



**Research Paper**

# An economic analysis of marketing of banana (*Musa paradisiaca* L.) in Durg district of Chhattisgarh

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**ABSTRACT :** The paper attempts to study the disposal pattern, marketing cost, marketing margins and price spread of banana in Dhamdha block of Durg district of Chhattisgarh state for the year 2017-18. The marketing of banana has been studied by three marketing channels, viz., I: Producer wholesaler → retailer → consumer; II: Producer → wholesaler (through commission agent) → retailer → consumer; III: Producer → retailer (through commission agent) → consumer. The net price received by the producer was 58.75 per cent, 53.08 per cent and 62.43 per cent in marketing channel I, II and III, respectively. The producer's share in marketing channel III was the maximum because of direct sale by the producer to the retailer through commission agent. In the marketing cost, expenditure was highest on commission charges followed by transportation in all the channels. The marketing channel I has been found most efficient because its marketing efficiency was 1.42 as compared to 0.96 and 1.36 in marketing channel II and III, respectively. The low marketing efficiency in supply chain II was on account of a higher number of market intermediaries in this chain. High price fluctuations followed by unremunerative prices, high commission charge, lack of regulated market and high transportation cost were the major problem reported by the banana growers. Whereas lack of cold storage facilities followed by non-availability of banana processing units, inadequate market infrastructure and shortage of electricity supply were the marketing problems highlighted by the intermediaries.

**KEY WORDS:** Marketing channels, Marketing cost, Market efficiency, Marketing intermediaries, Price spread

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## INTRODUCTION :

Banana (*Musa paradisiaca* L.) belongs to the family Musaceae is one of the oldest fruit known to mankind. Banana is considered one of the most important one both in terms of production, productivity and export potential

in India. It is considered as the fourth important fruit crop in terms of economic importance after rice, wheat and milk. It is highly nutritive and very delicious and also a cheapest and rich source of energy (104 cal/100g). The probable origin of this crop is Southeast Asia. The advantage of this fruit is it's year round. Banana is the largest produced and maximum consumed fruit crop

cultivated in India and accounts for about 33.4 per cent of the total fruit production in India. India ranks first both in terms of area and production of banana in the world contributing around 15 per cent of the total global area under banana and about 29 per cent of the total world's production. The average productivity of banana in India is 37.90 Mt/ha. compared to the world average of 21.20 Mt./ha.(NHB,2014). The five important banana producing states in the country are Maharashtra, Tamil Nadu, Gujarat, Karnataka and Andhra Pradesh. These five states contributes more than 70 per cent of total banana production in the country. Although India produces the largest volume of banana, it occupies a negligible share in world export.

Banana production plays an important role in Chhattisgarh with largest share of 26.64 per cent of the total fruit production in the state. Banana production in the state has increased at a compound annual growth rate of 37.40 per cent while area has grown at the rate of 22.8 per cent during 2004-05 to 2015-16. Durg district ranks second in the production of banana in the state with 58260 metric ton production and third in the area under banana cultivation with 1940 ha. and contributes about 9.44 per cent of total production of banana in the state. The area under banana cultivation is rapidly increasing in Durg district. So, there lies a tremendous opportunity in increasing the production and productivity of banana in the district as well as in the state. Though banana is an emerging fruit crop in Chhattisgarh but the state contributes only 1.6 per cent in the national banana production besides its less productivity. Cultivation of banana forms an important business to the farmers of Chhattisgarh, but the banana growers in the state are affected by the number of problems. Similarly, high commission charges, huge price fluctuations and malpractices by the middlemen, lack of processing industry, storage and regulated marketing system was reported as most important constraint faced by the farmers during supply chain management of banana (Chandrakar *et al.*, 2015).

Marketing management of banana is an important activity along with production and selection of appropriate market and marketing channel is a crucial aspect of banana marketing management which decides the returns on the produce. The available information indicated that major share of producers income goes to marketing costs and to intermediaries in banana trade resulting low share to producers in consumer's rupee. There was a need to

study the marketing management of banana with specific objectives such as to study marketing cost structure of banana and estimation of the factors influencing net price realized by the banana growers. This study will be useful to identify the functioning of the market system, marketing efficiencies, marketing cost and price spread in marketing channels preferred by them. Thus, it will be useful for them in deciding marketing place, marketing channel which give better price and returns to their produce with minimizing cost by under taking various marketing practices.

#### **The specific objectives are:**

- To compute the marketing cost, marketing margins of different intermediaries for banana in different channels of marketing.
- To analyze the price spread, marketing efficiency and farmer's share in consumer's rupee in different channels.
- To identify the constraints perceived by different stakeholders and suggest suitable strategies to enhance the marketing efficiency of banana.

## **MATERIALS AND METHODS :**

This study is based on the data collected from marginal, small and medium banana cultivators selected from Dhamdha block of Durg district of Chhattisgarh state in India. Multi-stage random sampling design was used for the selection of sample. In the first stage, one district, namely Durg was selected purposively being the second highest producer of banana in the state. In the second stage, out of three blocks, one block *viz.*, Dhamdha were randomly selected from the district. Subsequently, 10 per cent villages from the list of 83 villages from the selected block *i.e.*, 8 villages *viz.*, were selected. At a final stage of sampling, all the banana cultivators of the selected villages were grouped into three size categories *viz.*, small (upto 1.00 ha), medium (1.01 ha to 2.00 ha) and large (above 2.00 ha). A sample of 20 per cent banana cultivators were selected randomly from each size group in proportion to their total number in each category. Altogether, a sample of 132 banana growers were selected in three farm size groups for the present study. The data was collected from these 132 banana growers regarding the disposal pattern of the produce and the marketing cost incurred by the growers during marketing of the produce. To analyze the marketing channels and

estimate the price spread, 40 banana marketers (15 wholesalers/commission agents and 25 retailers) were randomly selected for the study. Primary data were collected with the help of pre tested schedule by interviewing selected cultivators and traders personally for the year 2017-18.

### Tools of analysis:

#### Marketing margin:

Marketing margin of middlemen will be calculated as the difference between the total payment (marketing cost + purchase price) and receipts (sale price) of the middlemen and was calculated as:

$$A_{mi} = P_{ri} - (P_{pi} + C_{mi})$$

where,

$A_{mi}$  = Absolute marketing margin of  $i$ th middlemen

$P_{ri}$  = Total value of receipts per unit

$P_{pi}$  = Purchase value per unit

$C_{mi}$  = Cost incurred on marketing per unit.

#### Marketing cost:

The total marketing cost (MC) incurred by the producer / seller and by various intermediaries will be calculated as:

$$MC = C_F + C_W + C_R$$

#### Marketing efficiency:

For estimation of marketing efficiency, Acharya's approach was used as per the suitability of the data. The modified marketing efficiency (MME) formula is given below:

$$MME = \frac{NPP}{MM} + MC$$

where,

NPP is net price received by the producers ('per qtl),

MM is the marketing margin.

MC is the marketing cost.

#### Garrett's ranking :

Garrett's Ranking technique has been used to identify the constraints in bananamarketing (Kathirvel and Chandrasekaran, 2008 and Muthupandi, 2009). The growers were asked to rank some of the identified reasons.

$$\text{Per cent position} = 100 (R_{ij} - 0.5) / N_j$$

where,

$R_{ij}$  = Rank given to  $i$ th factor by  $j$ th individual.

$N_j$  = Number of factors ranked by  $j$ th individual.

By referring the table given by Garrett, the per cent position estimated were converted into scores. Then for each factor, the scores of various respondents were added and divided by the number of respondents to arrive at the mean score. The mean score thus, obtained for each factor were arranged in a descending order. The factor with highest mean score was given the first rank followed by second, third and so on.

### Marketing channels:

There are three major marketing channels in this area through which banana fruits transacted from producers to consumers. The identified channels are:

Channel-I: Producer → Wholesaler → Retailer → Consumer

Channel-II: Producer → Commission agent → Wholesaler (distant) → Retailer → Consumer

Channel-III: Producer → Commission agent → Retailer → Consumer

Three distinct marketing systems prevail for raw fruit in the study area. In the wholesale channel, the wholesalers play an important role and they procure banana fruit from the farmers for a mutually agreed price. Then the bananas are transported to the primary market *i.e.* Bhilai powerhouse fruit mandi and the banana fruits are put in cooling chambers owned by the wholesalers for 4-5 days at 16-18 degree Celsius for ripening. After which, the fruits are sold to the retailers according to the demand. In the second channel *i.e.* the commission agent channel, banana fruits are harvested and transported to the commission agent in the primary market *i.e.* Bhilai powerhouse fruit mandi by the growers themselves with their own expenses to the primary market where the fruits are further sold to retailers or to the distant wholesaler after ripening.

## RESULTS AND DATA ANALYSIS :

The area and production of banana on farms of the sampled growers in Durg district is described in Table 1. It could be observed from Table 1 that the average area under banana was 4.1 ha for the large growers followed by medium (1.83) and small (0.82) banana growers. The percentage of area under banana cultivation to the total land holding was also found highest in case of small growers (74.39 %) followed by large (69.51%) and

medium banana growers (66.66%). The average production of banana per hectare was 77.70 tons for large growers followed by 77.47 tons in case of medium growers and 74.25 tons in case of small growers. These results clearly indicate that the dominance of large growers in the cultivation of banana in the study area. This might be due to the high investment in cultivation and management of banana fruit as compared to the other fruit crop.

### Disposal pattern adopted by the banana growers in Durg district:

It was evident from the Table 2 on an average about 53.49 per cent of total banana produce in the study area moved through Channel-I followed by 29.49 per cent through channel III and 17.02 per cent moved through II. Further, it was observed from table that per cent sale of banana through channel I increased with size of farm increases whereas it is seen declining in case of channel III. It can be inferred that the majority of banana growers in the study area preferred selling the produce through channel I *i.e.* through wholesaler. This might be due to the strong network of large banana growers with the wholesalers in the primary market as well as the immediate payment of produce in case of selling through wholesalers. Thus, it is clear that the role played by the wholesaler was dominant in marketing of banana in the study area.

### Marketing costs incurred by the producer and the intermediaries :

The detailed cost of marketing for banana production

is described in Table 3. It could be observed from Table 3 that on an average, the total marketing expenses was maximum in channel-II (Rs. 614.14), followed by channel-II (Rs. 561.79) and channel-I (Rs. 326.79). In the marketing cost, expenditure was highest on commission charges followed by transportation in all the channels. In channel I, the marketing cost borne by the producer per quintal was least (Rs. 54.89) compared to other two channels as the major portion of the marketing cost in channel I is shared by wholesaler and retailer. Marketing cost borne by the wholesaler in channel-I was Rs. 212/q, which comprised transportation cost (Rs. 110), loading/unloading (Rs.12) and pre cooling charges (Rs. 90). In channel II the maximum marketing cost was borne by the producer *i.e.* Rs.371.59 which involved the commission charge (Rs. 194.8) followed by transportation charge (Rs. 110) and loading/unloading charge (Rs. 20) while the wholesaler incurred only marketing cost of Rs.82. In channel- III, the producer had borne the marketing cost of Rs. 401.79 as the produce directly went to the retailer through commission agent. At the retailers' level, the expenditure was on transportation and, shop charges. The total marketing costs incurred by the retailer was Rs.60, Rs.70.55 and Rs.60 in channels I, II and III, respectively.

### Price spread of banana:

The results for the price spread of banana under three prevailing marketing channels in the Durg district is shown in Table 4. The results indicated that producers' share in consumers' rupee was highest in channel-III (62.43%), followed by channel-I (58.75%), channel-II

**Table 1: Area and production of banana on farms of the sampled growers in Durg district**

Sr. No.	Particulars	Small	Medium	Large
1.	Average land holding per farmer (in hectares)	0.82	1.83	4.1
2.	Average area under banana cultivation per farmer (in hectares)	0.61	1.22	2.85
3.	Percentage to total area under banana orchard (%)	74.39	66.66	69.51
4.	Average production of banana per hectare (in tonnes)	74.25	77.47	77.70

**Table 2: Disposal pattern of banana under the two channels**

Channel	Quantity sold (Quintals)			
	Small	Medium	Large	Overall
I	4205.91 (28.80)	25892.23 (45.62)	55513.25 (62.20)	28537.13 (53.49)
II	3299.92 (22.60)	12515.79 (22.05)	11416.15 (12.87)	9077.28 (17.02)
III	7097.98 (48.60)	18348.2 (32.33)	21748.83 (24.53)	15731.67 (29.49)
Total	14603.81 (100)	56756.22 (100)	88678.23 (100)	53346.08 (100)

Note: Figures in parenthesis denotes percentage of the total quantity sold

(53.08%) and the net price received by the producer was highest in channel III (Rs. 1748.21/qtl) followed by Channel I (Rs. 1645.21/qtl) and channel II (Rs. 1486.41/qtl) which reveals that selling through commission agent through Channel III provided a higher share to producer in the consumers' rupee. In regard to channel-I, the gross price received by producer was Rs.1700 per quintal while cost incurred by producer was Rs.54.79. Thus, net price received by producer was Rs.1645.21

per quintal. Further cost incurred by wholesaler was Rs.212 while margin of wholesaler was Rs.288 per quintal. Thus, the retailer purchase price for bananas was Rs.2200 per quintal and marketing cost incurred by retailer was Rs.60 while marketing margin was Rs.540. In regard to channel II, price paid by consumer was Rs. 2800.00 while cost incurred by producer was Rs.371.59. Hence, net price received by producer was Rs.1486.41. Producers' sale price to commission agent was Rs.1858

Sr. No.	Functionary	Channel I	Channel II	Channel III
	<b>Marketing cost incurred by the producer</b>	54.79	371.59	401.79
1.	Harvesting charges	46.79	46.79	46.79
2.	Loading and unloading	8	20	20
3.	Transportation		110	110
4.	Commission charged by commission agent @ 10 %		194.8	225
	<b>Marketing cost incurred by the commission agent</b>		90	100
1.	Pre cooling charge		90	100
	<b>Marketing cost incurred by the wholesaler</b>	212	82	
1.	Unloading	12	22	
2.	Transportation	110	60	
3.	Cooling charge	90		
	<b>Marketing cost incurred by the retailer</b>	60	70.55	60
1.	Transportation	50	55.55	50
2.	Rent for shop/ rehri	10	15	10
	<b>Total marketing cost (1+2+3+4)</b>	<b>326.79</b>	<b>614.14</b>	<b>561.79</b>

Sr. No.	Particulars	Channel I	Channel II	Channel III
1.	Net price received by producer	1645.21 (58.75)	1486.41 (53.08)	1748.21 (62.43)
2.	Marketing cost incurred by the producer	54.79 (1.95)	371.59 (13.27)	401.79 (14.34)
3.	Producer's sale price	1700 (60.71)	1858 (66.35)	2150 (76.78)
4.	Marketing cost incurred by the CA		90 (3.21)	100 (3.57)
5.	Commission charged by commission agent @ 10 %		194.8 (6.95)	225 (8.03)
6.	Commission Agent's sale price		1948 (69.57)	2250 (80.35)
7.	Marketing cost incurred by the wholesaler	212 (7.57)	82 (1.78)	
8.	Margin of wholesaler	288 (10.28)	279 (9.96)	
9.	Wholesaler's sale price	2200 (78.57)	2277 (81.32)	
10.	Marketing cost incurred by the retailer	60 (2.14)	70.55 (2.51)	60 (2.14)
11.	Margin of retailer	540 (19.28)	452.45 (16.15)	490 (17.5)
12.	Retailer's sale price (Price paid by consumer)	2800 (100)	2800 (100)	2800 (100)
13.	Price spread	1154.79	1313.59	1051.79
14.	Producer's share in consumers' price	58.75	53.08	62.43
15.	<b>Total Marketing margin</b>	<b>828</b>	<b>926.25</b>	<b>715</b>

Note: Figures within the parentheses are the percentages of price paid by consumer

while marketing cost incurred by commission agent was Rs.90.00. In the next order, cost incurred by wholesaler was Rs.82 while margin of wholesaler was Rs.279. It inferred that the wholesaler had sold the produce at Rs. 2277.00 to retailer. The cost incurred by the retailer was Rs.70.55 while margin of retailer was Rs.452.45. In channel III, the gross price received by producer was Rs. 2150.00 while cost incurred by producer was Rs. 401.79. Thus, net price received by producer was Rs.1748.21. Further cost incurred by retailer was Rs. 60 while margin of retailer was Rs. 490 per quintal. The margin of the retailer was highest in channel-I (19.28%), followed by channel- III (17.50%) and channel-II (16.15%). The total marketing margin was highest in channel-II (Rs. 926.25) due to one additional intermediary after commission agent, followed by channel I (Rs. 828) and Channel III (Rs. 715). It was also revealed that as the number of intermediaries increases, the producers share in consumer rupee decreases as was lowest in channel-II. The result coincides with the findings of the study conducted by Mali *et al.* (2003); Rane and Bagade

(2006); Pawar *et al.* (2010); Gajanana *et al.* (2002) and Sreenivasa Murthy *et al.* (2003).

### Marketing efficiency of banana:

The marketing efficiency of banana under different marketing channels was worked out by using Acharya's modified method and it has been shown in Table 5. The channel I was found to be most efficient with marketing efficiency of 1.42 compared to 0.96 in Channel II and 1.36 in channel III. The low marketing efficiency in supply chain II was on account of a higher number of market intermediaries in this chain (Sidhu *et al.*, 2011).

### Constraints faced by the respondents in marketing of banana :

An attempt has been made to identify major problems faced by the growers in the marketing of banana. The identified problems of growers in the marketing of banana are ranked by making use of Garrett's Ranking Technique and the details are presented in Table 6. It could be observed from Table 6

**Table 5 : Marketing efficiency of different channels for banana in Durg district**

Sr. No.	Particulars	Channel I	Channel II	Channel III
1.	Consumer's purchase price (Rs./q)	2800	2800	2800
2.	Producer's sale price (Rs./q)	1700	1858	2150
3.	Total marketing costs (Rs./q)	326.79	614.14	561.79
4.	Total margins of intermediaries (Rs./q)	828	926.25	715
5.	Net price received by farmer (Rs./q)	1645.21	1486.41	1748.21
	Marketing efficiency	1.42	0.96	1.36

**Table 6 : Constraints faced by the banana growers in marketing of banana**

Sr. No.	Problem	Garrett mean dcore	Rank
1.	High fluctuations in price	72.26	1
2.	Unremunerative prices	70.20	2
3.	High commission charge	64.85	3
4.	Lack of regulated market	60.48	4
5.	High transport cost	56.89	5

**Table 7: Constraints faced by the intermediaries/functionaries in marketing of banana**

Sr. No.	Problem	Garrett mean score	Rank
1.	Lack of cold storage facilities	8.30	1
2.	Non-availability of banana processing units	8.16	2
3.	Inadequate market infrastructure	7.45	3
4.	Shortage of electricity supply	7.11	4

that high price fluctuations is the major problem faced by the banana growers with mean score of 72.26. Jaffer (2002). Growers could not get right price for their produce in the absence of cold storage and processing facilities at the market centers. Unremunerative is the second important problem with a mean score of 70.20. High commission charges is the third important problem with mean score of 64.85. The fourth important problem is lack of regulated market with the mean score of 60.48. The high cost of transport facility is found to be the fifth problem with a mean score of 56.89, in the study area. These results are in conformity with the study conducted by Chandrakar *et al.* (2015) and Jaffer (2002).

The marketing problems highlighted by the intermediaries is shown in Table 7. The results reveal that the lack of cold storage facilities as the number one constraint, followed by non-availability of banana processing units (Rank II), inadequate market infrastructure (Rank III), and shortage of electricity supply (Rank IV).

### Conclusion:

The study revealed that banana growers were following the marketing channels involving commission agents and wholesalers for disposal of their produce. The first channel involving wholesaler and retailer was found to be most preferred channel by the growers since this channel incurred less marketing costs as compared to the other two channels. The total marketing cost incurred was highest in channel II (Rs. 614.14/qtl) followed by channel III (Rs. 561.79/qtl) and channel I (Rs. 326.79/qtl). In the marketing cost, expenditure was highest on commission charges followed by transportation in all the channels. The study on price spread of banana revealed that the net price received by the grower was greater in CIII (62.43 %) because the marketing margins of Commission agent and retailer was less in this channel whereas the net price received by the grower was found lowest in Channel II (53.08 %) because of involvement of larger number of intermediaries in Channel II. Hence, it can be inferred that the net price received by the grower reduces when the number of intermediaries increases in a channel. The retailers' margin was found greater in channel I (19.28 %) followed by channel III (17.5 %) and channel II (16.15 %). The study on the marketing efficiency of the channels show that the channel I is more efficient (1.42 %) and this is because

the total marketing cost incurred in this channel was lower as compared to the other two channel. On the contrary, channel II is found lesser efficient because of the involvement of more number of intermediaries in this channel which exaggerates total marketing cost and margins in the channel. It shows that the marketing efficiency is directly proportional to the farmers' price and inversely proportional to the marketing costs and margins. According to Garret's ranking technique, high price fluctuations is the major problem reported by the banana growers followed by unremunerative prices, high commission charge, lack of regulated market and high transportation cost. The marketing problems highlighted by the intermediaries is reveal that the lack of cold storage facilities as the number one constraint, followed by Non availability of banana processing units, inadequate market infrastructure and shortage of electricity supply.

### Suggestion:

*There is a need to form banana growers' marketing co-operative :*

The results of the present study revealed that the producer's share in consumer rupee was very less. Hence, there is a scope to enhance the efficiency through intervention of marketing co-operatives. As a large group, their per-unit transportation cost will definitely come down. This will encourage banana cultivation in the state. To encourage the small and medium farmers to take their produce in distant markets outside the state, co-operative/group marketing may be encouraged. This will increase income of the farmers. These will help the growers in orderly marketing of their produce and reduction in unauthorized market charges.

*Need of regulated market with better infrastructural facilities:*

There is a greater need to regulate the mandi so the undue commission charges can be reduced and growers could be benefited by the open auctioning of the produce. Modern market infrastructure (grading, storage, cold chain facilities, subsidization of inputs, etc.) may be built up with the public-private partnership to bring efficiency in the marketing of banana as well as other fruits and vegetables.

*Need to establish banana processing plants in the study area :*

There should be the establishment of more and more

processing plants in the study area and these plants should purchase the produce from farmers directly. Contract farming will also reduce the price risk of the farmers and provide the banana growers a better marketing alternative. The banana varieties suitable for processing may be developed for the growers.

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