….. Cmn*

Where,

C = Total marketing cost
CF = Marketing cost of cabbage grower
Cmn= cost incurred by the i-th middleman in the marketing of cabbage

*Modified Measure of Marketing Efficiency (MME)*

MME was computed by employing the following formula suggested by Acharya and Agarwal (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, the more marketing efficiency and vice-versa.

IV

RESULT AND DISCUSSION

*Marketing Cost, Margin, Price Spread*

*Utilization Pattern*

The total production, utilization, and marketable surplus of cabbage on farms of different sizes are shown in Table 1.

TABLE 1: PATTERN OF UTILISATION OF CABBAGE ON THE SAMPLE FARMS

*(qty. in quintal)*

| Sl. No (1) | Particulars (2) | Category of farm | | | | |
|---|---|---|---|---|---|---|
| | | Marginal (3) | Small (4) | Medium (5) | Large (6) | Total (7) |
| 1 | Total production | 404.28 (100) | 409.05 (100) | 411.62 (100) | 416.35 (100) | 1641.30 (100) |
| | Utilisation | | | | | |
| 2 | (a) Home consumption | 0.30 (0.07) | 0.27 (0.06) | 0.25 (0.06) | 0.26 (0.06) | 1.08 (0.06) |
| | (b) Kind payment | 2.11 (0.52) | 2.04 (0.50) | 1.96 (0.48) | 1.91 (0.46) | 8.01 (0.49) |
| | (c) Damage | 3.37 (0.84) | 3.28 (0.80) | 3.24 (0.79) | 3.25 (0.78) | 13.13 (0.80) |
| | (d) Relatives | 2.21 (0.55) | 2.13 (0.52) | 2.07 (0.50) | 2.10 (0.51) | 8.52 (0.52) |
| | Total (a to d) | 7.99 (1.97) | 7.71 (1.88) | 7.53 (1.83) | 7.52 (1.81) | 30.74 (1.87) |
| 3 | Marketable Surplus | 396.29 (98.02) | 401.34 (98.12) | 404.09 (98.17) | 408.84 (98.19) | 1610.56 (98.13) |

*Note*: Figure in parentheses indicate percent to total production.

The results in Table 1 showed that the total production of cabbage on sampled farms was 1641.30 quintals. The amount used as damages was 0.80 percent, to relatives (0.52 percent), kind payment (0.49 percent) and home consumption 0.06 percent. The marketable surplus of cabbage ranged from 98.02 percent on marginal farms to 98.19 percent on large farms.

*Agency-Wise Cabbage Sales*

The economic profitability of vegetable crops depends on how farmers conduct marketing activities. The channel through which it is sold, the place of sale and the time of sale are crucial factors affecting the net price of farmers. Farmers' decisions regarding the channel/agency for buying cabbage are influenced by transportation facilities, distance and location of markets, production price, transportation costs, marketable quantity and farmers' economic conditions. The agency-wise sales of a total marketed surplus of cabbage are shown in Table 2.

The total marketed surplus of cabbage was observed at 1610.56 quintals. Out of this, a major share of 44.18 percent was sold through wholesalers- cum commissions agents, followed by wholesalers (28.01 percent), retailers (20.62) and village traders (7.19 percent) to cabbage growers. Thus, costs, margins and price spreads from producer to wholesaler cum commissions agents to retailers to producer were examined. The quantity sold to wholesaler cum-commission agents ranged from 51.46 percent on large farms to 38.78 percent on marginal cabbages farms.

TABLE 2: DISPOSAL PATTERN OF CABBAGE THROUGH DIFFERENT AGENCIES

*(qty. in quintal)*

| Marketing agency (1) | Category of farm | | | | |
|---|---|---|---|---|---|
| | Marginal (2) | Small (3) | Medium (4) | Large (5) | Total (6) |
| Wholesaler-cum commission agents | 153.69 (38.78) | 166.60 (41.51) | 180.95 (44.78) | 210.39 (51.46) | 711.63 (44.18) |
| Wholesaler | 90.55 (22.85) | 122.20 (30.45) | 117.11 (28.98) | 121.29 (29.67) | 451.15 (28.01) |
| Retailers | 119.08 (30.05) | 84.80 (21.13) | 78.36 (19.39) | 49.75 (12.17) | 331.99 (20.62) |
| Village traders | 32.97 (8.32) | 27.74 (6.92) | 27.67 (6.85) | 27.41 (6.70) | 115.79 (7.19) |
| Total Marketable surplus | 396.29 (100.00) | 401.34 100.00) | 404.09 100.00) | 408.84 (100.00) | 1610.56(100.00) |

Note : Figure in parentheses indicate per cent to total marketed surplus.

*Marketing Costs Incurred by Cabbage Growers*

Marketing charges paid by cabbage growers for various components are shown in Table 3.

Marketing costs per quintal of cabbage ranged from Rs. 20.91 on marginal farms to Rs.17.88 on medium-sized farms. On the other hand, it was Rs. 19.72 in small and Rs. 18.00 in large farms. Thus, marketing costs were relatively higher on smaller farms than on large farms. The average, total marketing costs for cabbage paid by growers were 19.58 per quintal. Among the various marketing costs, transportation charges ranked first with 33.11 per cent, followed by loading and unloading charges,

packaging charges, damage and other costs, weighing and cleaning costs, which accounted for about 20.72 per cent, 19.58 per cent, 11.28 per cent, 9.57 and 5.74 per cent, respectively.

TABLE 3: MARKETING COSTS INCURRED BY CABBAGE GROWERS

(*Rs./quintal*)

| Particulars | Category of farm | | | | |
| | Marginal | Small | Medium | Large | Overall |
| (1) | (2) | (3) | (4) | (5) | (6) |
| --- | --- | --- | --- | --- | --- |
| Weighing Cost | 2.00 (9.57) | 1.94 (9.82) | 1.64 (9.20) | 1.71 (9.48) | 1.88 (9.57) |
| Cleaning and Grading | 0.95 (4.56) | 1.40 (7.11) | 1.01 (5.60) | 1.06 (5.88) | 1.12 (5.74) |
| Packing Charges | 4.15 (19.86) | 3.96 (20.09) | 3.29 (18.19) | 3.41 (18.95) | 3.83 (19.58) |
| Loading and unloading charges | 4.36 (20.86) | 4.03 (20.41) | 3.69 (20.43) | 3.82 (21.24) | 4.06 (20.72) |
| Transportation Cost | 7.08 (33.87) | 6.18 (31.33) | 6.18 (34.18) | 6.03 (33.50) | 6.48 (33.11) |
| Damage and other charges | 2.36 (11.29) | 2.22 (11.25) | 2.07 (11.59) | 1.97 (10.95) | 2.21 (11.28) |
| Total Marketing Cost | 20.91 (100.00) | 19.72 (100.00) | 17.88 (100.00) | 18.00(100.00) | 19.58 100.00) |

Figures in parentheses indicate the percentage to the total cost.

## Marketing Cost Incurred by Wholesaler-Cum Commission Agent

The marketing costs incurred by wholesaler-cum commission agents in marketing of cabbages are shown in Table 4. The table revealed that the total marketing cost borne by the cabbage wholesaler-cum commission agent was Rs 77.70 per quintal. Among the total cost components, commission accounted for about 37.97 per cent of total marketing costs, followed by spoilage (19.18 per cent), loading and unloading costs (14.80 per cent), cleaning and grading costs (8.24 per cent), cost of packaging (7.34 per cent)., market fee (5.79 per cent), miscellaneous (4.12 per cent) and weighing charges (2.57 per cent). It can be seen that the higher marketing costs may be due to the higher commission costs incurred by the wholesaler as a buyer when purchasing in distance markets.

TABLE 4: MARKETING COST INCURRED BY WHOLESALER-CUMCOMMISSION AGENT

| Sl. No. | Particulars | Cost (Rs./qtl.) | Per cent to total cost |
| (1) | (2) | (3) | (4) |
| --- | --- | --- | --- |
| 1. | Cleaning and grading | 6.40 | 8.24 |
| 2. | Weighing charges | 2.00 | 2.57 |
| 3. | Loading and unloading charges | 11.50 | 14.80 |
| 4. | Packing charges | 5.70 | 7.34 |
| 5. | Market fee | 4.50 | 5.79 |
| 6.. | Commission charges | 29.50 | 37.97 |
| 7. | Spoilage | 14.90 | 19.18 |
| 8. | Miscellaneous | 3.20 | 4.12 |
| Total marketing cost | | 77.70 | 100.00 |

## Marketing Costs Incurred by Retailers

Retailers generally purchase vegetables from wholesalers and wholesalers in APMCs and sell to consumers through their retail outlets. The results of cabbage marketing costs incurred by retailers are shown in Table 5.

TABLE 5: MARKETING COST INCURRED BY RETAILERS

| Sl.No. (1) | Particulars (2) | Cost (Rs./qtl.) (3) | Per cent to total cost (4) |
|---|---|---|---|
| 1. | Loading and unloading Charges | 5.60 | 4.96 |
| 2. | Transportation cost | 31.00 | 27.46 |
| 3. | Packing cost | 15.30 | 13.55 |
| 4. | Spoilage | 48.50 | 42.96 |
| 5. | Miscellaneous cost | 12.50 | 11.07 |
| | Total marketing cost | 112.90 | 100.00 |

Retailers incurred Rs. 112.90 as total marketing cost per quintal. The maximum share was observed for spoilage among various costs i.e. 42.96 per cent of marketing costs. Other major components were transportation (27.46 per cent), packaging (13.55 per cent), miscellaneous (11.07 per cent) and loading and unloading (4.96 per cent) costs to retailers' total marketing costs.

*Total Cost and Net Returns from Cabbage*

The cost of production, marketing, sale price, and net returns per quintal of cabbage are shown in Table 6. The total cost of cabbage production per quintal was Rs.266.83. It ranged from Rs.259.56 per quintal on large farm groups to Rs.268.35 on medium-sized groups. The total cost, which includes production and marketing costs incurred by cabbage producers, was therefore Rs. 286.41 per quintal.

Further, the total net return was Rs.230.86 per quintal. However, it ranges from Rs.223.30 per quintal on a marginal farm to Rs.249.09 on a large farm. It shows that higher landowners had higher returns than smaller landowners. The reason was that large farmers sold their marketable surpluses in distant markets where they realized higher prices.

TABLE 6: COST OF PRODUCTION, MARKETING COST AND NET RETURNS FROM CABBAGE

| Sl. No. (1) | Category of Farm (2) | Total cost of Production (3) | Marketing cost (4) | Total cost* 5 (3+4) | Sale price (6) | Net return 7 (6-5) |
|---|---|---|---|---|---|---|
| 1. | Marginal | 266.79 | 20.91 | 287.70 | 511.00 | 223.30 |
| 2. | Small | 267.61 | 19.72 | 287.33 | 517.77 | 230.44 |
| 3. | Medium | 268.35 | 17.88 | 286.23 | 521.57 | 235.34 |
| 4. | Large | 259.56 | 18.00 | 277.56 | 526.65 | 249.09 |
| 5. | All Farm | 266.83 | 19.58 | 286.41 | 517.27 | 230.86 |

*Cost, Margin, and Price Spread in the Marketing of Cabbage*

The price spread includes the cost of various marketing activities and the margins of various functionaries associated with the marketing process. The extent of the price spread helps policy makers design appropriate policies for reducing marketing costs or by eliminating unwanted marketing intermediaries from the process

or both. Marketing costs, margins and price spreads in the marketing of cabbage through major channels have been presented based on 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 average, about 60.53, 40.18, and 2.37 percent of the total cabbage moved in the study area through channel II, III, and I, respectively. Thus, more than 50 percent of the cabbage moved from the producer to the wholesaler-cum-commission agent to the retailers to the consumer. As such, costs, margins, and price spreads were studied only for Channel II. The costs and margins earned by various market functionaries and the price spread in marketing of cabbage through channel II are shown in Table 7.

The total margin earned by various functionaries was Rs.116.64 per quintal. It was higher at the retail level (94.10 per quintal) than at the wholesale level (22.54 per quintal), representing 11.41 percent and 2.73 percent of the consumer price. The marketing cost of various functionaries was Rs 210.18 per quintal of cabbage, which was 25.49 per cent of the consumer price. Out of the total marketing costs, retailers incurred the highest costs (13.69 per cent), followed by wholesale-cum-commission agents (9.42 per cent) and producers (2.37 per cent). It was further observed from the table that the producer's share was 60.36 per cent of the price paid by cabbage consumers.

In case of vegetables, lack of suitable storage facilities at reasonable charges and disorganized marketing system in the study area resulted in higher margin of retailers and higher share of marketing cost. The results are similar to the findings of Jadav *et al*. (2011), Kumar et al. (2008), Kumawat (2014 and 2015) and Prasad (2001).

TABLE 7: COST, MARGIN AND PRICE SPREAD IN  CABBAGE MARKETING

| Sl. No. | Particulars | Rs./qtl. | Per cent to consumer's price |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| 1. | Producer's net price | 497.69 | 60.36 |
| 2. | Cost incurred by | | |
| | (a) Producer | 19.58 | 2.37 |
| | (b) Wholesaler-cum-commission agent | 77.70 | 9.42 |
| | (c) Retailer | 112.90 | 13.69 |
| | Total | 210.18 | 25.49 |
| 3. | Margins of | | |
| | (b) Wholesaler-cum-commission agent | 22.54 | 2.73 |
| | (c) Retailer | 94.10 | 11.41 |
| | Total | 116.64 | 14.15 |
| 4 | Price spread (cost + margins) | 326.82 | 39.64 |
| 5 | Retailer's sale price/ consumer's purchase price | 824.51 | 100.00 |
| 6 | Producer's share in consumer' rupee (per cent) | 60.36 | |

*Marketing Efficiency*

The efficiency of marketing for agricultural produce is generally assessed by the size of the share that the producer-farmer receives from the price paid by the consumer. These results were further substantiated by elaborating on market efficiency as proposed by Acharya and Agarwal (2003). The marketing efficiency of cabbage was worked out with respect to the modified Acharya formula and the results are shown in Table 8.

Table 8: Marketing efficiency of cabbage

| Sl. No. (1) | Particulars (2) | Cabbage (3) |
|---|---|---|
| 1. | Consumer's price (Rs./qtl.) | 824.51 |
| 2. | Producer's net price (Rs./qtl.) | 497.69 |
| 3. | Marketing cost (Rs./qtl.) | 210.18 |
| 4. | Marketing margin (Rs./qtl.) | 116.64 |
| 5. | Marketing efficiency | 1.52 |

In the case of cabbage, the total marketing cost and marketing margins in the selected marketing channel (Channel II) were Rs 326.82 per quintal. The modified marketing efficiency was greater than unity (1.52).

V

CONCLUSION

Out of the total marketed surplus, the main share was sold through wholesalers-cum-commission agents, followed by wholesalers, retailers and village traders to cabbage growers. Marketing costs were relatively higher on smaller farms than on large farms. Among the various marketing costs, transportation costs ranked first with 33.11 per cent, followed by loading and unloading costs, packaging costs, damage costs and other costs, weighing fees and cleaning fees. The marketing cost on commission charge was the highest for wholesalers-cum-commission agents. The higher marketing costs may be due to higher commission costs incurred by wholesalers as buyers when purchasing in distance markets. Among the various costs borne by the retailer, the maximum share of spoilage was observed, i.e., 42.96 per cent of the total marketing costs. It can also be seen that higher landowners had higher returns than smaller landowners. The reason was that large farmers sold their market surpluses in distant markets where they realized higher prices. More than 50 per cent of cabbage has moved from the producer to the wholesaler-cum-commission agent to the consumers. It was found that the producer's share was 60.36 per cent of the price paid by cabbage consumers. The modified marketing efficiency was greater than unity (1.52). The study suggests the need to market cabbage directly to consumers, through malls, catering services, etc., to secure a higher share in the consumer's rupee.

REFERENCES

Acharya, S.S. and Agrawal, N.L. (2003), *Agricultural Marketing in India.* Third Ed. Oxford and IBH Publishing Co., New Delhi, pp. 299-336.

Jadav, K.S., Leua, A.K. and Darji, V.B. (2011), "Economics of Supply Chain of Fresh Potato in Middle Gujarat", *Indian Journal of Agricultural Research,* Vol. 45, No.4, pp. 266-274.

Kumar, S., Kumar, V. and Jha A.K. (2008),."Marketing of Vegetable in Vaishali District of Bihar", *Indian Journal of Agricultural Markrting,* Vol. 22, No.3, pp. 80-87.

Kumawat,S. (2014), "Marketing of Mungbean (*Vigana Radiata*) in Nagaur District of Rajasthan, *Advances in Economics and Business Management,* Vol. 1, No.03, pp.151-154.

Kumawat,S. (2015), "Efficiency of Marketing of Mungbean in Nagaur District of Rajasthan", *International Journal of Management and Applied Science,* Vol. 1, No.10,pp.159-162.

Prasad, J. (2001), "Vegetables Production and Marketing in Bihar: A Farm Level Study", Bihar *Journal of Agricultural Markrting*, Vol. 9, No.3, pp.225-260.