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Marketing Efficiency and Marketing Constraints of Different Egg Marketing Channels in East Godavari District of Andhra Pradesh, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

In this investigation, an attempt has been made to analyze the marketing efficiency of different egg marketing channels and marketing constraints faced by producers and marketing intermediaries in the East Godavari district of Andhra Pradesh. The investigation is based on primary and secondary data collected from 90 poultry farmers and 30 marketing intermediaries from two randomly selected mandals of East Godavari district by interviewing the individual respondents during 2018-19. The respondents were selected using multistage random sampling techniques. In the study area, four predominant marketing channels were identified. Channel-I: Producer- Wholesaler- Retailer-Consumer; Channel-II: Producer- Wholesaler-Consumer; Channel-III: Producer- Retailer-Consumer; Channel-IV: Producer- Commission agent- Trader of other states. The results revealed that the price spread was less in channel-II (Rs.110) as compared to channel-I (Rs.150) and

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channel-III (Rs.120). Channel-II was found to be comparatively more efficient (3.63) than that channel-I (2.66) and channel-III (3.45). High price fluctuation, exploitation of intermediaries, seasonal nature of consumption, and perishability of eggs were the primary marketing problems faced by the producers. The major marketing problems faced by marketing intermediaries were high price fluctuation, seasonal consumption, perishability of eggs, high marketing cost and lack of grading at the farm level. It was observed from the marketing margin analysis that egg marketing was a profitable business in the study area. The findings, therefore, suggest that there is a broad scope for the development of layer farming and egg marketing in the district. The development of this enterprise may be helpful in employment generation and poverty alleviation in the district as well as the state.

Keywords: Eggs; marketing channels; marketing efficiency; marketing constraints; price spread.

1. INTRODUCTION

The poultry (layer) sector has a significant role in Indian Economy as it generates additional income and employment in the country. India is now the world's third-largest egg producer and seventh-largest chicken meat producer. In 2020-21, the country's total egg production was around 122.11 billion eggs. The per-capita availability reached 90 eggs per year during the same period. Gross Value Added at current prices from eggs in 2018-19 was estimated to be Rs. 32,844 crores in the country. Andhra Pradesh (19.1%), Tamil Nadu (18.2%), Telangana (13.2%), West Bengal (8.3%), and Haryana (5.9%) were the top five egg-producing states. They accounted for 65 per cent of the country's total egg production.

Andhra Pradesh produces one-fifth of the country's eggs, and the poultry sector accounts for roughly half of the state's meat production. The poultry sector contributes Rs.8217.00 crore to the Gross State Domestic Product (GSDP), about 20% of the GSDP contribution from the livestock sector, with Rs.2958 crore from eggs. East Godavari district alone produced 29.9% of the total egg production of the state and 26.1% of the total poultry population during 2019-20 [1].

Agriculture marketing is essential for increasing demand and output and accelerating economic development. In terms of agricultural development, it is the most significant multiplier. Due to production surpluses created by the transition from traditional to modern agriculture, marketing emerges as the main problem as the efficient use of resources and output management result from an effective agricultural marketing system. It also guarantees higher income levels for the producers by lowering the number of intermediaries or limiting the commission on marketing services and their unethical actions when marketing their goods. An efficient system ensures that producers receive higher prices for their goods and encourages them to use their surplus funds to adopt new technology that will boost output and efficiency [2,3].

Despite rapid growth in the poultry industry in East Godavari District, the intermediaries often exploited the producers as they dominated the market. As a result, there was a significant price difference between the producer's and consumers' prices, leading to great dissatisfaction among producers. The present investigation has been conducted to identify the different egg marketing channels, to estimate the marketing cost, margins, price spread and marketing efficiency for different egg marketing channels and to identify the marketing constraints of poultry layer farms in the study area.

2. METHODOLOGY

2.1 Sampling Design

Andhra Pradesh state was selected for the study as it is the largest egg-producing state in the country, accounting for 19.1 per cent of total egg production. Within the state, East Godavari district was selected as it alone produces 29.9 per cent of total egg production in the state. Out of 64 mandals, two mandals, namely Peddapuram and Anaparthi were randomly selected for the present investigation. From two selected mandals 15 marketing intermediaries and 45 poultry farms from the villages under these two selected mandals were randomly selected, constituting a total sample of 90 poultry farms and 30 marketing intermediaries.

2.2 Data Collection

The required primary data was collected from the sample farmers and marketing intermediaries by

personally interviewing the respondents using a pre-tested schedule to evaluate the specific objectives designed for the analysis. The secondary data about egg production was collected from "The Department of Animal Husbandry", East Godavari District. The data regarding daily egg prices were obtained from the National Egg Coordination Committee (NECC) website.

2.3 Analytical Tools and Techniques

2.3.1 Marketing costs, margins, price spread and marketing efficiency

Marketing costs: Marketing costs are the expenses required to bring goods and services from the producer to the consumer. These costs differ depending on the channels a specific product passes through. For example, packaging costs, transportation, weighing, loading, unloading, damages, spoilage, etc.

$$\mathbf{Tc} = \mathbf{C_p} + \sum_{\mathbf{i=1}}^{\mathbf{n}} \mathbf{M_{ci}}$$

Where, T_c is the total cost of marketing; C_p is the cost incurred by the producer in the marketing of his produce; M_{ci} is marketing costs incurred by the middlemen or traders.

Marketing margin: The difference between the Price charged and received by a single marketing intermediary, such as a single retailer, or any form of the marketing agency, such as retailers or assemblers, or any combination of marketing agencies, such as the marketing system as a whole, is referred to as the margin.

Absolute marketing margin of i^{th} middlemen (A_{mi}) =$P_{Ri\ (-)}$ [P_{Pi}+ C_{mi}]

Where, P_{Ri} is the selling price of the i^{th} middlemen; P_{Pi} is the purchase price of i^{th} middlemen; C_{mi} is the marketing Cost incurred by i^{th} middlemen.

Price spread: Price spread is the difference between the Price paid by the consumer and the Price received by the farmer. It involves various costs incurred by various intermediaries and their margins.

$$\mathbf{Price\ spread} = \mathbf{P_c} - \mathbf{P_f}$$

Where, P_c is the Price paid by the consumer; P_f is the Price received by the producer.

Producer's share in consumer's rupee: The Price received by the farmer expressed as a percentage of the retail Price (i.e., the Price paid by the consumer).

$$\mathbf{PS} = \frac{\mathbf{PF}}{\mathbf{PP}}\mathbf{X100}$$

Where, PS is Producer's share in the consumer's rupee, PF is the Price received by the producer; PP is the Price paid by the consumer.

Marketing efficiency: Marketing efficiency is essentially the degree of market performance. It is the competence with which a market structure performs its designated function. It is calculated using the formula;

$$\mathbf{MME} = \frac{\mathbf{PF}}{\mathbf{MC} + \mathbf{MM}}$$

Where, MME is the Modified measure of marketing efficiency; PF is the Price received by the producer; MC is Marketing cost; MM is the Marketing margin.

Garrett ranking technique: This study used Garrett's Ranking Technique to identify the marketing constraints in poultry production based on their importance. The order of the merit given by the respondents is converted into per cent position using the formula:

$$\mathbf{Percent\ position} = \frac{\mathbf{100\ (Rij - 0.5)}}{\mathbf{N_j}}$$

Where, R_{ij} is the rank given for the i^{th} variable by j^{th} respondent; N_j is the number of variables ranked by j^{th} respondents.

The per cent position of each rank was converted to scores by referring to the Garrett table [4].

3. RESULTS AND DISCUSSION

Under this section, different components concerning the marketing of eggs, such as marketing channels for disposal of eggs, marketing cost, marketing margins, price spread, marketing efficiency and marketing constraints, are briefly discussed.

Marketing channels for egg disposal: These are how the products reach the end user, the consumer. In the study area, four predominant marketing channels were identified and were:

Channel-I: Producer- Wholesaler- Retailer-Consumer
Channel-II: Producer- Wholesaler-Consumer
Channel-III: Producer- Retailer- Consumer
Channel-IV: Producer- Commission agent-Trader of other states.

Channel-wise marketing costs, marketing margins, and price spread: The details of marketing costs and marketing margins for different channels in the study area are discussed below:

Channel-I: The marketing costs per 100 eggs involved in the disposal of eggs through channel-I are listed in Table 1. The Price received by the producer per 100 eggs was Rs. 400, which accounted for a 72.72 per cent share of the consumer's rupee. The total marketing cost incurred by the wholesaler was Rs. 27.66, which accounted for a 5.02 per cent share of the consumer's rupee. Rent for the shop (0.19%), labour charges (0.83%), transportation (1.90%), packing charges (1.05%), electricity charges (0.11%), the value of breakage of eggs (0.92%) were the cost components incurred by the wholesaler. The total marketing cost incurred by the retailer was Rs.20.26, which accounted for a 3.68 per cent share of consumer's rupee. Rent for the shop (0.17%), transportation (2.24%), labour charges (0.45%), and value of breakage of eggs (0.80%) were the cost components incurred by retailers. The marketing margin of the wholesaler was Rs.36.34, which constituted 6.60 percentage shares in the consumer's rupee, and the marketing margin of the retailer was Rs.65.74, estimated to be 11.95 percentage shares in the consumer's rupee. The price spread in marketing channel-I was Rs.150.

Channel-II: The marketing costs per 100 eggs involved in the disposal of eggs through channel-II are presented in Table 1. The Price received by the producer per 100 eggs was Rs.400, which accounted for a 78.43 per cent share of the consumer's rupee. The total cost incurred by the wholesaler in channel-II was Rs.27.66, making 5.42 percentage shares in the consumer's rupee. Rent for the shop (0.20%), labour charges (0.90%), transportation (2.05%), packing charges (1.13%), electricity charges (0.12%), loss due to breakage of eggs (1.00%) were the cost components incurred by the wholesaler. The marketing margin of the wholesaler was Rs.82.34, which accounted for a 16.14 per cent share of the consumer's rupee. The price spread in marketing channel-II was Rs.110.

Channel-III: The marketing costs per 100 eggs involved in the disposal of eggs through channel-III are given in Table 1. The Price received by the producer per 100 eggs was Rs.415, which accounted for a 77.57 per cent share of the consumer's rupee. The total cost incurred by retailers was Rs. 21.57, which accounted for a 4.03 per cent share of consumers' rupee. Rent for the shop (0.18%), transportation (2.52%), labour charges (0.48%), and loss due to breakage of eggs (0.84%) were the cost components incurred by retailers. The marketing margin of retailers was Rs.98.43, an 18.39 per cent share of consumer's rupee. The price spread in marketing channel-III was Rs.120.

Channel-IV: In addition to the above marketing channels, another marketing channel was also identified in the study area through which eggs were exported from the East Godavari district of Andhra Pradesh to other states like West Bengal, Bihar, Assam and Orissa through commission agents. The marketing costs and margins involved in the disposal of eggs through this marketing channel are listed in Table 2. Due to the restriction of the study area, data was collected until the produce reached the trader of other states. Table 1 shows that the total marketing costs incurred by commission agents per 100 eggs were Rs.9.95. Insurance charges (Rs.0.87), loading charges (Rs.2.5), rent for the shop (Rs.1.02), and packing charges (Rs.5.56) were the cost components incurred by commission agents. The trader of the other state bore fright (transportation) charges. The marketing margin of retailers was Rs.22.05 per 100 eggs. The commission agent sale price or the purchase price of the trader (other states) was Rs.432.00 per 100 eggs.

Marketing costs, margins and price spread of all the marketing channels have been presented in Table 1. The results revealed that the price spread was more in channel-I due to the involvement of more intermediaries than channel-II and channel-III. Producers' share in the consumer rupee was comparatively more, and the price spread was comparatively less in channel-II. This showed that channel-II was comparatively more efficient than the channel I and III. However, most of the produce was disposed through the channels I and IV, which were the main marketing channels prevailing in the area under investigation. Farmers preferred these channels as the sale of produce was easy, and there was timely payment in these two channels.

Table 1. Marketing cost, margin and Price spread for three marketing channels of eggs in the study area (rupees per 100 eggs)

Sl. No	Particulars	Marketing of eggs		
		Channel-I	Channel-II	Channel-III
1.	**Producer**			
	Net Price received by a producer	400.00	400.00	415.00
2.	**Wholesaler**			
	a) Purchase price	400.00	400.00	…..
	b) Marketing cost	27.66	27.66	…..
	c) Selling price	464.00	510.00	…..
	d) Margin	36.34	82.34	…..
3.	**Retailer**			
	a) Purchase price	464.00	…..	415.00
	b) Marketing cost	20.26	…..	21.57
	c) Selling price	550.00	…..	535.00
	d) Margin	65.74	…..	98.43
4.	**Consumer purchase price/Retailer selling price**	550.00	510.00	535.00
5.	**Total cost incurred**	47.92	27.66	21.57
6.	**Price Spread**	150.00	110.00	120.00
7.	**Producer share in consumer rupee**	72.72	78.43	77.57

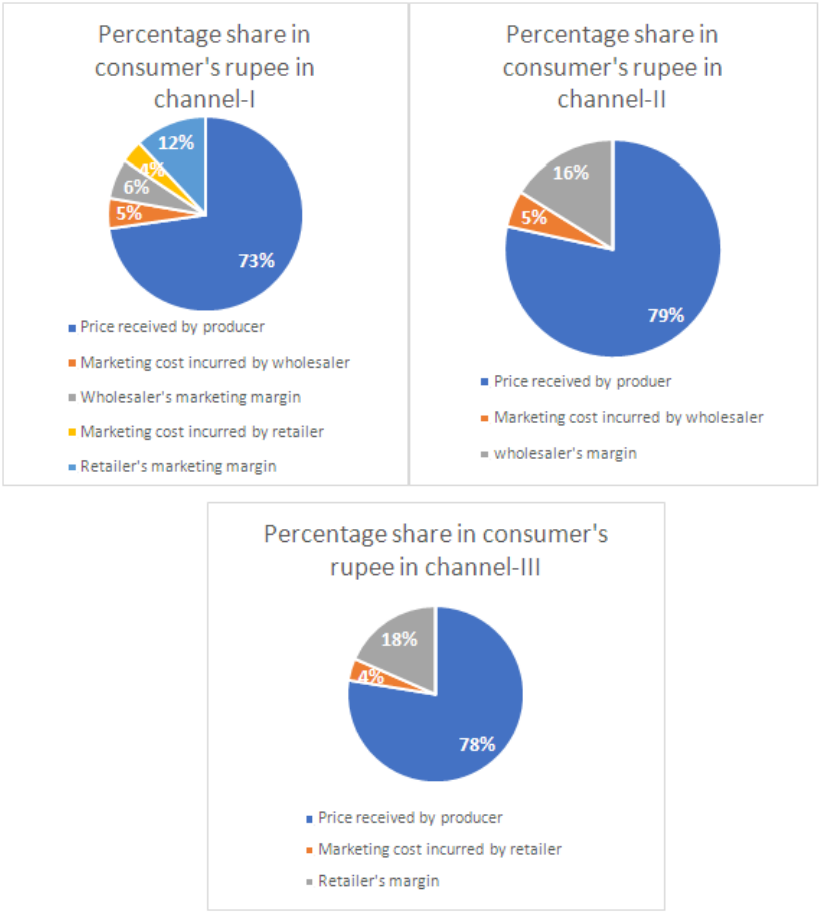

Fig. 1. Price spread in the marketing of eggs in channel-I, II and III

Table 2. Marketing costs and margins in channel-IV (per 100 eggs)

Sl. No.	Particulars	Amount (Rupees per 100 eggs)
1.	Net Price received by producer/commission agent purchase price	400.00
2.	Marketing costs incurred by commission agents	
a.	Insurance charges	0.87
b.	Loading charges	2.50
c.	Rent for shop	1.02
d.	Packing charges	5.56
e.	Commission agent margin	22.05
f.	Total marketing costs	9.95
3.	Commission agent sale price/ trader (of other state) purchase price	432.00

Hence in the farmer's point of view channels I and IV were the most efficient, and the producer's share in the consumer rupee could be increased by reducing marketing costs and margins in these channels. In this way, consumer prices could be reduced, and consumers would also be benefited.

Value added to eggs by different stakeholders in the study area: The values added to the produce due to marketing functions by different stakeholders in the study area are discussed in the following sub-sections.

Value addition to eggs by wholesalers in the study area: This section discusses different activities carried out by wholesalers in the value addition of eggs. During the survey, it was observed that sometimes small producers acted as wholesalers, and wholesalers sometimes worked as retailers. The value added to eggs by wholesalers in two marketing channels of the study area on account of transportation and storage are presented in Table 3, which shows that the purchase price of eggs was the same: Rs. 400 per 100 eggs in both marketing channels I and II. Selling prices were Rs.464 and Rs.510 in channels I and II, respectively. The value additions (marketing margin) were Rs. 64 and Rs. 110, and net margins received by wholesalers were Rs. 36.34 and Rs. 82.34 in marketing channels I and II. Channel II marketing eggs was more efficient than channel I to the wholesaler.

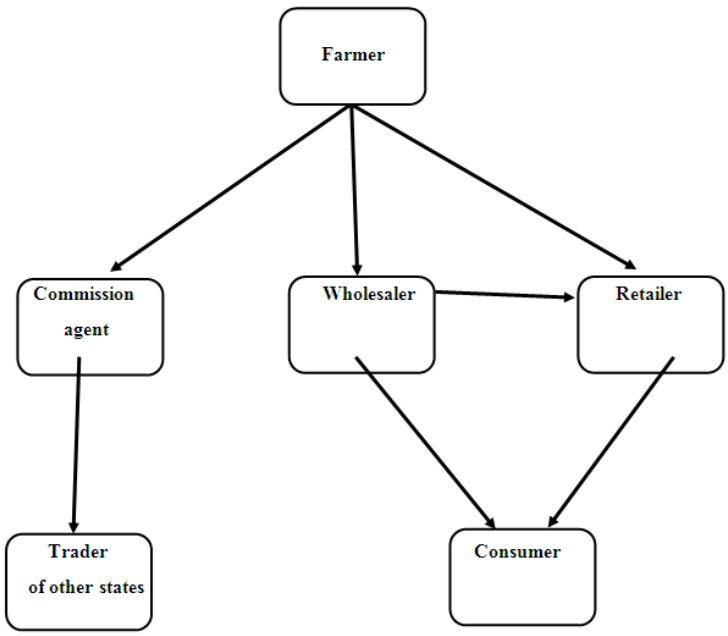

Fig. 2. Map showing disposal patterns of eggs in the study area

Table 3. Value added to eggs by wholesalers in marketing channels I and II of the study area

Sl. No	Particulars	Rs/100 eggs	
		Marketing channels	
		I	II
1.	Purchase price of eggs	400	400
2.	The sale price of eggs	464	510
3.	Value addition	64	110
4.	Net margin	36.34	82.34

Table 4. Value added to eggs in Marketing channel I and III by retailers in the study area

Sl. No	Particulars	Rs/100 eggs	
		Marketing channels	
		I	III
1.	Purchase price of eggs	464	415
2.	The sale price of eggs	550	535
3.	Value addition	86	120
4.	Net margin	65.74	98.43

Value addition to eggs by retailers: Retailers were the final actors in the value chain of eggs in the study area. The important role and activities of retailers are discussed below:

Values added to eggs by retailers due to transportation and storage in different marketing channels of the study area are presented in Table 4. A perusal of the table revealed that purchasing prices of eggs by retailers were Rs.464 and Rs.415 from the corresponding source, and the sale prices were Rs.550 and Rs.535 in the marketing channels I and III of the study area, respectively. The values added were Rs.86 and Rs.120, and net margins received by retailers were Rs.65.74 and Rs.98.43 in channels I and III, respectively. Marketing channel III was more efficient for retailers than the channel I in the study area.

Marketing efficiency: The competence with which a market structure performs its designated function is termed marketing efficiency. It is the measure of market performance. The marketing efficiency for the three marketing channels was estimated using Acharya's method. The marketing efficiency values for three marketing channels are listed in Table 5.

The results revealed that the net Price received by the producer was Rs.400 per 100 eggs in channel-I, and the consumer's Price was Rs.550 per 100 eggs. The total marketing costs and margins incurred in channel-I were Rs.150 per 100 eggs. The marketing efficiency in channel-I was 2.66. In channel-II, the net Price received by the producer was Rs.400 per 100 eggs, and the consumer's purchase price was Rs.510. The total marketing costs and margins incurred in channel-II were Rs.110 per 100 eggs. The marketing efficiency in channel-II was 3.63. In channel-III, the net Price received by the producer was Rs.415 per 100 eggs, and the consumer's purchase price was Rs.535 per 100 eggs. The marketing costs and margins incurred in channel-III were Rs.120 per 100 eggs. The marketing efficiency in channel-III was 3.45.

The analysis showed that the price spread was comparatively high in channel-I and low in channel-II. Marketing efficiency and producer's share in consumers' rupee were the highest in channel-II and the lowest in channel-I. All these indicated that marketing channel-II was comparatively more efficient than the channel that of channel-III and channel-I [5].

Table 5. Marketing efficiency of eggs in different channels in the study area

Sl. No	Particulars	Marketing channels		
		Channel-I	Channel-II	Channel-III
1.	Net Price received by the producer	400	400	415
2.	Marketing cost + marketing margin	150	110	120
3.	Consumer's Price	550	510	535
4.	Marketing efficiency	2.66	3.63	3.45

3.1 Constraints in the Marketing of Eggs

Table 6. Mean Garrett score of constraints faced by producers in marketing

Sl. No	Particulars	Garrett Mean Score	Rank
1.	High price fluctuation	56.53	I
2.	Exploitation by middlemen	55.24	II
3.	Seasonal nature of consumption	48.38	III
4.	Perishability or less shelf-life of the product	39.83	IV

Table 7. Ranking of constraints faced by intermediaries in the marketing of eggs

Sl. No.	Particulars	Mean Garrett Score	Rank
1.	High price fluctuation	62.16	I
2.	Seasonal nature of consumption	60	II
3.	Perishability or less shelf-life of the product	50.5	III
4.	High cost of marketing	41.5	IV
5.	Lack of grading at farm level	35.83	V

3.1.1 Constraints faced by producers in the marketing of eggs

The survey regarding the marketing problems faced by the layer farmers and the constraints of the middlemen was conducted in the area under investigation. The problems were ranked using Mean Garrett Score, and the results are presented in Table 6.

The table depicted that the main constraint in marketing was high price fluctuation, with a Garrett mean score of 56.53. The exploitation by intermediaries (55.24) got the second rank in orders of constraints faced by the farmers, followed by the Seasonal nature of consumption (48.38), perishability or less shelf-life of eggs (39.83).

3.1.2 Constraints faced by intermediaries in the marketing of eggs

The constraints in the marketing of eggs, along with the Garrett Mean Score and Garrett Ranks, are represented in Table 7.

The table revealed that the main constraint faced by middlemen was high price fluctuation in the marketing of eggs having a Garrett Mean Score of 62.16. The other marketing constraints were Seasonal nature of consumption, perishability or less shelf-life of eggs, high marketing cost and lack of grading at the farm level, with Mean Garrett Scores of 60, 50, 41 and 35, respectively. These results follow the findings of Islam, 2003, Hymajyothi et al. 2010, Chandrakumarmangalam and Vetrivel, 2012 and Omar et al. 2013 [6-8].

4. CONCLUSION

The results revealed that the price spread was less in channel-II (Rs.110) as compared to channel-I (Rs.150) and channel-III (Rs.120). Channel-III was found to be comparatively more efficient (3.63) than that channel-I (2.66) and channel-III (3.45). The results of the Garrett ranking technique revealed that high price fluctuation, exploitation of intermediaries, seasonal nature of consumption, and perishability of eggs were the major marketing constraints faced by the producers. The results further revealed that the major marketing constraints faced by marketing intermediaries were high price fluctuation, seasonal consumption, perishability of eggs, high marketing cost and lack of grading at the farm level in the study area. Poultry farming is an economically viable business in the state. Hence, the expansion of layer farming and egg marketing is necessary for the creation of employment both in rural and urban areas. Government, private entrepreneurs and NGOs can play an important role in developing egg production and marketing in the district and the state.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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