Analysis of Marketing Channels, Price Spread and Costs of Wheat in Junagadh District of Gujarat, 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.

Original Research Article

ABSTRACT

The purpose of this study was to estimate the price spread, marketing margin and marketing cost of wheat in the Junagadh district. The present study was carried out in Junagadh district. Multi-stage sampling technique was adopted as per the objective of study and total 120 farmers were selected for the study purpose. Data were gathered through in-person interviews with farmers, typically conducted on their farms, using a structured questionnaire. For the wheat, three main marketing channels were identified: Producer-consumer (Channel I), Producer-village trader-consumer (Channel II), and Producer-wholesaler-retailer-consumer (Channel III). With the lowest overall cost, margin, and price spread, Channel-I earned the largest producer's share in terms of consumer rupees. Whereas Channels II and III, being the least efficient.

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1. INTRODUCTION

The most extensively grown staple crop in the world, wheat has been farmed since prehistoric times and is consumed in various forms by over a billion people worldwide [1]. It is crucial to the agricultural and food security missions of the world [2]. India stands as a major global wheat producer, contributing to a substantial 20% of the world's wheat output [3-8]. Gujarat is a thriving state in the agricultural sector, with high levels of gross production, productivity per hectare, adoption of innovations and technologies, crop diversification, introduction of new crops, and post-harvest technology and management. Gujarat has a diversified cropping pattern that includes cash crops, oil seeds, food grains and pulses, as well as food grains and pulses, and cash crops. Major food grain crops in Gujarat include wheat, paddy, bajara, maize, and others [9].

The arrangements for marketing and the expansion of markets have to be made only for the surplus quantity available with the farmers, and not for total productions. The rate at which agricultural production expands determines the pace of agricultural development, while the growth in the marketable surplus determines the pace of economic developments [10].

Stability in price of wheat has remained an important goal for the planners and policy makers. In recent years, it has received considerable attention of researchers due to the high inflation of food items. Most of the study examined producer's share in consumer's rupee, the marketing cost and marketing margins in foodgrain marketing. Marketing cost depends on several factors, including the type of commodity, nature of functioning necessary in marketing and the distance of the marketing place from the farm [11-14]. On small farm wheat production is taken for consumption to family and surplus quantity is sold in market. Medium farm wheat grower is growing the wheat crop for both consumption and marketing purposes. The large farm wheat grower is taking higher production for marketing. India is the second largest producer of wheat in the world [15,16].

Researchers have discovered that farmers sell their harvested wheat to village traders, wholesalers, retailers, or consumers directly. It is significant to remember that farmers store their produce for their own purposes, such as personal consumption or seed. With a particular emphasis on the distinctions between marketable and marketed excess, the purpose of this article was to examine wheat disposal practices and marketing effectiveness across a different farmer size. The goal of the study is to comprehend how various sales channels, along with the expenses, profit margins, and price spreads that go along with them, affect the producer's part of the rupee that consumers spend. The study compares the effectiveness of several distribution channels to determine which marketing tactics are most advantageous for wheat growers, with a focus on the advantages of more straightforward distribution methods for increasing producer profits.

2. METHODOLOGY

2.1 Source of Data

The present study was carried out in Junagadh district located on the Kathiawar peninsula in southwestern Gujarat with the city Junagadh as its administrative headquarters.It is located at 20° 47' N and 21° 45' N latitude and 70° 17' E and 70° 55' E longitudes.The analysis obtained from primary data collected with the structured questionnaire. A total number of 120 farmers were randomly selected and interviewed. Total marketing cost and price spread incurred by the producer and various middlemen were calculated by using different formula.

2.2 Statistical Tools

2.2.1 Marketable surplus

The marketable surplus is the residual left with the producer/farmer after meeting his requirement for the family consumption, for need for seeds payment to labour in kind, *etc.*

$$MS = P\text{-}C \qquad \ldots\ldots(1)$$

Where,

MS = Marketable surplus
P = Total production
C = Total requirement

2.2.2 Total cost of marketing

The total cost incurred on marketing of wheat by the farmers and the intermediaries involved in the process of marketing was calculated as:

$$C = C_F + C_{m1} + C_{m2} + C_{m3} + _____ + C_{mn} \quad \ldots\ldots(2)$$

Where,

C = Total cost of marketing.
C_F = Cost incurred by the producer in marketing of wheat
Cmi = Cost incurred by the ith middlemen in the marketing of wheat.

2.2.3 Marketing margin

The absolute and percentage margin of middle men involved in the marketing of wheat was be calculated as:

Absolute margin of ith middlemen (A_{mi}):

$$= P_{ri} - (P_{pi} + C_{mi}) \quad \ldots\ldots (3)$$

Percentage margin of ith middleman:

$$= P_{ri} - (P_{pi} + C_{mi}) \times 100 / P_{ri} \quad \ldots\ldots(4)$$

where,

P_{ri} = Sale price of the ith middlemen
P_{pi} = Purchase price of the ith middlemen
C_{mi}= Marketing cost incurred by ith middlemen

2.2.4 Price-Spread

The producer's share, marketing costs and margins of different middle-men in the marketing of wheat was worked out for the adopted channels using the formula:

$$P_s = P_f \times 100 / P_c \quad \ldots\ldots(5)$$

where,

P_s = Producer's share in consumer's rupee
P_f = Price of the produce received by the farmer
P_c = Price of the produce paid by the consumer

2.2.5 Marketing efficiency (ME)

Ratio of Price received by the farmer to sum of the marketing cost and marketing margins is a measure of efficiency. Higher value of marketing efficiency (ME) indicates higher efficiency and vice-versa. The ratio of the total value of goods marketed to the total marketing cost is used as a measure of efficiency [17].

$$ME = FP / MC + MM \quad \ldots\ldots(6)$$

Where,

ME = Index of Marketing Efficiency
FP = Price received by the farmer
MC = Marketing Cost
MM = Marketing Margin

3. RESULTS AND DISCUSSION

Primary data was collected with the well preparedquestionnaire and 120 farmers were selected andinterviewed.In the study area three marketing channels were identified through which wheat inthe study area were marketed from the producers to the consumers, which was:

Channel-I: Producer – Consumer
Channel-II: Producer –Village trader – Consumer
Channel-III: Producer – Wholesaler – Retailer – Consumer

3.1 Disposal Pattern, Marketable Surplus and Marketed Surplus of Wheat

The data presented in Table 1 outlines the disposal patterns of wheat across various farmer size. It can be observed that, on an overall basis, total production of wheat on sampled farms was 8970.093 quintal. At the overall level, out of total produce, 2422.21 quintal was utilized for home consumption, 304.83 quintal was utilized for wage purpose, 260.40 quintal was lost for damage and 396.98 quintal was used for reserved seed. The results also revealed that the larger size of farmers have the higher home consumption, wage purpose and damage. The data reveals that the overall marketable surplus of wheat production was 5585.66 quintal. This surplus across different farm sizes was, ranging from 508.44 quintals in marginal farms, 1154.09 quintal in small farms, 2045.93 quintal in medium farms and 1877.19 quintal in large farms, likely because wheat was consumed in large quantities as a cereal. However, the marketed surplus was 2461.64 quintal, on overall. That indicated that small farmers sell a smaller proportion of their production, possibly due their personal needs, whereas medium farms might retain more for future sales or other purposes.

Table 1. Marketable surplus and marketed surplus of wheat n = 120

Particulars	Size of farmers (qty. in quintal)				Total
	Marginal	**Small**	**Medium**	**Large**	
Total Production	749.7	1764.67	3181.36	3274.35	8970.09
(a) Home consumption	168.68	397.58	816.33	1039.60	2422.21
(b) Wage Purpose	28.26	90.70	82.39	103.46	304.83
(c) Damage	9.37	41.11	99.89	110.01	260.40
(d) Reserved for seed	34.93	81.17	136.79	144.07	396.98
Total (a to d)	241.25	610.57	1135.42	1397.16	3384.42
Marketable surplus	508.44	1154.09	2045.93	1877.19	5585.66
Marketed surplus	276.56	584.63	1010.39	590.03	2461.64

3.2 Disposal Pattern of Wheat

Table 2 presents the breakdown of the total marketed surplus of wheat based on the agency through which it was sold. This data provides insights into the distribution channels utilized by farmers to sell their wheat produce. By analyzing agency-wise sales, researchers could gain a comprehensive understanding of the dynamics of wheat marketing, including the preferences and strategies adopted by farmers in response to market conditions and economic considerations. On an overall basis, the total marketed surplus of wheat was observed to be 2461.64 quintals. Out of this, the highest produce 848.09 quintal was sold through APMC, followed by village trader 807.61 quintal, consumer 577.62 quintal, wholesaler 121.03 quintal and retailers 107.26 quintal by sample wheat grower.

3.3 Marketing Costs Incurred by Wheat Grower

Table 3 revealed that the marketing costs per quintal were highest when selling through wholesalers and retailer was Rs. 65.19, followed by village trader Rs. 16.19 and producer Rs. 57.19. Further analysis revealed that at the village trader level, transportation cost was the highest share of the total marketing costs which was Rs. 28.06, followed by loading and unloading costs Rs. 11.25, damage and other cost Rs. 7.39, weighing costs Rs. 4.29, and

packaging costs Rs.6.2. Interestingly, there was not much variation in marketing costs incurred by producers when selling in distant markets through wholesalers and retailer.

3.4 Marketing Costs Incurred by Different Middlemen

The data presented in Table 4 highlights the marketing costs incurred by different middlemen in the marketing of wheat. It was evident that wholesalers bear the highest average total marketing cost per quintal of wheat Rs. 122.3, followed by, retailers Rs. 117.68 and village traders Rs. 104.45. Wholesalers incurred the highest costs in commission Rs. 42.05, which significantly contributed to their total marketing costs. Transportation costs were similar among all three groups, with retailers spending Rs. 40.1, followed by wholesalers Rs. 39.7 and village traders Rs. 36.9.

3.5 Marketing Cost, Margin and Price Spread in Marketing of Wheat

The marketing costs, margins and price spread in the marketing of wheat through different channels have been presented based on the data collected from farmers and market functionaries in Table 5. Each channel has distinct components contributing to the producer's selling price, net price,

Table 2. Disposal pattern of wheat by farmers n = 120

Particulars	Size of farmers (qty. in quintal)				
	Marginal	**Small**	**Medium**	**Large**	**Total**
Consumer	55.17	133.53	239.46	149.45	577.62
Village trader	98.40	175.62	343.53	190.05	807.61
APMC	82.25	205.32	339.49	221.02	848.09
Wholesaler	29.03	32.73	43.44	15.81	121.03
Retailer	11.69	37.41	44.45	13.68	107.26
Total marketed surplus	276.56	584.63	1010.39	590.03	2461.64

Table 3. Marketing costs incurred by wheat grower n = 120

Particulars (Rs./quintal)	Producer	Village trader	Wholesaler/retailer
Weighing cost	4.29	5.26	6.33
Packing Charges	6.2	6.6	6.3
Loading and Unloading Charges	11.25	12.08	14.41
Transportation Cost	28.06	27.65	28.75
Damage and other cost	7.39	8.6	9.4
Total Marketing Cost	57.19	60.19	65.19

Table 4. Marketing costs incurred by different middlemen n=120

Particulars (Rs./quintal)	Village trader	Wholesaler	Retailer
Weighing Charge	12.4	16.28	15.32
Transportation	36.9	39.7	40.1
Loading and Unloading Charge	13.39	12.9	11.07
Packing charges	2.06	2.76	2.5
Commission	30	42.05	39.33
Damage/Spoilage	5.9	5.4	5.2
Others	3.8	3.21	4.16
Total Marketing Cost	104.45	122.3	117.68

Table 5. Cost, margin and price spread in marketing of wheatn=120

Particulars (Rs./quintal)	Channel-I	Channel-II	Channel-III
Producer's selling price	2300	2380	2545
Producer's net price	2242.81	2319.81	2479.81
Market cost			
Producer	57.19	60.19	65.19
Village trader		104.45	
Wholesaler			122.3
Retailer			117.68
Total Cost	57.19	164.64	305.17
Market margin			
Village trader		110	
Wholesaler			112.47
Retailer			170
Total Margin	0	110	282.47
Price Spread (cost + margins)	57.19	274.64	587.64
Consumer's purchase price	2300	2594.45	3067.45
Producer's share in consumer's rupee (%)	97.51	89.41	80.84

market cost and market margin. In Channel-I, the producer's selling price was Rs. 2300 per quintal, with a net price of Rs. 2242.81. The market cost was relatively low at Rs. 57.19. The consumer's purchase price in this channel was Rs. 2300, resulting in the producer's share in the consumer's rupee being significantly high at 97.51%. Channel-II exhibited a slightly higher producer's selling price of Rs. 2380 with a net price of Rs. 2319.81 and the producer's share in the consumer's rupee was 89.41%.

Channel-III showed the highest values among the three channels. The producer's selling price was Rs. 2545 with a net price of Rs. 2479.81 and

total margin was Rs. 282.47. This resulted in a price spread of Rs. 587.64 with the producer's share in the consumer's rupee being the lowest at 80.84%.

Channel-I had the lowest total cost, margin and price spread with the highest producer's share in the consumer's rupee, while Channel-III exhibited the highest costs, margins and price spread with the lowest producer's share in the consumer's rupee. This analysis indicates that simpler distribution channels (Channel-I) were more beneficial to producers in terms of the share they retained from the consumer's purchase price.

3.6 Marketing Efficiency

Table 6. Marketing efficiency of wheat n=120

Particulars	Channel-I	Channel-II	Channel-III
Consumer's price (Rs. /q)	2300	2594.45	3067.45
Producer's net price (Rs. /q)	2242.81	2319.81	2479.81
Marketing cost (Rs. /q)	57.19	164.64	305.17
Marketing margin (Rs. /q)	0	110	282.47
Price spread (Rs. /q)	57.19	274.64	587.64
Marketing efficiency	39.21	8.44	4.21

The table displayed the marketing efficiency of wheat across three different channels. Channel-I exhibited the highest marketing efficiency with a value of 39.21 %, while Channel-II and Channel-III had efficiencies of 8.44% and 4.21%. The producer's net price was highest in Channel-I at Rs. 2242.81, whereas Channel-II and Channel-III had net prices of Rs. 2319.81 and Rs. 2479.79. The marketing cost was also lowest in Channel-I at Rs. 57.19 and Channel-III incurring higher costs Rs. 305.17, respectively.

Marketing margins showed a difference across channels. Channel-I had no marketing margin, while Channel-II and Channel-III had margins of Rs. 110 and Rs. 282.47. Consequently, the price spread was minimal in Channel-I at Rs. 57.19 compared to Channel-III. Overall, the highest marketing efficiency was achieved in Channel-I due to its minimal marketing costs and no marketing margins, making it the most efficient marketing channel among the three. Despite of Channel-II and Channel-III, having higher consumer prices and marketing costs, exhibited lower marketing efficiencies. This analysis indicated that Channel-I was the most favourable for both producers and consumers in terms of cost-effectiveness and marketing efficiency.

4. CONCLUSION

The disposal patterns of wheat across various farm sizes revealed that a significant portion of wheat production was allocated for home consumption, wages, damage, and reserved seed. The marketed surplus was lower than the marketable surplusdue to their higher personal consumption needs. Marketing costs varied across different sales agencies, with wholesalers incurring the highest costs per quintal, followed by village traders and retailers. Transportation and loading/unloading were significant components of these costs. Channel-I exhibited the lowest total cost, margin, and price spread, resulting in the highest producer's share of the consumer's rupee. In contrast, Channel-II and Channel-III had higher costs, margins, and price spreads, with Channel-III being the least efficient.

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 this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Giraldo P, Benavente E, Manzano-Agugliaro F, Gimenez E. Worldwide research trends on wheat and barley: A bibliometric comparative analysis. Agronomy. 2019;9:352.
2. Grote U, Fasse A, Nguyen TT, Erenstein O. Food security and the dynamics of wheat and maize value chains in Africa and Asia. Front. Sustain. Food Syst. 2021;4:617009.
3. Ashkra, Jadaun KK, Khan AA. An economic analysis of wheat production in the light of climate change in India. J. Res. ANGRAU. 2023;51(4):155-164
4. Agam PA, Perke DS, Chavan RV, Baviskar PP. Wheat production in India: An overtime study on growth and instability. The Pharma Innovation Journal. 2022;11(12): 3630-363.
5. Lakhran H, Sharma OP, Bajiya R, Choudhary M. Productivity and nutrient content of wheat (*Triticum aestivum* L.) as Influenced by sowing temperatures and bio-regulators. Int J Curr Microbiol App Sci. 2020;9(10):2609-2615.

6. Shiv Kumar, Jang Bhadur Rana, Sanjay Kumar, Vijay Kumar Shahni, Santosh Kumar, Rakesh Pal Singh, Ram Bharose. A study of production of wheat in Hardoi district of western Uttar Pradesh. J Pharmacogn Phytochem. 2019;8(1):1955-1958.

7. Oganja YH, Maheta HY, Kumar K, Bharodia CR. Factors influencing farmers purchase intention toward insecticides of Rajkot district, India. Arch. Curr. Res. Int. 2024;24(8):67-74.
DOI: 10.9734/acri/2024/v24i8849

8. Oganja YH, Maheta HY, Kumar K, Bharodia CR. Identification of mutation point and trend analysis of area, production and yield of wheat crop in Gujarat, India. Asian Res. J. Agric. 2024; 17(4):150-156.
DOI: 10.9734/arja/2024/v17i4510

9. Khichadiya JM, Makadia JJ. Marketing channels, cost, margins and price spread of Bt cotton in Bharuch district of south Gujarat. Agriculture Update. 2020;15(4): 391–396.

10. Sharma S. Singh R. Rao Burman RR. Singh M. Economic analysis of marketed and marketable surplus of wheat production in Gwalior district of Madhya Pradesh. Inn J of Ext. Educ. 2018; 54(2):231–235.

11. Sulthana R, Kumar K, Maheta H, Bharodia C, Doke VY. Marketing distribution channel of tomato at Madanapalle block of Chittor district in Andhra Pradesh. International Journal of Agriculture Sciences. 2019; 11(15):8841-8843.

12. Katariya BB, Maheta HY, Kalsariya R, Khorajiya M, Chaudhari VP. A study on marketing of milk in Junagadh district of Gujarat. Advances in Life Sciences. 2016;5(1):239-246.

13. Kumar S, Bhargava H, Singh P, Singh J, Verma SK. Economic analysis of marketing channel of wheat production in Hardoi District of western Uttar Pradesh, India. Asian Journal of Agricultural Extension, Economics & Sociology. 2023;41(10):140-148.

14. Dagar A. Kumar S. Marketing cost of wheat at different marketing places in Haryana. Ind J of Mktg. 2012;42:38–44.

15. Dahiwade PM, Pawar BR. Mane PS. Price spread in marketing channels of wheat in Latur district of Maharashtra. Agriculture Update. 2013;8(3):476–479.

16. Villacis AH, Kopp T, Mishra AK. Agricultural marketing channels and market prices: Evidence from high-value crop producers in India. Economic Analysis and Policy. 2024;81:1308-1321.

17. Meena RK, Singh B. Soybean processing in Kota district of Rajasthan. Ind J of Agri Mktg. 2010;24(2):19-27.

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