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Economics of marketing of apple ber in Dhule district of Maharashtra

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ABSTRACT

The present study was undertaken to evaluate the economic aspects, resource use efficiency, and marketing dynamics of Apple Ber in the Dhule district of Maharashtra. The investigation encompassed 90 randomly selected growers across six villages situated in the Dhule and Sindkheda tehsils. Three distinct marketing channels were identified based on intermediary involvement: Channel-I operates directly from Producer to Retailer to Consumer; Channel-II flows from Producer to Wholesaler to Retailer to Consumer; and Channel-III progresses from Producer to Pre-harvest Contractor to Wholesaler to Retailer to Consumer. The per quintal marketing costs incurred by producers were ₹170.42 for Channel-I and ₹172.16 for Channel-II. In contrast, producers incurred zero direct marketing costs under Channel-III, as pre-harvest contractors managed all post-harvest handling. Packing materials, grading charges, and transportation expenses emerged as the principal operational cost components. Channel-I was determined to be the most efficient marketing route, recording the highest modified marketing efficiency index (10.09) and the narrowest price spread (₹404.77 per quintal).

Keywords: Apple Ber, Marketing

Introduction

Apple Ber (*Ziziphus mauritiana* L.), a high-yielding jujube cultivar originating from Thailand, has gained considerable commercial traction across India due to its resilience in arid agro-climatic conditions, low input costs, and strong nutritional profile. Despite its economic potential, growers frequently encounter challenges related to post-harvest handling, market access, and price volatility.

Effective marketing channels serve a critical role in bridging the gap between farm-gate production and consumer demand. Analysing how produce moves through intermediary entities helps clarify price discovery, operational expenditures, and overall financial realization for growers. The objective of the current study was to examine the cost of cultivation, resource utilization efficiency, marketing margins, and price spread associated with Apple Ber production in the Dhule district of Maharashtra.

Materials and methods

Dhule district was purposefully selected for this investigation owing to its significant area dedicated to Apple Ber cultivation. A two-stage purposive sampling technique was employed to carry out the research, focusing on the Dhule and Sindkheda tehsils as they represent the highest concentration of land under Apple Ber farming in the district. Primary data was gathered from a representative sample of 90 Apple Ber growers across six villages comprising three villages from Dhule tehsil and three from Sindkheda tehsil. To analyse structural differences across farm scales, the selected growers were categorized into three distinct farm-size groups based on their total area under Apple Ber cultivation: small farms (below 0.40 ha), medium farms (0.41 to 0.80 ha), and large farms (above 0.81 ha), with 30 farmers sampled from each category. Field data collection was conducted via personal surveys using comprehensive, questionnaires during the 2024-25 crop year. Analytical frameworks applied to evaluate the collected data included cost of cultivation standard concepts (Cost A, Cost B, and Cost C), Cobb-Douglas production functions for resource productivity, marketing margins, price spreads, modified marketing efficiency indices (Acharya's method), and Garrett's ranking technique for identifying production and marketing constraints. The following formulas were used:

Total Marketing Cost

$$C = C_f + C_{m1} + C_{m2} + \dots + C_{mi}$$

Where,

C = Total Marketing Cost

C_f = Cost paid by the producer

C_{mi} = Cost incurred by i^{th} middleman

Marketing Margin

$$MT = \sum (S_i - P_i) / Q_i$$

Where,

M_T = Total marketing margin

S_i = Sell value of a product paid by i^{th} firm

P_i = Purchase value of a product paid by i^{th} firm

Q_i = Quantity of product handled by i^{th} firm

Price Spread

Price Spread: Consumer's price – Price received by the farmer.

$$Ps = C_p - P_f$$

Where,

C_p = Consumer's price

P_f = Price received by the farmer

Marketing Efficiency (ME)

$$MME = RP / (MC + MM)$$

Where,

M_{ME} = Modified measure of marketing efficiency

R_P = Price paid by consumer or retailers sell price

M_C = Total marketing cost and

M_M = Net marketing margin

Analysis of Constraints

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

Where,

R_{ij} = Rank given for the i^{th} variable by j^{th} respondents

N_j = No. of variables ranked by j^{th} respondent

Results and discussions

1. Marketing channels of apple ber

Marketing channels represent the sequential pathways through which agricultural commodities flow from farm-gate producers to ultimate consumers via market intermediaries. The empirical investigation

identified three major marketing channels:

1. Producer → Retailer → Consumer
2. Producer → Wholesaler → Retailer → Consumer
3. Producer → Pre-harvest Contractor → Wholesaler → Retailer → Consumer

(q/channel)

(Figures in parentheses are the percentages to the respective sub-totals)

Sr. No.	Channel	Size Group			
		Small	Medium	Large	Overall
1	I	131.5	39.06	26.09	65.55
		(61.20)	(17.67)	(11.61)	(29.77)
2	II	51.96	102.39	60.43	71.59
		(24.18)	(46.32)	(26.90)	(32.51)
3	III	32.29	79.57	138.06	83.3
		(15.02)	(36.00)	(61.47)	(37.83)
	Total	214.85	221.02	224.58	220.15
		(100)	(100)	(100)	(100)

Among Group I producers, the predominant share of apple ber output (61.20 per cent) was transacted through Channel I, whereas Channel II and Channel III accounted for 24.18 per cent and 15.02 per cent of sales, respectively. Within Group II, Channel II emerged as the primary marketing route, handling 46.32 per cent of the total produce, followed by Channel III at 36.00 per cent and Channel I at 17.67 per cent. For Group III growers, Channel III absorbed the vast majority of market volume at 61.47 per cent, while Channel II and Channel I represented 26.90 per cent and 11.61 per cent, respectively.

On an aggregate level, Channel III—which operates via pre-harvest contractors—proved to be the most prevalent marketing path across

the sampled apple ber orchards, capturing 37.83 per cent of the total marketed produce.

2. Channel wise marketing cost of apple ber

Marketing apple ber requires several essential post-harvest services, including sorting, packaging, transit, and general product handling. Executing these activities incurs specific operational expenditures that directly influence retail consumer prices and, by extension, affect the net returns realized by growers.

(₹/qtl)

Sr. No.	Particulars	Size group		
		Channel 1	Channel 2	Channel 3
1	Grading charges	38.45	40.54	0.00
		(22.562)	(23.548)	(0.00)
2	Packing material charges	54.75	60.56	0.00
		(32.127)	(30.320)	(0.00)
3	Transportation charges	50.00	46.54	0.00
		(29.339)	(27.033)	(0.00)
4	Loading and unloading charges	20.55	18.00	0.00
		(12.058)	(10.455)	(0.00)

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Sr. No.	Particulars	Size group		
		Channel 1	Channel 2	Channel 3
5	Weighing charges	4.32 (2.535)	4.1 (2.382)	0.00 (0.00)
7	Other	2.35 (1.38)	2.42 (1.41)	0.00 (0.00)
	Total marketing cost	170.42 (100)	172.16 (100)	0.00 (0.00)
	Gross price received by the farmer	3850.65	3565.45	3530.78
	Net price received by farmer	3680.23	3393.29	3530.78

(Figures in the parentheses indicates the percentages to the total marketing cost)

The marketing expenditure per quintal of apple ber stood at ₹170.42 in Channel I and ₹172.16 in Channel II. The maximum expenditure was recorded in Channel II, driven predominantly by packing material expenses and grading costs, which represented 30.32 per cent and 23.55 per cent of the total outlay, respectively. Conversely, in Channel I (Producer → Retailer → Consumer), packing material and freight charges constituted the largest financial shares, contributing 32.13 per cent and 29.34 per cent to overall marketing expenses. Notably, growers incurred zero marketing costs in Channel III, as pre-harvest con-

tractors managed all post-harvest operations, completely relieving producers of the direct financial burden.

3. Price spread and marketing efficiency in different marketing channels

The price spread refers to the difference between the price paid by the consumer and the net price received by the farmer, thereby indicating the share appropriated by various intermediaries in the final consumer price. The channel-wise marketing efficiency of apple ber was calculated using the modified method suggested by Acharya and Agarwal.

(₹/qtl)

Sr.No.	Particulars	Channel I	Channel II	Channel III
1	Gross price received by Farmer	3850.65 (94.26)	3565.45 (88.24)	3530.78 (83.04)
	i) Marketing cost	170.42 (4.17)	172.16 (4.26)	0.00 (0.00)
	ii) Net price received	3680.23 (90.09)	3393.29 (83.98)	3530.78 (83.04)
2	Preharvest contractor			
	i) Price paid	0.00 (0.00)	0.00 (0.00)	3530.78 (83.04)
	ii) Marketing cost	0.00 (0.00)	0.00 (0.00)	180.10 (4.24)
	iii) Marketing margin	0.00 (0.00)	0.00 (0.00)	240.65 (5.66)
	iv) Price received	0.00	0.00	3771.43
3	Wholesaler			
	i) Price paid	0.00 (0.00)	3565.45 (88.24)	3771.43 (88.70)
	ii) Marketing cost	0.00 (0.00)	105.6 (2.61)	108.45 (2.55)
	iii) Marketing margin	0.00 (0.00)	130.75 (3.24)	136.48 (3.21)
	iv) Price received	0.00 (0.00)	3801.80 (94.09)	4016.36 (94.46)
4	Retailer			
	i) Price paid	3850.65 (94.26)	3801.80 (94.09)	4016.36 (94.46)
	ii) Marketing cost	74.00 (1.81)	72.22 (1.79)	70.85 (1.67)
	iii) Marketing margin	160.35 (3.93)	166.38 (4.12)	164.56 (3.87)
	iv) Price received	4085.00 (100.00)	4040.40 (100.00)	4251.77 (100.00)
5	Consumer			
	i) Price paid	4085.00	4040.40	4251.77

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Sr.No.	Particulars	Channel I	Channel II	Channel III
		(100.00)	(100.00)	(100.00)
	Price spread	404.77	647.11	720.99
	MC+MM	404.77	647.11	901.09
	Marketing efficiency	10.09	6.24	4.72
	Producer share in consumer rupee	94.26	88.24	83.04

(Figures in parentheses are the percentage to the price paid by consumers)

The empirical data indicates that the net price received by the producer stood at ₹3,680.23 per quintal in Channel I, ₹3,393.29 in Channel II, and ₹3,530.78 in Channel III. Channel I (Producer → Channel I recorded the highest marketing efficiency index (M_{ME} = 10.09), demonstrating that producers receive a superior proportion of the ultimate consumer price on account of lower aggregate marketing expenditures and intermediary margins. Channel II registered a moderate efficiency level with an M_{ME} of 6.24, whereas Channel III emerged as the least efficient route with an M_{ME} index of 4.72, driven by a higher presence of intermediaries and elevated overall marketing margins (₹541.69/ql).

Sr. No.	Constraint	Garret Score	(%) Score	Rank
1	C1: Lack of standardized packaging	3564	39.60	IV
2	C2: More dependency on middlemen	5264	57.60	II
3	C3: Price volatility during harvest season	5950	62.11	I
4	C4: High cost of transportation	4520	50.22	III
5	C5: Unavailability of storage facilities	3019	33.78	V

Conclusions

This study examined the production economics and marketing dynamics of apple ber among small, medium, and large growers in the Dhule district of Maharashtra. It found that three primary supply routes differing mainly in the number of intermediaries involved account for the commercial distribution of the crop in the study area. Channel I (Producer → Retailer → Consumer), the shortest route involving only a retailer, delivered growers the highest net price (

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