A Study on the Marketing Efficiency of Button Mushroom in Solan District of Himachal Pradesh, India

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Original Research Article

ABSTRACT

The study was conducted on the marketing of button mushrooms in the Solan district of Himachal Pradesh. A multi-stage sampling technique was used for the selection of primary and secondary market functionaries. Market functionaries were taken into study in order to collect information related to marketing cost, marketing margin, price spread, marketing efficiency, and the producer's share in the consumer's rupee. It was also used to identify the different marketing channels used in the marketing of mushrooms. All the details of the marketing process were figured out by using the data collected from the respondents and the market middlemen. Three categories of market channels were involved: channel I was producer to consumer, channel II was producer to retailer to wholesaler, and channel III was producer to wholesaler to retailer to consumer. In all three groups, channel I was more profitable. The study was conducted to identify the various problems faced by growers in the marketing of mushrooms. The study also revealed that the maximum number of

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growers sold their products through channel I, which was direct from growers to consumers. The maximum price received by mushroom growers in channel I was Rs. 9000 per quintal, followed by channel II at Rs. 8590 per quintal, and in channel III at Rs. 7500 per quintal.

The total marketing cost incurred in channel I was Rs. 1000 per quintal; in channel II, it was Rs. 2050 per quintal; and in channel III, it was Rs. 1220 per quintal. Producer's share in consumer's rupee was obtained maximum in channel I, which was 90%, followed by channel II, which was 71.58%, and in channel III, it was 62.5%. Total marketing efficiency was 9.0 in channel I, 2.51 in channel II, and 1.66 in channel III.

1. INTRODUCTION

In India, white button mushrooms were the main subject of the first mushroom studies conducted in Himachal Pradesh in the 1960s. The main mushroom-growing districts in Himachal Pradesh are Sirmour, Kullu, Solan, and Shimla. In the state, Solan is ranked second for mushroom cultivation, behind Shimla. It has been observed that mushroom farming has improved the state's farmers' economic circumstances. In essence, mushrooms belong to the *Agaricaceae* family. They are raised on organic matter that has decomposed. There is no chlorophyll in them [1-3]. They are a great source of folic acid, proteins, carbs, vitamins, and minerals. It can be eaten raw or preserved and used to make sauces, soups, and other foods. In addition to having 60–70% digestibility, the proteins found in mushrooms have antiviral, antifungal, and antibacterial qualities. Mushrooms are low-cost and intensive for rural families to cultivate [4,5]. As the farmers of Himachal Pradesh have a shortage of cultivable land, they prefer mushroom cultivation as their business because it can be cultivated in a single room. Being a low-labor-intensive crop, it also yields maximum profit to rural families. China is the leading producer of mushrooms in the world with about 41.127 million metric tons of production, and India ranks sixth in terms of mushroom production with 0.243 million metric tons of production (FAOSTAT 2023). Mushrooms have a wide range of uses, both as food and medicine (Beetz and Kustudia, 2004). The amino acids essential for the human body are also present in mushrooms (Hayes and Haddad, 1976). India, Bihar has maximum of mushroom production with 28.00 tonnes production. Himachal Pradesh produces 14.80 metric tons of mushrooms and ranks eighth in the country (ICAR DMR).

2. MATERIALS AND METHODS

For the selection of districts, blocks, panchayats, and respondents, the multi-stage sampling technique was used. By using a random sampling technique, 73 farmers were selected from the Solan block of Solan district. Based on the production process, the respondents were divided into three categories: small farmers with a production of <1 quintal, medium farmers with a production of 1-3 quintals, and large farmers with a production of >3 quintals. For the data and collection of information, personal questioning was done with the farmers and their families, and for secondary data, different sources were mushroom markets and the Directorate of Mushroom Research [6,7].

From the primary and secondary markets, 10% of market functionaries were randomly selected. Solan Sabzi Mandi, Shimla Sabzi Mandi, and Chandigarh Fruits and Vegetable Market were selected purposefully for the study [8,9].

Table 1 revealed that data of market functionaries was collected to find out the marketing cost and other marketing charges in all the three marketing channels.

2.1 Analytical Tools

Different analytical techniques were used to fulfill the specific objective of the study. Arithmetic mean, weighted mean different formulae were applied to calculate various marketing concepts such as marketing margin, marketing efficiency, marketing cost, price spread and producer's share in consumer's rupee.

$$\text{Arithmetic Mean} = AM = \frac{\sum Xi}{N}$$

Where,

AM= Arithmetic Mean
∑Xi= Sum of variables
N= Total number of variables

Table 1. Different market functionaries

S. No.	Market (Primary & Secondary)	Market Functionaries	Total
1	Solan sabzi mandi	Producer	25
		Retailer	15
2	Shimla sabzi mandi	Producer	5
		Retailer	11
		Wholesaler	9
3	Chandigarh fruits & vegetables market	Retailer	3
		Wholesaler	5
Total			73

Weighted Mean = $Wm = \frac{\sum WiXi}{\sum Wi}$

Where,

WM= weighted mean
Wi= weight of Xi
Xi= variable

2.2 Marketing Cost

C = Cf + CM1 + C2 + CM3+…….+CMn

Where;

C = Total cost of marketing of commodity
Cf = Cost paid by the producer from the time of produce leave the farm till the sale it
CMi = Cost incurred by the ith middleman in the process of buying and selling the product.

2.3 Marketing Margin

MM = Pr – Pg

Where;

Pr = price paid by the consumer
Pg = price received by the producer

2.4 Price Spread

Price Spread = MC + MM

Where;

MC = total market cost
MM = net marketing margin

2.5 Marketing Efficiency by Acharya's Approach

Acharya's approach was used to calculate the efficiency of marketing. It's the most commonly used method of calculating marketing efficiency. It measures the performance of the market.

MME = PF ÷ (MC + MM)

Where;

MME = Modified measure of Marketing EfficiencyMC = Total marketing costs
MM = Net marketing margin
PF = Prices received by the farmer

2.6 Producer's Share in Consumer's Rupee

$$\text{Producer's share's} = \frac{PF}{Pr} \times 100$$

Where;

PF = Price received by the farmer
PR = Retail price paid by the consumer

3. RESULTS AND DISCUSSION

In Solan district the following three channels were recognized for the mushroom marketing.

Channel I: Producer → Consumer

Channel II: Producer → Retailer → Consumer

Channel III: Producer → Wholesaler → Retailer → Consumer

From Table 2, it was clear that the majority of growers sold their produce through Channel I. Through channel III, only a very small number of respondents sold their produce. Less profit was earned by producers in channels II and III due to the existence of middlemen's or intermediates. The channel chosen by growers also varies from season to season.

Table 3 identifies that the marketing cost obtained in channel I was Rs. 1000. Among all the costs

incurred, the maximum cost was transportation (Rs. 250). Due to the perishable nature of mushrooms, they need proper handling. The cost incurred by packing material, loading and unloading, and labor charges was Rs. 150. The cost obtained by miscellaneous was Rs. 100. The minimum cost was found to be weighing charges (Rs. 80).

From Table 4, it was revealed that the total cost of marketing was determined to be Rs. 2050 per

quintal of mushroom. In channel II, the total marketing cost obtained by the producer was Rs. 750 per quintal, out of which the highest cost was obtained by transportation (Rs. 250) and the minimum cost was obtained by other expenses (Rs. 80).

The total cost experienced by retailers in channel II was Rs. 1300 per quintal, out of which the largest cost was recognized by spoilage (Rs. 400), followed by loading and unloading

Table 2. Detailed distribution of mushrooms by way of different channels

S. No.	Channels	Number of Intermediaries involved	Number of Farmers sold through this Channel	Percentage
1	Channel I	Producer → Consumer	40	54.79
2	Channel II	Producer → Village Merchant/Retailer → Consumer	25	34.24
3	Channel III	Producer → Commission Agent/Wholesaler → Retailer → Consumer	8	10.97
Total			73	100

Table 3. Marketing cost obtained in Channel I (per quintal)

S. No.	Particulars	Rs/qtl
1	**Cost incurred by the producer**	
I	Packing cost	120 (12)
II	Packing Material Cost	150 (15)
III	Loading & unloading	150 (15)
IV	Transportation Cost	250 (25)
V	Labor Cost	150 (15)
VI	Miscellaneous	100 (10)
VII	Weighing Charges	80 (8)
2	**Total cost (I-VII)**	**1000**

Table 4. Marketing cost obtained in Channel II (per quintal)

S. No.	Particulars	Rs/Qtl
1	**Producer/seller**	
I	Labor Charges	150 (7.31)
II	Packing Charges	120 (5.85)
III	Transportation	250 (12.19)
IV	Loading & unloading	150 (7.31)
V	Other Expenses	80 (3.90)
	Sub Total Cost (I-V)	750 (36.58)
2 Retailer		
I	Weighing Charges	50 (2.43)
II	Labor Charges	150 (7.31)
III	Transportation Cost	200 (9.75)
IV	Loading & unloading	300 (14.63)
V	Spoilage	400 (19.51)
VI	Other Expenses	200 (9.75)
	Sub Total Cost (I-VI)	1300 (63.41)
	Total Marketing Cost (Producer + Retailer)	2050

charges (Rs. 300), transportation costs (Rs. 200), other expenses (Rs. 200), and the least cost was experienced by weighing charges (Rs. 50).

Table 5 shows that the total cultivation cost incurred in channel III was Rs. 1220 per quintal of mushroom. In this channel, the cost obtained by the wholesaler was Rs. 500, with the highest cost incurred by shop rent, market charges, and transportation charges, which were Rs. 100 each. The minimum cost was obtained by loading and unloading and other expenses, which was Rs. 40. The cost experienced by the retailer was Rs. 720, of which the maximum cost was obtained by grading, which was Rs. 120. The cost obtained by transportation, loading and unloading, and spoilage was the same, which was Rs. 100 each. The least cost was incurred by other expenses, which was Rs.40.

From Table 6, it is clear that the maximum the maximum net price received by mushroom growers per quintal was in Channel I (Rs. 9000), followed by Channel II (Rs. 8590), and the

Table 5. Marketing cost obtained in Channel III (per quintal)

S. No.	Particulars	Rs/qtl
1	**Producer/Seller**	
	Sub Total	0 (0)
2	**Wholesaler**	
I	Shop Rent	100 (8.19)
II	Labor Salary	50 (4.09)
III	Market Charges	100 (8.19)
IV	Spoilage	70 (5.73)
V	Other Expenses	40 (3.27)
VI	Loading & unloading	40 (3.27)
VII	Transportation	100 (8.19)
	Sub Total	500(40.98)
3	**Retailer**	
I	Shop Rent	100 (8.19)
II	Grading	120 (9.83)
III	Labor salary	50 (4.09)
IV	Transportation	100 (8.19)
V	Packing Material	110 (9.01)
VI	Loading & unloading	100 (8.19)
VII	Spoilage	100(8.19)
VIII	Other Expenses	40 (3.27)
	Sub Total (I-VIII)	720 (59.01)
4	Total Marketing Cost	1220

Table 6 Measures of profitability in different marketing channels

S. No.	Particulars	Channel I	Channel II	Channel III
1	Net price received by mushroomgrower	9000	8590	7500
2	Marketing cost incurred bymushroom grower	1000	750	0
3	Price paid by wholesaler	-	-	
4	Market cost incurred by wholesaler	-	7500	500
5	Net margin of wholesaler	-	-	1500
6	Price paid by retailer	-	9340	9500
7	Marketing cost incurred by retailer	-	1300	720
8	Net margin of retailer	-	1360	1780
9	Price paid by consumer	10000	12000	12000
10	Total marketing cost	1000	2050	1220
11	Total marketing margin	0	1360	3280
12	Total price spread	1000	3410	4500
13	Producer's share in consumer'srupees (%)	90%	71.58%	62.5%
14	Total marketing efficiency	9.0	2.51	1.66

minimum was in Channel III (7500). Total marketing cost was incurred maximum in channel II (Rs. 2050), followed by channel I (Rs. 1000), and channel III incurred less cost (Rs. 1220). Channel I earned the maximum profit in channel I, which was 90%, followed by channel II, which was 71.58%, and channel III earned the least profit, which was 62.5%. Marketing efficiency was greater in channel I (9.0), followed by channel II (2.51), and channel III had the lowest marketing efficiency (1.66).

4. CONCLUSION

It was found that there were three channels of marketing for mushrooms in Solan district. First, growers sold directly to consumers; second, grower sold to retailers to consumers; and third, grower sold to wholesalers to retailers to consumers. The direct channel, i.e., channel one, was found to be the most widely used distribution channel, as the maximum number of growers were using this channel. The majority of growers reported the unregulated market as the major problem in the marketing of mushrooms in Solan district. It was found that whenever there was an excessive crop in the market, the price of the mushroom was reduced. The study conducted in the Solan block of Solan district states that 54.79% of respondents sold mushrooms by channel I, which was the maximum among all three given channels. Marketing costs were highest in channel II due to the presence of market intermediaries. The study also revealed that the maximum profit was earned by channel III, which was 90% because no intermediaries were present in this channel. The total price spread was greater in channel III (Rs. 4500), followed by channel II (Rs. 3410), and the minimum was in channel I (Rs. 1000).

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DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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