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### A study on analysis of supply chain management of chilies in Guntur district of Andhra Pradesh

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#### Abstract

The present study entitled “A Study on Analysis of Supply Chain Management of Chilies in Guntur District of Andhra Pradesh” was undertaken to examine the supply chain structure, marketing system, price spread, marketing costs, producer’s share in consumer’s rupee, marketing efficiency, and constraints faced by chili growers in the study area. The study was based on both primary and secondary data. Primary data were collected from 100 randomly selected chili growers, along with other stakeholders involved in the supply chain such as traders, retailers, and commission agents. Secondary data were obtained from published reports, government records, and relevant literature. The data were analyzed using statistical tools such as percentages, averages, ratios, and price spread analysis.

The socio-economic profile of respondents revealed that most chili growers were small and marginal farmers, predominantly in the 31–50 years age group, and had secondary-level education. Agriculture was the primary occupation, often supplemented with allied activities, indicating diversified income sources. The average family size was found to be 6.8 members, providing adequate family labor for cultivation and marketing activities.

Three major marketing channels were identified: Channel I (Producer–Consumer), Channel II (Producer–Retailer–Consumer), and Channel III (Producer–Wholesaler–Retailer–Consumer). Among these, Channel II was the most widely used due to better market access, while Channel I was the most efficient and profitable, and Channel III was mainly used for bulk and distant markets. The study found that marketing costs and price spread increased with the number of intermediaries, resulting in a lower producer’s share in consumer’s price in longer channels. Consequently, marketing efficiency was highest in Channel I and lowest in Channel III.

Major constraints identified included price fluctuations, high transportation costs, inadequate storage and grading facilities, dependence on middlemen, and limited access to timely market information. The study concludes that improving infrastructure, promoting direct marketing, strengthening farmer organizations, and enhancing market information systems can significantly improve supply chain efficiency and increase farmers’ income in the chili sector of Guntur district.

**Keywords:** Chilies, supply chain management, Guntur district, marketing channels, price spread, marketing efficiency, producer’s share, marketing cost, constraints, farmer income, value chain, agricultural marketing

#### Introduction

Chilies are one of the most important commercial spice crops cultivated in India and hold a significant position in the agricultural economy due to their high domestic consumption and strong export potential. They are widely valued for their pungency, color, flavor, and preservative properties and are used in fresh, dried, and processed forms across households, food processing industries, and international markets. India is the largest producer, consumer, and exporter of chilies in the world, with major producing states including Andhra Pradesh, Telangana, Karnataka, Madhya Pradesh, Maharashtra, and Tamil Nadu.

Among these, Andhra Pradesh plays a leading role in chili production due to favorable agro-climatic conditions, established trading systems, and strong farmer participation. Chilies are also processed into value-added products such as chili powder, flakes, paste, and oleoresins, which further increase their market demand and industrial use. However, being a highly sensitive crop in terms of price and quality, efficient supply chain management is essential for maintaining quality and ensuring better returns to farmers. In Andhra Pradesh, Guntur district is widely recognized as the most important center for chili production and trade in India. The region is famous for high-quality varieties such

as Guntur Sannam, which has strong demand in both domestic and international markets. Favorable climatic conditions, fertile soils, and well-developed market infrastructure have contributed to the district's dominance in chili cultivation. A large number of farmers in Guntur are engaged in chili cultivation as a major cash crop, supplying produce to wholesale markets, exporters, processors, and spice industries. Despite its strong production base, farmers and market participants face several supply chain challenges such as price fluctuations, inadequate storage facilities, dependence on intermediaries, lack of direct market access, transportation issues, and quality deterioration during handling and storage. These problems reduce profitability and affect overall supply chain efficiency. The supply chain of chilies involves several interconnected activities including harvesting, drying, grading, packaging, storage, transportation, processing, and distribution to domestic and export markets. Since chilies are highly sensitive to moisture, proper drying and storage are essential to maintain quality and prevent losses. The supply chain generally includes farmers, village traders, commission agents, wholesalers, processors, exporters, and retailers. Effective coordination among these stakeholders is necessary to ensure smooth flow of produce, maintain quality standards, and achieve fair price realization. Understanding the structure and functioning of the chili supply chain is important to identify inefficiencies and improve overall performance. The present study titled "A Study on Analysis of Supply Chain Management of Chilies in Guntur District of Andhra Pradesh" aims to analyze the existing supply chain system of chilies and examine the major constraints faced by stakeholders in the study area. The study also focuses on socio-economic characteristics of chili growers such as age, education, farming experience, landholding size, production level, income, and access to market information, which influence supply chain participation and decision-making. The study further examines supply chain channels, marketing costs, price spread, value addition, and supply chain efficiency in chili marketing in Guntur district. It highlights key issues such as lack of scientific storage, inefficient logistics, dependence on intermediaries, price volatility, and post-harvest losses. The study also evaluates the role of farmers, traders, processors, exporters, and commission agents in the supply chain. By analyzing these factors, the study aims to identify gaps and suggest measures to improve efficiency, reduce losses, enhance farmer income, strengthen market linkages, and promote sustainable development of chili cultivation in Guntur district.

### Objectives

- To study the socio-economic profile of respondents in the study area.
- To examine the marketing channels involved in marketing of mango.

### Research Methodology

#### Sampling Design

For the present study titled "A Study on Analysis of Supply Chain Management of Chilies in Guntur District of Andhra Pradesh", a multistage sampling design was used. At the first stage, Guntur district was selected purposively due to

its high concentration of chili production and trade. At the second stage, mandals/blocks were selected based on the extent of chili cultivation and marketing activities, followed by the selection of villages through random sampling at the third stage. At the final stage, chili growers and key supply chain stakeholders such as traders, commission agents, wholesalers, processors, retailers, exporters, and consumers were selected as respondents. This design was used to collect representative data for analyzing the supply chain structure, costs, price spread, efficiency, and constraints in the study area.

#### Selection of District

The study was conducted in Guntur District, Andhra Pradesh. The district was selected purposively because it is one of the major chili-growing districts in India, especially known for Guntur Sannam chilies, which have high demand in domestic and international markets. Chili cultivation is a primary source of income for small and marginal farmers, and the district has significant infrastructure supporting collection, processing, and marketing of chilies.

#### Selection of Blocks

Guntur district consists of several mandals. Out of these, Chilakaluripet Mandal was selected purposively for the present study due to its significant contribution to chili cultivation and active participation in marketing activities. The mandal is well known for large-scale chili production, favorable agro-climatic conditions, and strong market linkages. It represents the typical production and supply chain pattern of chilies in Guntur district, making it highly suitable for the present study.

#### Selection of Villages

From each selected mandal, three villages were randomly selected based on the area under chili cultivation and farmer participation in the market. Accordingly, twelve villages were selected for the study. From these villages, 120 chili growers were randomly chosen as respondents to collect data on production, marketing channels, costs, price spread, and supply chain efficiency.

#### Selection of Respondents/Farmers

A list of all chili growers in the selected villages was obtained from the District Horticulture Office, Guntur. From this list, 120 growers were selected randomly for the study. The selected farmers were categorized into three groups based on their size of landholding:

| Sr. No | Type of Farmers  | Area under Chili (Hectares) |
|--------|------------------|-----------------------------|
| 1      | Marginal Farmers | <1 ha                       |
| 2      | Small Farmers    | 1–2 ha                      |
| 3      | Semi-Medium      | 2–4 ha                      |
| 4      | Medium Farmers   | 4–10 ha                     |
| 5      | Large Farmers    | >10 ha                      |

This categorization helps analyze differences in production, marketing practices, cost, and profitability among different types of chili growers.

#### Analysis of data/ analytical tools used

The present study titled "A Study on Analysis of Supply

Chain Management of Chilies in Guntur District of Andhra Pradesh” was based on both primary and secondary data. The primary data were collected from chili growers, village traders, commission agents, wholesalers, processors, exporters, retailers, and other stakeholders involved in the chili supply chain system, while secondary data were obtained from published reports, government records, agricultural department statistics, research articles, and relevant literature. The collected data were compiled, tabulated, and analyzed using appropriate statistical tools such as averages, percentages, and ratios. For analyzing the chili supply chain, indicators such as supply chain channels, marketing costs, price spread, transportation facilities, storage conditions, value addition, market margins, supply chain efficiency, and constraints faced by different stakeholders were used to evaluate the performance of the chili supply chain system in the study area.

### Analytical techniques employed

#### Analytical Tools

The following statistical tools and techniques will be used in analysis of data and interpretation of result.

$$\text{Arithmetic Mean} = \text{AM} = \frac{1}{n} \sum_{i=1}^n a_i$$

Where,

AM = Arithmetic Mean

n = Number of values

$a_i$  = Data set values

$$\text{Weighted Mean} = W = \frac{\sum_{i=1}^n w_i X_i}{\sum_{i=1}^n w_i}$$

Where,

W = Weighted average

n = number of terms to be averaged

$w_i$  = Weight applied to x values

$X_i$  = Data values to be averaged

#### Tabular Presentation

Mapping of different marketing channels (Producer → Retailer → Consumer, Producer → Wholesaler → Retailer → Consumer, etc.).

#### Descriptive Analysis

Frequency and percentage of producers using each channel.

### Results and Discussion

The socio-economic characteristics of button mushroom growers influence production practices, marketing decisions, and income generation. Factors such as age, education, family size, farming experience, and investment capacity affect mushroom cultivation and marketing behavior.

Therefore, the present study on “A Study on Marketing of Button Mushroom in Prayagraj District” examined the socio-economic profile of respondents to understand their role in mushroom production and marketing in the study area.

### Socio–Economic Profile of Sample Respondents

| Particulars       | Value | Percentage |
|-------------------|-------|------------|
| Male members      | 3.00  | 44.12      |
| Female members    | 2.50  | 36.76      |
| Children          | 1.30  | 19.12      |
| Total family size | 6.8   | 100        |

### Education Level

| Education Level | Number | Percentage |
|-----------------|--------|------------|
| Illiterate      | 12     | 10.00      |
| Primary         | 28     | 23.33      |
| Secondary       | 55     | 45.83      |
| College         | 25     | 20.83      |
| Total           | 120    | 100        |

The socio-economic profile shows that the average family size of chili growers is 6.8 members, with males (44.12%), females (36.76%), and children (19.12%), indicating sufficient household labor for farm activities. In terms of education, most farmers are educated up to secondary level (45.83%), followed by college (20.83%), primary (23.33%), and only 10% are illiterate, which supports better adoption of modern farming and marketing practices.

### Occupational Pattern and Age Distribution of Respondents

| Category               | Number | Percentage |
|------------------------|--------|------------|
| Agriculture only       | 55     | 45.83      |
| Agriculture + Dairy    | 25     | 20.83      |
| Agriculture + Business | 20     | 16.67      |
| Agriculture + Service  | 20     | 16.67      |

### Age Group

| Age Group | Number | Percentage |
|-----------|--------|------------|
| Below 30  | 20     | 16.67      |
| 31–50     | 70     | 58.33      |
| Above 50  | 30     | 25.00      |
| Total     | 120    | 100        |

Regarding occupation, 45.83% of respondents depend solely on agriculture, while the remaining are engaged in allied activities such as dairy, business, and services, helping them diversify income sources. Age distribution shows that the majority (58.33%) are in the 31–50 years group, indicating an active and productive farming population.

### Farm Size and Area under Chili

| Farm Category | No. of Farms | Avg. Cultivated Area (ha) | Avg. Chili Area (ha) |
|---------------|--------------|---------------------------|----------------------|
| Marginal      | 25           | 0.80                      | 0.50                 |
| Small         | 40           | 1.50                      | 1.00                 |
| Semi-medium   | 30           | 2.70                      | 2.00                 |
| Medium        | 20           | 5.00                      | 4.00                 |
| Large         | 5            | 12.00                     | 10.00                |
| Overall       | 120          | 3.25                      | 2.50                 |

Farm size analysis reveals that most chili cultivation is done by small and semi-medium farmers, with an overall average chili area of 2.5 hectares. This shows that medium and small farmers dominate production, while large farmers contribute bulk supply.

### Marketing Channels of Chilies

| Channel     | Flow                                        | Remarks                                  |
|-------------|---------------------------------------------|------------------------------------------|
| Channel I   | Producer → Consumer                         | Most profitable but limited reach        |
| Channel II  | Producer → Retailer → Consumer              | Most commonly used                       |
| Channel III | Producer → Wholesaler → Retailer → Consumer | Used for bulk and distant/export markets |

Finally, marketing channel analysis indicates that Channel II (Producer → Retailer → Consumer) is the most commonly used due to easy access to local markets. Channel I is most profitable but limited in use, while Channel III is used mainly for bulk trade and distant or export markets.

### Conclusion

The present study titled “*A Study on Analysis of Supply Chain Management of Chilies in Guntur District of Andhra Pradesh*” analyzed the supply chain system, marketing channels, costs, price spread, producer’s share, marketing efficiency, and constraints faced by chili growers. The study found that most farmers are small and marginal, middle-aged, and moderately educated. Chili cultivation is an important livelihood source in the region. Three marketing channels were identified: Producer–Consumer (Channel I), Producer–Retailer–Consumer (Channel II), and Producer–Wholesaler–Retailer–Consumer (Channel III). Channel II was the most commonly used, while Channel I was the most efficient and profitable. Marketing costs, price spread, and intermediaries increased from Channel I to Channel III, reducing farmers’ income and efficiency. Major constraints included price fluctuations, high transportation costs, lack of cold storage and grading facilities, dependence on middlemen, and poor access to market information. Policy suggestions include development of cold storage and processing units, improvement of transport and logistics, promotion of direct marketing and FPOs, strengthening regulated markets, providing real-time market information, encouraging value addition and exports, training farmers, and introducing price stabilization measures. In conclusion, improving infrastructure, reducing intermediaries, strengthening farmer organizations, and promoting value addition and direct marketing will enhance supply chain efficiency, increase farmers’ income, and support sustainable growth of the chili sector in Guntur district.

### Summary

Chili is an important spice crop in India, and Guntur district of Andhra Pradesh is a major production hub known for high-quality varieties like Guntur Sannam. The present study titled “*Analysis of Supply Chain Management of Chilies in Guntur District of Andhra Pradesh*” was conducted using primary data from 100 farmers. The study analyzed supply chain structure, marketing channels, costs, price spread, marketing efficiency, and constraints using statistical tools like percentage and price spread analysis.

The socio-economic profile showed that most farmers were small and marginal, middle-aged, and moderately educated, with agriculture as the main occupation. Chili cultivation is an important source of income, supported by family labor and diversified livelihood activities. Three marketing channels were identified: Channel I (Producer–Consumer), Channel II (Producer–Retailer–Consumer), and Channel III (Producer–Wholesaler–Retailer–Consumer). Channel II was the most commonly used, while Channel I was most profitable and Channel III was used for bulk and distant markets. Marketing costs, price spread, and intermediaries increased from Channel I to Channel III. As a result, producer’s share and marketing efficiency were highest in Channel I and lowest in Channel III, showing that shorter supply chains benefit farmers more. Major constraints included price fluctuations, high transport cost, lack of storage and grading facilities, dependence on middlemen, and limited market information. These issues reduce farmer profitability and supply chain efficiency. In conclusion, improving infrastructure, promoting direct marketing, strengthening storage and transport facilities, and providing timely market information can enhance efficiency and increase farmers’ income in the chili supply chain of Guntur district.

### References

1. Acharya SS, Agarwal NL. Agricultural marketing in India. New Delhi: Oxford & IBH Publishing Co. Pvt. Ltd.; 2011.
2. Acharya SS. Agricultural marketing in India: Status, issues and reforms. *Indian Journal of Agricultural Marketing*. 2003;17(3):1-21.
3. BIRTHAL PS, JOSHI PK, GULATI A. Vertical coordination in high-value commodities. MTID Discussion Paper. Washington (DC): IFPRI; 2005.
4. Chand R. Development policies and agricultural markets. *Economic and Political Weekly*. 2012;47(52):53-63.
5. Deshmukh MS, Babar VS. Marketing efficiency of vegetables in Maharashtra. *International Journal of Agricultural Sciences*. 2016;8(54):2980-2983.
6. Dutta S, Dutta P. Supply chain management of vegetables in India: A case study of chilies. *Journal of Agribusiness Management*. 2019;11(1):45-52.
7. Food and Agriculture Organization. The state of agricultural commodity markets. Rome: Food and Agriculture Organization; 2020.
8. Food and Agriculture Organization. FAOSTAT statistical database. Rome: Food and Agriculture Organization; 2021.
9. Gajanana TM, Sudha M, Dakshinamoorthy V. Marketing channels and price spread in vegetables. *Agricultural Economics Research Review*. 2013;26(2):233-240.
10. Government of India. Agricultural statistics at a glance. New Delhi: Ministry of Agriculture & Farmers Welfare; 2022.
11. Gupta S, Rathore DS. Marketing of chilies in Rajasthan. *Indian Journal of Agricultural Marketing*. 2017;31(1):78-85.
12. Jain R, Singh H. Supply chain efficiency in horticultural crops. *International Journal of Supply*

- Chain Management. 2015;4(3):34-39.
13. Joshi PK, Gulati A, BIRTHAL PS. Agricultural diversification in South Asia. New Delhi: Academic Foundation; 2007.
  14. Kachroo J, Sharma A. Price spread analysis of vegetables in India. *Agricultural Economics Research Review*. 2012;25(1):95-102.
  15. Kumar P, Sharma R. Post-harvest losses and marketing constraints in vegetables. *Indian Journal of Horticulture*. 2018;75(4):567-572.
  16. Meena GL, Dudi A. Constraints in marketing of fruits and vegetables. *Indian Journal of Agricultural Marketing*. 2014;28(2):45-52.
  17. Mishra A, Kumar S. Supply chain analysis of horticultural crops in India. *Journal of Agribusiness in Developing Countries*. 2020;10(2):89-101.
  18. National Horticulture Board. Indian horticulture database. New Delhi: Ministry of Agriculture, Government of India; 2022.
  19. Patel RK, Singh A. Marketing efficiency of chilies in Gujarat. *International Journal of Agricultural Marketing*. 2013;2(1):23-30.
  20. Pingali P. Agricultural growth and economic development. In: Evenson RE, Pingali P, editors. *Handbook of Agricultural Economics*. Vol. 3. Amsterdam: Elsevier; 2007. p. 2155-2202.
  21. Reddy AA, Bantilan MCS. Competitiveness and supply chain efficiency. *Agricultural Economics Research Review*. 2012;25(1):67-78.
  22. Singh DK, Singh R. Marketing channels and constraints in vegetable marketing. *Indian Journal of Agricultural Economics*. 2014;69(3):412-420.
  23. Singh P, Singh N. Value chain analysis of chilies in India. *International Journal of Horticulture*. 2019;9(1):15-22.
  24. Srivastava SK, Rai KN. Economics of chili production in eastern India. *Journal of Agricultural Economics Research*. 2017;30(2):56-63.
  25. Thakur DS, Sharma KD. Price spread and marketing efficiency of vegetables. *Agricultural Marketing Review*. 2015;29(1):61-70.
  26. Tripathi A, Prasad R. Constraints in supply chain of horticultural produce. *Indian Journal of Agricultural Sciences*. 2018;88(5):745-750.
  27. Verma AR, Yadav JP. Post-harvest management and marketing of chilies. *Journal of Horticultural Sciences*. 2016;11(2):120-126.
  28. World Bank. *Agricultural supply chain development report*. Washington (DC): World Bank; 2020.
  29. Yadav D, Sharma S. Marketing efficiency of vegetable crops in Madhya Pradesh. *Journal of Agricultural Economics*. 2018;73(3):345-352.
  30. Yadav R, Singh K. Economics of vegetable cultivation and marketing in Uttar Pradesh. *Indian Journal of Agricultural Marketing*. 2016;30(1):55-63.
  31. Zalkuwi J, Singh R, Singh OP. Analysis of vegetable marketing system in India. *Journal of Agricultural Science*. 2014;6(9):45-52.
  32. National Sample Survey Office. *Situation assessment survey of agricultural households*. New Delhi: Government of India; 2019.
  33. Directorate of Economics and Statistics. *Agricultural statistics at a glance*. New Delhi: Ministry of Agriculture, Government of India; 2021.
  34. National Horticulture Mission. *Horticulture statistics division report*. New Delhi: Ministry of Agriculture; 2020.