Original Research Article

Understanding Market Dynamics and Profitability in Small Ruminant Marketing: An Economic Analysis in Southern Karnataka, India

Abstract

Small ruminants, particularly sheep and goats, play a crucial role in India's agricultural economy, serving as a significant source of income and livelihood for millions of small and marginalized farmers. In regions like Southern Karnataka, where livestock farming is integral part of rural households as they are not only a source of meat, wool, and milk but also provide financial security during times of economic distress. Despite their importance, the marketing of small ruminants remains largely unorganized, posing significant challenges for farmers. The marketing of small ruminants such as sheep and goat involves the procurement of animals at primary markets from farmers, selling these animals at local markets, and further distribution to terminal markets through wholesalers or commission agents. For sheep and goat farmers, selecting the appropriate marketing channel is crucial, as the benefits they receive are largely dependent on this choice. The chosen channel must minimize marketing costs while maximizing the farmer's share of the consumer's rupee. So, this study was undertaken focusing on analysing the existing marketing channels for small ruminants in Karnataka, particularly sheep and goats, and to evaluate the cost structure of different marketing channels, understand the role of middlemen, and propose measures to reduce marketing costs and improve the farmers' share of profits. In the study area, four primary marketing channels were identified: (1) Farmer → Village Trader → Wholesaler/Butcher, (2) Farmer → Local Trader → Wholesaler/Butcher, (3) Farmer → Local Trader → Farmer, and (4) Farmer → Wholesaler → Distant Trader. The cost of marketing is a significant concern for sheep and goat farmers, encompassing expenses such as transportation, feeding, market fees, middlemen charges, personnel expenses, and loading/unloading fees. The average marketing cost per animal across various channels was ₹91.71, with transportation costs making up the largest portion (49.61%), followed by feeding costs (14.72%) and middlemen charges (17.01%).This highlights the challenges related to high transportation costs and inadequate market facilities, particularly for sheep and goat marketing. So, to improve the marketing efficiency and reduce costs for sheep and goat farmers, there is a need for the establishment of regulated markets for livestock and enhancing the transportation facilities in the rural areas to help farmers realize better prices for their small ruminants.

Keywords: Economic Analysis, Karnataka, Livestock , Marketing Channels, Sheep and Goat Marketing.

Introduction

"The livestock sector is one of the important sources of income and employment to rural people. Both livestock and agriculture are very much dependent on each other, where livestock contributes with its manure and draught power to agriculture whereas agriculture contributes with crop residues which are major source of feed to livestock. The fact is that combination of livestock rearing, and crop production enables full utilization of farm" [1]. Livestock is also important with respect to providing nutritive food to families both in rural and urban areas.

Small ruminants, particularly sheep and goats, play a crucial role in India's agricultural economy, serving as a significant source of income and livelihood for millions of small and marginalized farmers. In regions like Southern Karnataka, where livestock farming is integral to rural households, these animals are not only a source of meat, wool, and milk but also provide financial security during times of economic distress [2]. Despite their importance, the marketing of small ruminants remains largely unorganized, posing significant challenges for farmers [3].

"From the ancient years in India, sheep and goat have an inseparable identity with the farmers. The ownership of the livestock is more evenly distributed with landless laborers and marginal farmers owning bulk of livestock. They play a key part for the rearing community in India especially for the marginal and small farmers. The woman in rural areas plays a very significant role with respect to animal husbandry and they are directly involved in the operations such as feeding, breeding and management of well-being and supervision of the animals" [4]. In addition, they are like assets to the farmers, whenever there is a crop failure due to some natural causes and other adverse conditions. They may be also called man's first helpmates providing him with meat, milk, wool and skin. If the livestock sector progresses, it results in equitable growth of the rural economy particularly in reducing the poverty amongst the weaker sections. Spreading of livestock prosperity is more egalitarian, compared to land. Hence, from the fairness and livelihood viewpoint it is measured as a significant module in poverty alleviation programs. The fact is that combination of livestock rearing, and crop production enables fuller utilization of farms. The major factor for raising the income and living standards of rural households is increase in desire for livestock products from the consumers.

The commercialization of livestock is on the rise as a result of market developments and financial incentives, and an increasing demand for high value commodities (animal protein) in the consumer market. A gradual shift is occurring towards intensively managed sheep and goat units from extensive units. The new marketing system is expected to improve marketing efficiency and induce a shift in sheep and goat production from subsistence to a commercial venture. This needs the integration of small-scale producers into the supply chain as majority of sheep and goats are reared by the poor farmers.

"Karnataka is one of the important sheep and goat producing states, it contributes around seven per cent to countries sheep and goat population. Sheep and goat rearing is the backbone of the economy of small and marginal farmers. There is a huge potential of common property resource in general and pastures and grazing land in particular. A large number of local and improved sheep and goat breeds are also available, most of small, marginal and

landless famers depends on sheep and goat for their livelihood. There is a high demand for meat and meat products, wool and milk. However, limited studies on production and marketing aspects of sheep and goat have been conducted in Karnataka" [3]. Keeping this in mind the present study is conducted on economics of sheep and goat marketing in Karnataka to suggest suitable policy measures for encouraging sheep and goat keeping activities in the state with the following specific objectives

1. To identify the major existing marketing channels for small ruminants in Karnataka
2. To analyze the cost structure and efficiency of different marketing channels for small ruminants in Karnataka.

Methodology

The study was carried out in Mandya and Mysuru districts of Karnataka. In recent years, in this region farmers are changing their method of rearing with respect to sheep and goat rearing, in which they are getting good profit from it. The bandur sheep breed, which is the popular breed in this region is gaining more importance because of its meat quality [5]. The sheep and goat rearing also acts as assets to the farmers. In the southern part of Karnataka, Mandya and Mysuru districts have a larger population of sheep and goat.

For studying marketing aspects, four markets namely, Chunchunkatte, Kanchinkere, Malavalli and Krishnarajasagara were chosen, based on the size of the market for sheep and goat. From each of the selected market, five village traders cum local traders, five distant traders and five wholesalers cum butchers constituting 60 market intermediaries were chosen and interviewed personally using structured and pretested questionnaires to elicit required information (Table 1).

Table 1: Distribution of market intermediaries in selected markets

Sl. No.	Intermediaries	Name of the market				
		Kanchinkere	**Chunchunkatte**	**Malavalli**	**KRS**	**Total**
1	Village/ Local traders	5	5	5	5	**20**
2	Wholesaler/ Butcher	5	5	5	5	**20**
3	Distant trader	5	5	5	5	**20**
	Total	**15**	**15**	**15**	**15**	**60**

Nature and sources of data

General information regarding socio-economic status, size of land holdings, livestock inventory, costs and returns of sheep and goat rearing, constraints in sheep and goat rearing and other relevant data required for evaluating the objectives of the study were collected from 180 sample farmers, 60 market intermediaries using pre-tested, well-structured schedules through personal interview method.

Analytical tools used

In the context of sheep and goat marketing, the methodology employed for analysing the efficiency of various marketing channels includes the following analytical tools:

1. Price Spread

Price spread is a critical indicator used to assess the efficiency of marketing channels. It refers to the difference between the price paid by the consumer for sheep or goat products and the net price received by the producer/ farmer. This spread includes all the costs incurred and margins earned by intermediaries involved in the marketing process, such as village traders, wholesalers, and retailers. Price spread is calculated using the below formula

$$\text{Price Spread} = \text{Price Paid by Consumer} - \text{Net Price Received by Producer}$$

A higher price spread indicates inefficiency in the marketing channel, as it suggests that a larger portion of the consumer's expenditure is being absorbed by intermediaries rather than reaching the sheep of goat farmers and A lower price spread is desirable, as it reflects a more efficient marketing channel where the producer retains a greater share of the final price.

2. Producer's Share in Consumer's Rupee (PSCR)

The PSCR is a measure that indicates the proportion of the consumer's rupee that reaches the producer. It is expressed as a percentage and provides a direct insight into how much of the final price paid by the consumer is received by the farmer. It is

$$\textbf{PSCR} = (\text{Price Received by Producer} / \text{Price Paid by Consumer}) \times 100$$

A **higher PSCR** reflects a more efficient marketing system where the farmer retains a significant portion of the consumer's expenditure and A **lower PSCR** suggests that intermediaries are absorbing a larger share, indicating inefficiency in the marketing channel.

3. Marketing Margin

Marketing margin represents the actual profit earned by stakeholders after accounting for the costs they incur in the process of marketing. It provides a clear picture of the profitability and efficiency of different actors in the supply chain. Marketing margin is calculated using the below formula

$$\text{Marketing Margin} = \text{Price Difference} - \text{Cost Incurred by Stakeholder}$$

A higher marketing margin may indicate greater profitability for intermediaries but could also suggest inefficiency if it results from high costs or unnecessary layers in the marketing process. Conversely, a **lower marketing margin** with a lower price spread and

higher PSCR would indicate a more streamlined and efficient marketing channel, benefiting both producers and consumers.

In the context of sheep and goat marketing, these analytical tools help were used to evaluate the effectiveness of different marketing channels—ranging from direct sales by farmers to consumers, to more complex chains involving multiple intermediaries.

RESULTS AND DISCUSSION

Marketing performance of sheep and goat farmers

Sheep and goat marketing is highly unorganized. The general features of sheep and goat markets are locally known as hat/animal fair/Shandi, which are held weekly or bi-weekly at village, block or town and city level. Most of the sheep and goats reared by the farmers are sold in these markets through middlemen. There are three major activities along the marketing chain i.e. procurement of animals at primary market from farmers, selling of the animals at local market and terminal markets through wholesalers/commission agents.

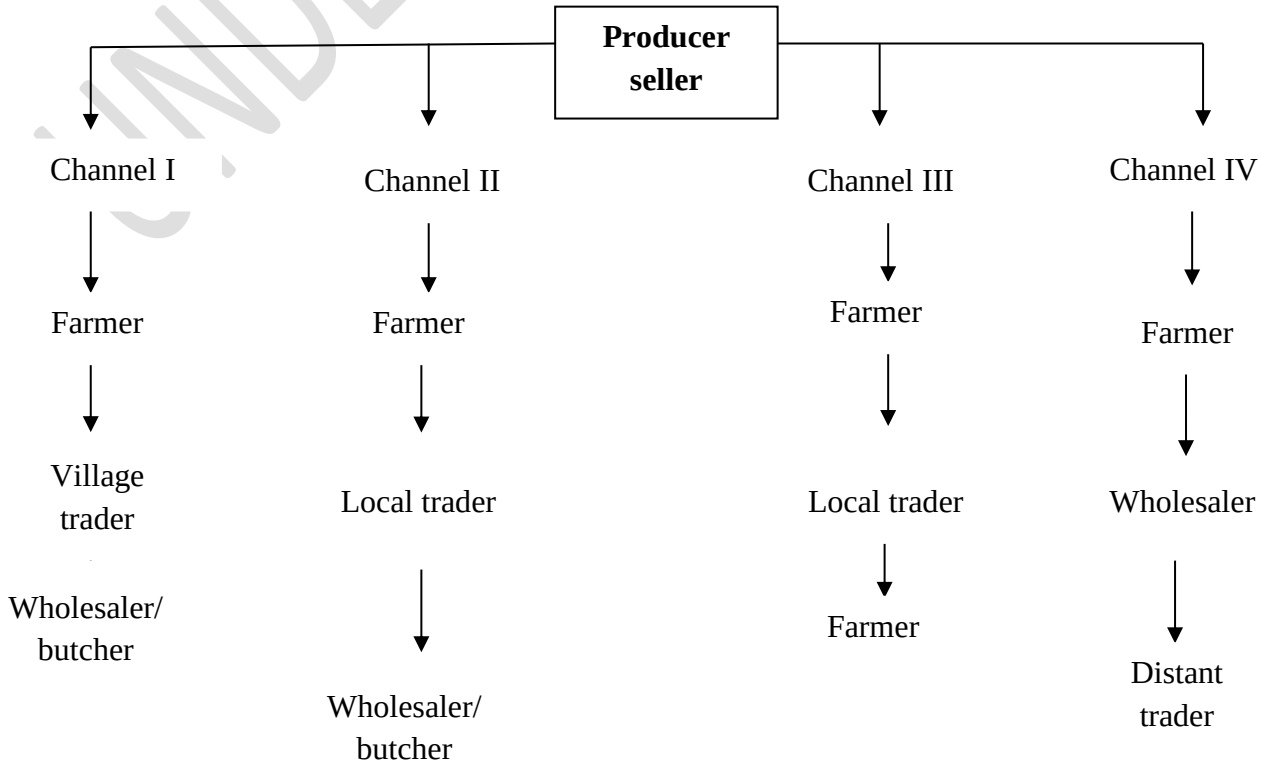
The selection of a marketing channel becomes imperative for the farmers since the real benefit accrued to them mainly depends upon choice of channel for disposal of their animals. The channel selected by them must account for minimum marketing cost and ensure a higher share of consumer's rupee. In the study area, the following four important marketing channels were identified in marketing of sheep and goat.

Channel-I: Farmer-Village Trader-Wholesaler/Butcher

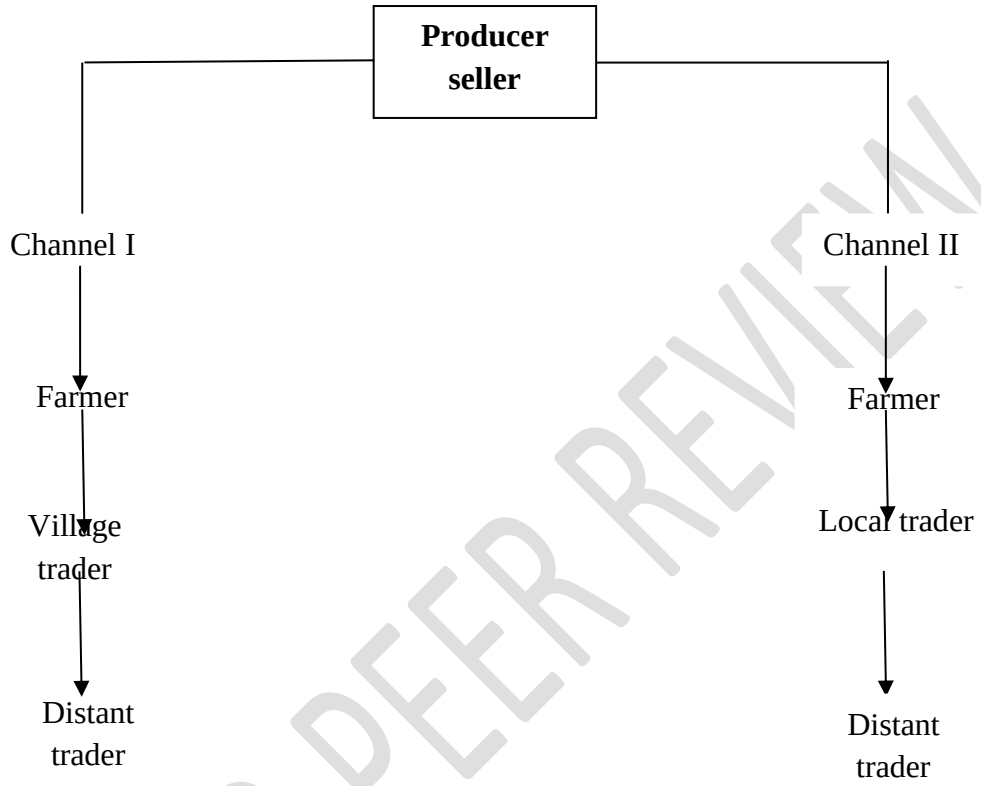
Channel-II: Farmer-Local Trader-Wholesaler/Butcher

Channel-III: Farmer-Local trader-Farmer

Channel-IV: Farmer-Wholesaler-Distant trader



The market channels in wool marketing were identified in the study area, and it is given in below:



Channel-I: Farmer-Village Trader-Wholesaler/Butcher

Channel-II: Farmer-Local Trader-Wholesaler/Butcher

Marketing cost incurred by farmers

The marketing cost is the cost associated with delivering produce or service from farmers to consumers. The marketing cost of farmers includes expenses associated with transportation, feeding, market fee, middlemen charges, personnel expenditure and loading and unloading charges.

The average cost of marketing incurred by sheep and goat farmers is presented in Table 2. The cost incurred per animal was ₹ 91.71 per animal across different channels. Out of total marketing cost, transportation cost formed major component (49.61 %) followed by feeding cost (14.72 %), middleman charges (17.01 %), personnel expenditure (13.52 %), market fee (2.57 %) and loading and unloading charges (2.56 %).

An appraisal of components of marketing costs clearly revealed that transportation charge form the most significant constituent of the total marketing cost incurred by the farmers.

Table 2: Marketing cost incurred by farmers

(₹/animal)

Particulars	Value	% to total
a. Transportation cost	45.5	49.61
b. Loading and unloading	2.35	2.56
c. Feeding cost	13.5	14.72
d. Market fee	2.36	2.57
e. Commission	15.6	17.01
f. Other expenses	12.4	13.52
Total cost	91.71	100

Similar results were obtained for goats in Arun Pandit; (2005) study on efficiency of male goat markets in the central alluvial plains of West Bengal. This was mainly due to non-availability of adequate transportation facilities in the villages and higher cost ranging from ₹ 20 to ₹ 50 per animal. However, feeding cost also formed a major component of marketing cost because of inadequate market facilities wherein feed and fodder were not available. The other marketing cost components are commission and personnel expenditure. Therefore, sheep and goat should be regulated in accordance with food grain marketing at local, hobli and gram panchayath levels to minimize costs and improve efficiency and also transportation charges, feeding cost and personnel expenditure can be brought down for the benefit of the farmers.

The farmers sold sheep and goat in distant markets in the state as well as outside the states for realizing better prices. Further, lack of cheap and timely transportation facilities might be another reason for higher transportation cost as expressed by majority of the farmers in the opinion survey. Therefore, it is suggested that transportation costs could be substantially reduced through pooling of small, scattered and isolated individual farms, especially at sponsored collection centers from where they could be lifted to the market.

Marketing costs of intermediaries, margins and price spread

"A systematic analysis of costs and returns of various intermediaries involved in marketing of sheep and goat would help to know the various services rendered by these intermediaries and their economic performances in the marketing process. The price spread is one of the measures of market efficiency which indicates an increase in the price of a commodity, as it changes hands from one intermediary to another in the marketing set up. The price spread includes marketing cost incurred, and margin obtained by various middlemen" [22].

In general, among all the selected channels mentioned above, price spread was found to be marginally higher in both channel-I (₹ 854) and channel-II (₹ 854) compared to channel-IV (₹ 810.26) and channel-III (₹ 370.23). However, magnitude of price spread was found to be lower in channel-III compared to other channels indicating higher share of producers in wholesaler/butchers (92.08 %) price. Similarly, the producer share in consumer rupee was 85.04, 85.04 and 87.09 per cent in channel-I, II and IV respectively. Thus the producer's share in the price paid by the wholesaler/butcher varied marginally across different channels.

Table 3: Marketing costs, margins and price spread (₹/animal)

Particulars	Channel-I	Channel-II	Channel-III	Channel-IV
I. Sale price of animal				
a. Farmer	5468.40	5468.40	5468.40	5468.40
b. Village trader	5786.70	-	-	-
c. Local trader	-	5838.63	5838.63	-
d. Wholesaler/Butcher	6322.40	6322.40	-	5744.60
e. Distant trader	-	-	-	6278.66
II. Purchase price of animal				
a. Farmer(Consumer)	-	-	5838.63	-
b. Village trader	5786.40	-	-	-
c. Local trader	-	5468.40	5468.40	-
d. Wholesaler/Butcher	6322.40	5838.63	-	5468.40
e. Distant trader	-	-	-	5744.60
III. Marketing cost incurred	-	-	-	-
a. Farmer	91.71	91.71	91.71	91.71
b. Village trader	234.56	-	-	-
c. Local trader	-	102.44	98.98	-
d. Wholesaler/Butcher	270.92	270.92	-	210.16
e. Distant trader	-	-	-	279.80
IV. Market margin earned				
a. Farmer	-	-	-	-
b. Village trader	318.30	-	-	-
c. Local trader		370.23	370.23	-
d. Wholesaler/Butcher	535.70	483.77	-	276.20
e. Distant trader	-	-	-	534.06
V. Price spread	854	854	370.23	810.26

VI. Producer share in Wholesaler/ Butcher price (%)	85.04	85.04	92.08	87.09

Table 4: Marketing costs, margins and price spread in wool marketing

(₹/kg)

Particulars	Channel- I	Channel- II
I. Sale price of animal		
Farmer	48.6	48.6
Village trader	62.5	-
Local trader	-	68.5
Distant trader	72.6	78.4
II. Purchase price of animal		
Farmer	-	-
Village trader	48.6	-
Local trader	-	48.6
Distant trader	62.5	68.5
III. Marketing cost incurred	-	-
Farmer	-	-
Village trader	18.4	-
Local trader	-	18.4
Distant trader	20.6	20.6
IV. Market margin earned		
Farmer	-	-
Village trader	13.9	-
Local trader		19.9
Distant trader	24	29.8
V. Price spread	37.9	49.7
VI. Producer share in Wholesaler/ Butcher price (%)	69.94	61.98

Out of the total price spread, margin accrued by different market functionaries formed major component in all channels (₹ 370.23 to ₹ 854/animal) followed by total cost of marketing (₹ 91.71 to ₹ 279.80/ animal) incurred by different market intermediaries.

The cost incurred by market intermediaries indicated that farmers spent ₹ 91.71 per animal followed by village trader (₹ 234.56) and wholesaler (₹ 270.92) in channel-I. Whereas, margin earned by village trader was ₹ 318.30 and wholesaler/butcher was ₹ 535.70. It is important to note that, marketing margin earned by wholesaler was higher in channel-I (₹ 535.70/animal) compared to other channel respectively and details are mentioned in Table 3.

Marketing costs of intermediaries, margins and price spread in wool marketing

In general, among the two channels mentioned above, price spread was found to be marginally higher in channel-II (₹ 49.7) compared to channel-I (₹ 37.9). The producer share in consumer rupee was 69.94 per cent in channel-I and 61.98 in channel II respectively. Thus the producer's share in the price paid by the wholesaler/butcher varied marginally across the channels.

The cost incurred by market intermediaries indicated that butcher spent ₹18.4 per animal followed by distant trader (₹ 20.6) in channel-I. Whereas, in channel II, that local trader spent ₹ 18.4 per kg followed by distant trader (₹ 20.6). It is important to note that, marketing margin earned by distant trader was higher in channel-II (₹ 29.8/kg) compared to channel-I (₹ 24/kg) respectively and details are mentioned in Table 4.

Reasons for sale of sheep and goat

The reasons for the sale of sheep and goat were given in the Table 5. The results indicated that, the first and foremost reason opined by the extensive rearing farmers for sale of sheep and goat was to meet out the farm expenditure (76.66 %), followed by non-availability of grazing land (70 %), un-productive animals (46.66 %) and so on. In the case of semi-intensive rearing labour problem (60 %) and to meet out farm expenditure (60 %) were the major reasons for the sale. The same reasons were noticed in case of intensive rearing farmers also.

Table 5: Reasons for sale of sheep and goat by respondent farmers

Particulars	Extensive rearing farmers (60)		Semi-intensive rearing farmers (60)		Intensive rearing farmers (60)	
	Frequency	%	Frequency	%	Frequency	%
a. Disease outbreak	24	40	20	33.33	14	23.33
b. Surplus animals	16	26.66	28	46.66	42	70
c. Unproductive animals	28	46.66	26	43.33	26	43.33
d. To meet out family	18	30	15	25	24	40

consumption expenditure						
e. Repayment of loan	8	13.33	12	20	15	25
f. Labour problem	12	20	36	60	34	56.66
g. Inadequate space for shelter	14	23.33	12	20	16	26.66
h. To meet out farm expenditure	46	76.66	36	60	28	46.66
i. Non-availability of grazing land	42	70	16	26.66	4	6.66

"The reasons for sale of sheep and goat revealed that to meet out his emergency needs of farm and family expenditure, non-availability of the grazing land, surplus animals, to safeguard animals from the disease outbreak and repayment of loans. This indicated that sheep and goat rearing helps farmers to meet out his emergency needs including repayment of loans. Therefore, there is need to encourage sheep and goat rearing by both state and central government through providing subsidies for establishing sheep and goat farms. In addition to this NABARD and other financial institutions should come forward to provide short term and medium-term loans which would help to improve livelihood and nutritional security of the farmers through sheep and goat keeping activity. Therefore, there is need to encourage sheep and goat rearing by both state and central government through providing subsidies for establishing sheep and goat farms. In addition to this NABARD and other financial institutions should come forward to provide short term and medium-term loan which would help to improve livelihood and nutritional security of the farmers through sheep and goat keeping activity" [22].

Reasons for purchase of sheep and goat

The opinion of the buyers with respect to the purchase of sheep and goat was given in table 6. About 30 per cent of the buyers purchased sheep and goat mainly for resale of animals in the distant markets followed by reproduction purpose (23.33 %), slaughter purpose (20 %), to meet out home consumption (16.67 %) and to exhibit sheep and goat in village fair/customs (10 %). The reason for purchase of sheep and goat by the wholesaler and butcher were to resale animals in the distant markets and also for transporting animal to slaughterhouse (Table 6).

These findings align with those of a study on the efficiency of male goat markets in the central alluvial plains of West Bengal [6]. Pandit found that a substantial number of buyers were involved in the resale of goats in distant markets, driven by the profit margins available in different regions.

Table 6: Reasons for purchase of sheep and goat

(n=30)

Particulars	Numbers	%
a. Resale	9	30
b. Family consumption	5	16.66
c. Slaughter purpose	6	20
d. Reproduction	7	23.33
e. Village fair/customs/benison	3	10
Total sample	30	100

Conclusion:

The marketing performance of sheep and goat farmers is significantly influenced by the highly unorganized nature of the market. Sheep and goat markets, known locally as *hat*, animal fairs, or *shandi*, are typically held weekly or bi-weekly at various levels, including village, block, town, and city levels. These markets serve as the primary venues for farmers to sell their livestock, often through middlemen, which adds complexity to the marketing chain. The marketing costs incurred by sheep and goat farmers encompass various expenses, such as transportation, feeding, market fees, middlemen charges, personnel expenses, and loading/unloading charges. In the study area, four major marketing channels were identified: Farmer-Village Trader-Wholesaler/Butcher, Farmer-Local Trader-Wholesaler/Butcher, Farmer-Local Trader-Farmer, and Farmer-Wholesaler-Distant Trader. The analysis revealed that transportation costs form the largest component of marketing costs, followed by feeding costs and middlemen charges. The average cost of marketing per animal is approximately ₹91.71, with transportation being the most significant component, constituting nearly 49.61% of the total cost. These costs highlight the challenges faced by farmers in the marketing process, particularly due to the lack of adequate transportation facilities and the high associated costs, which can range from ₹20 to ₹50 per animal. Feeding costs are also substantial due to inadequate market facilities that lack feed and fodder. The price spread, a key indicator of market efficiency, varied across the channels. Channel III, where farmers directly sold to other farmers, had the lowest price spread, indicating a higher share of the consumer's rupee for the producers. In contrast, Channels I and II, which involved multiple intermediaries, had a higher price spread, reflecting the larger margins accrued by middlemen. The marketing of wool followed a similar pattern, with the producer's share in the consumer rupee being slightly lower in Channel II compared to Channel I, indicating the inefficiency of the marketing channels. The study also highlighted the reasons for the sale and purchase of sheep and goats, with the primary reasons for sale being the need to meet farm and family expenditures, non-availability of grazing land, and the need to dispose of unproductive animals. For buyers, the main reasons

included resale in distant markets, reproduction, and slaughter. So, there is a need to improve marketing performance and reduce costs for sheep and goat farmers, through Regulation of Markets, developing cheaper and more timely transportation, improving the availability of feed and fodder at market locations , ensuring farmers have access to distant and more profitable markets can help them realize better prices for their livestock. There is also a need for government support through subsidies, loans, and infrastructure development to help farmers maximize their returns from sheep and goat rearing. Encouraging cooperative marketing and pooling resources at collection centers could further reduce costs and improve farmers' profitability.

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.

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