

International Journal of Agriculture Extension and Social Development

Volume 9; Issue 5; May 2026; Page No. 575-578

Received: 23-03-2026
Accepted: 29-04-2026

Indexed Journal
Peer Reviewed Journal

Marketing analysis and value chain study of button mushroom in Dumka District of Jharkhand

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DOI: <https://www.doi.org/10.33545/26180723.2026.v9.i5g.3628>

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Abstract

The present study entitled "Marketing Analysis and value Chain Study of Button Mushroom in Dumka District of Jharkhand" examines the marketing dynamics and value chain structure of button mushroom (*Agaricus bisporus*) cultivation in Dumka district of Jharkhand. Mushroom cultivation has gained considerable importance in recent years due to its high nutritional value, short production cycle, and increasing domestic and urban demand. Despite its economic potential, systematic research on marketing and value chain performance in rural regions like Dumka remains limited. The study primarily focuses on analyzing the socio-economic and economic profile of button mushroom growers, including age, education, landholding pattern, production experience, investment structure, cost of cultivation and returns. It further examines the disposal pattern and prevailing marketing practices adopted by producers, such as direct sales, sales through retailers, wholesalers, and commission agents.

The research evaluates different marketing channels and estimates marketing cost, marketing margin, price spread and producer's share in the consumer's rupee using standard analytical tools. The findings reveal a relatively higher producer's share and improved marketing efficiency compared to longer channels involving multiple intermediaries. Based on the findings, the study suggests strengthening farmer producer organizations, improving storage and transportation infrastructure, promoting value addition, and enhancing market information systems to improve marketing efficiency and income levels. The research provides valuable insights for policymakers, extension agencies, and stakeholders to enhance market access, improve value chain coordination, and promote sustainable growth of the mushroom sector in Dumka district.

Keywords: Marketing dynamics, value chain analysis, price spread, producer's share, sustainable growth

Introduction

Button mushrooms (*Agaricus bisporus*) are one of the most popular and widely consumed types of mushrooms globally, known for their delicate flavor and versatile culinary uses. They are rich in essential nutrients like proteins, fiber, vitamins (especially B-vitamins and Vitamin D), and minerals (such as iron, potassium, and selenium). These nutritional benefits, combined with their low-calorie content, make them a healthy choice in a variety of diets, including vegetarian and vegan cuisines. The mushroom's mild taste also allows it to be easily incorporated into a wide range of dishes, from soups and salads to stir-fries and pizzas.

In India, button mushrooms are cultivated across various regions, with favorable conditions present in both temperate and subtropical areas. Among these, Jharkhand has emerged as one of the leading states for mushroom cultivation, contributing significantly to the country's production.

Specifically, Dumka district in Jharkhand has shown promise as a notable center for button mushroom farming. The region's climate, along with increasing awareness of mushroom farming, has made it a favourable location for small and medium-scale mushroom farming operations. With proper government support, technological advancements in cultivation and distribution, and the development of value-added products, button mushrooms could become a key agricultural commodity in the region. Moreover, as consumer demand for healthier and sustainable food options increases, mushrooms could gain further traction in both domestic and international markets. Hence, the present study is focused on the following objectives:

1. To study the socio-economic and economic profile of button mushroom growers in the study area.
2. To identify the disposal pattern, marketing cost, marketing margin, and marketing efficiency.

Research Methodology

The present study entitled "Market Dynamics and Value Chain Assessment of Button Mushroom in Dumka District of Jharkhand" was undertaken to analyse the socio-economic profile of button mushroom growers, to examine the disposal patterns and marketing practices of button mushroom growers. The study was based on a descriptive and analytical research design. It aimed to describe the existing marketing system of button mushrooms and analyse marketing costs, margins and price spread across different channels. Both qualitative and quantitative approaches were used to obtain comprehensive insights into the value chain structure. Multi-stage sampling technique was used to ensure a systematic representation of the respondents, regions, and marketing stakeholders involved in the mushroom marketing. Out of the 24 districts of Jharkhand, Dumka district was selected purposively for the study. Dumka district has witnessed an increasing adoption of button mushroom cultivation due to favorable climatic conditions, availability of agricultural residues, and government support programs. Islamnagar Block was selected purposively due to its significant contribution to button mushroom cultivation and marketing activities. A 5% random sampling approach was used to select 10 villages within the Islamnagar Block. Respondents were selected from various stakeholder groups involved in the button mushroom marketing chain involving consumers, farmers, retailers, distributors and cooperatives/ organizational representatives. Primary data were collected through structured interviews and surveys using pre-tested questionnaires. Secondary data were gathered from industry reports, government publications, and relevant research studies on mushroom farming, marketing, and consumer behavior. This secondary data provided context and support for the primary data analysis.

Data Analysis Techniques

To analyze and interpret the collected data, statistical and econometric methods were used.

These included descriptive statistics, such as percentage calculations, Tabular and Chart Presentations, and Averages.

Analytical Tools

The formula for the Arithmetic Mean (commonly referred to as the average) is:

$$\text{Arithmetic Mean} = \frac{\sum X_i}{n}$$

Where

- $\sum X_i$ is the sum of all the values in the data set.
- n is the number of values in the data set.

Averages: Measures like mean, median, and mode were used to describe the central tendency of data on consumer behavior, pricing preferences, and purchase frequency.

Marketing margin

$$M_T = \sum_{i=1}^n \frac{S_i - P_i}{Q_i}$$

Where

M_T = Total marketing margin.

S_i = Sale value of a product for i^{th} firm

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

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

$i = 1, 2, \dots, n$ (No. of firms involved in the marketing channel).

Price spread

Price spread is defined as the difference between the price paid by the consumer and the net price received by the producer for an equivalent quantity of farm produce.

It is expressed as percentage of consumer's price

$$\text{Price spread} = \frac{(\text{Consumer price} - \text{Net price of producer})}{\text{Consumer price}} \times 100$$

Marketing Cost

The total cost incurred on marketing by various intermediators involved in the sale and purchase of the commodity till it reaches the ultimate consumer were be computed as follow.

$$C = C_f + C_{m1} + C_{m2} + C_{m3} + \dots + C_{mn}$$

Where

C = Total cost of marketing

C_f = Cost borne by the producer

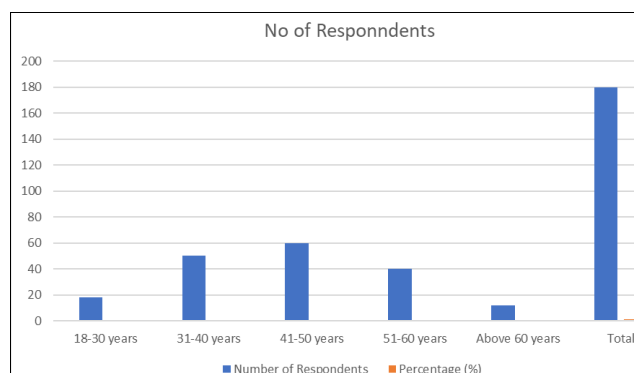
C_{mn} = Cost incurred by the middleman

Results and Discussion

The majority of the respondents (33.33%) fall in the 41-50 years age group. This indicates that middle-aged individuals are more likely to engage in button mushroom farming and marketing, possibly due to accumulated experience and financial stability.

The 18-30 years age group (22.22%) also shows notable involvement, indicating that younger individuals are beginning to take an interest in mushroom farming, likely driven by opportunities in organic farming and increased market demand for mushrooms.

Older individuals (51-60 years, 11.11% and 60+, 5.56%) are less involved, possibly due to health limitations or lack of interest in intensive farming activities like mushroom cultivation.



Monthly Income of Respondents

The majority of respondents (33.33%) earn between ₹10,000 and ₹20,000 monthly, which may represent small-

scale mushroom producers who supplement their income with other farming activities.

A significant number (27.78%) earn between ₹20,000 and ₹30,000, indicating that mushroom farming can be a viable income-generating activity for those who focus on production and marketing. Higher-income groups (> ₹30,000) constitute a small percentage (16.67%), suggesting that those who invest heavily in mushroom farming or commercial ventures may still be in the minority.

Lower-income groups (< ₹10,000) still make up a considerable share (22.22%), reflecting that mushroom farming is sometimes undertaken by individuals with fewer resources, often as an additional activity rather than a primary source of income.

Table 1: Monthly Income of Respondents

Income Group (INR)	Number of Respondents	Percentage (%)
< 10,000	40	22.22%
10,000-20,000	60	33.33%
20,001-30,000	50	27.78%
30,001-40,000	20	11.11%
> 40,000	10	5.56%

Marketing Cost, Marketing Margin, Price Spread and the Producer's Share in Consumer's Rupee

This objective assesses how efficiently the marketing

system works by evaluating costs, margins, and producer's share. The evaluation helps understand the economic dynamics in the value chain and potential profit distribution.

Marketing Cost

Marketing costs represent the expenses incurred by intermediaries in moving mushrooms from the producer to the consumer.

Table 2: Marketing Cost Distribution

Marketing Activity	Cost (INR per unit)
Cost of Production (by Farmer)	₹50
Cost of Transportation	₹20
Cost of Packaging	₹10
Cost of Retailing	₹15
Total Marketing Cost	₹95

The total marketing cost of ₹95 per unit of button mushrooms includes production, packaging, transportation, and retailing costs. The cost breakdown shows that the largest expenses are related to transportation (₹20) and retailing (₹15).

Marketing Margin

Marketing margin is the difference between the price paid by the consumer and the price received by the producer.

Table 3: Marketing Margin Calculation

Marketing Channel	Price Paid by Consumer (INR)	Price Received by Producer (INR)	Marketing Margin (INR)
Direct Sales to Consumers	₹120	₹100	₹20
Retail Markets	₹130	₹95	₹35
Wholesale Markets	₹140	₹90	₹50

The marketing margin is highest in wholesale markets (₹50), likely due to the involvement of multiple intermediaries. Retail markets show a margin of ₹35, while direct sales to consumers result in the lowest margin (₹20), suggesting that producers benefit most when they sell

directly to consumers, bypassing intermediaries.

Price Spread

Price spread measures the difference between the price paid by the consumer and the price received by the producer.

Table 4: Price Spread Calculation

Marketing Channel	Price Paid by Consumer (INR)	Price Received by Producer (INR)	Price Spread (INR)	Price Spread (%)
Direct Sales to Consumers	₹120	₹100	₹20	16.67%
Retail Markets	₹130	₹95	₹35	26.92%
Wholesale Markets	₹140	₹90	₹50	35.71%

Price spread is highest in wholesale markets (35.71%), which indicates that the final price to consumers is significantly higher than what the producer receives. Direct

sales to consumers have the lowest price spread (16.67%), demonstrating that the producer captures a larger share of the consumer's rupee.

Table 5: Producer's Share in Consumer's Rupee

Marketing Channel	Price Paid by Consumer (INR)	Price Received by Producer (INR)	Producer's Share (%)
Direct Sales to Consumers	₹120	₹100	83.33%
Retail Markets	₹130	₹95	73.08%
Wholesale Markets	₹140	₹90	64.29%

The producer's share is highest in direct sales to consumers (83.33%), indicating that producers keep the majority of the price. Retail markets (73.08%) and wholesale markets (64.29%) show a decrease in the producer's share due to the involvement of intermediaries.

Summary and Conclusion

The study highlights that the mushroom industry has the potential for sustainable growth in Dumka, especially given the increasing demand for organic produce. The study concludes that mushroom farming in Dumka has a

significant potential as the existing marketing system is inefficient and needs substantial improvements. Producers face high marketing costs, which reduce their overall profit margins. In addition, post-harvest losses during transportation and storage further diminish their returns. The price spread is high, especially in wholesale markets, where the presence of multiple intermediaries results in producers receiving a disproportionately small share of the final consumer price.

Key recommendations include improving infrastructure (cold storage, transportation) and enhancing farmers' marketing knowledge. Addressing these issues would increase producers' share of the consumer's rupee and lead to a more efficient marketing system. These improvements would not only benefit producers but also create a more streamlined and profitable mushroom industry. The findings also offer insights for agricultural marketing policies in Jharkhand and similar regions. By focusing on infrastructure and farmer education, the mushroom industry in Dumka can grow sustainably, ensuring better economic returns for farmers and meeting the rising consumer demand for organic produce. Training farmers on pricing strategies, direct sales techniques, and the use of alternative marketing channels could significantly increase their profits. These interventions could contribute to the long-term success and profitability of the industry, providing a scalable model for rural agricultural development across India.

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