Market performance of small ruminant value chain in TahtayAdyabo District, Tigray Region, Ethiopia.

Abstract

The objective of this study was to examine market performance of small ruminant value chainin TahtayAdyabo District.The data were collected fromboth primary and secondary sources. Primary data were collected from a randomly selected 138 sample households, 6 large traders, 12 small traders, 8 collectors 5 butchers, 7 hotels/restaurants and 11 consumers interviewed through a semi-structured questionnaire and from key informant interview.Each of the small ruminant value chain actors adds value to the product as the product passes from one actor to another. Collectors, small traders, large traders, butchers and hotels/restaurants were added 6.8%, 11%, 10.9%, 25.2% and 28.4% of the total value of goat and 11.4%, 9.5%, 9.4%, 24.9% and 26.7% of the total value of sheep in the district respectively. The highest total gross marketing margins were 46.1% and 42.8% for goat and sheep marketing channels respectively. producer's share of the consumer's price was highest along producers – consumers, producers – farmers (for breeding purpose) and producers – small traders – consumers in both goat and sheep market channels. Hotels/restaurants and butchers have the highest gross marketing margin whereas collectors have got the lowest gross marketing margin in both goat and sheep market channels. The performance of small ruminant market analyzed using marketing marginsshowed poor performance of the market. Therefore, producers must strengthen horizontal linkages with other producers and vertical linkages with other actors to get higher gross profit.

Comment [BM1]: Can you also mention what are secondary source ? Otherwise rephrase to have logic flow to the readers as you just mentioned primary data source

Comment [BM2]: Remove this sentence or merge with sentence explaining how you did your analysis from both primary and secondary data? Descriptive statistics and/ or regression analysis to assess the market chain??

Comment [BM3]: Data???
add value while reporting your results here. I would suggest abbreviating some words to maximize the word count in the abstract.

For example, small traders (SM) and collectors (C) could be used to save space and still convey the necessary information

Comment [BM4]: Data??

Comment [BM5]: Is this how you analyzed your data?
If you explain your data analysis above, I would suggest not repeating this whole sentence,
Go to findings and then conclusion.

Key words: Small ruminant, Market performance, TahtayAdyabo, Tigray, Ethiopia.

Introduction

Livestock sectors play vital roles in generating income to farmers, creating job opportunities, ensuring food security, providing different services, contributing to asset, social, cultural, and environmental values, and sustaining livelihood strategies of peoples [1]. The livestock marketing system in Ethiopia is fragmented and disorganized and the supply chain linking smallholder producers with domestic consumers and export markets is long and extended. ~~This depresses farmgate prices and prevents producers from receiving better revenues, since a vast array of middle men tap a large proportion of the price paid by consumers and exporters.~~ This decreased farm gate prices lead to low revenue for producers since a vast array of middle men tap a large proportion of the price paid by consumers and exporters. Numerous actors further characterize the entire livestock supply chain in the country. This makes the supply chain unnecessarily long with increased transaction costs and without significant value-added activities. ~~This is because of the entire livestock supply chain in the country is further characterized by numerous actors. This makes the supply chain unnecessarily long with increased transaction costs and without significant value-added activities~~ [2].

Demand for Ethiopian sheep and goat meat has dramatically increased after market promotion by development projects in close collaboration with the government. This has created an opportunity for sheep and goat producers to sell more animals at better prices[3].The increase in international demand for meat in general and the high demand for sheep and goat meat in the Middle East are another incentive for sheep and goat production in the country[4].

Livestock marketing encompasses the sale, purchase, or exchange of live animals and their products (milk, meat, skins, wool, and hides) for income or other commodities. Marketing as an economic activity bridges the gap between production and consumption and creates linkages between sellers and buyers [5]

The rural/village and roadside markets operate periodically, where sellers of livestock meet to offer animal trade with collectors, aggregators, and negotiators with other buyers (Reference??). Butchers or negotiators who convey animals to towns/cities or abattoirs are the principal buyers from farmers (Reference??). The market structure includes producers, traders, retailers, food service providers, and consumers. Public, privates, inputs, service providers, and regulatory institutions that involve; taxation, licensing, and warranties, are part of the structures[6]. Small

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Leading to produce

Comment [BM8]: Add an open sentence explaining the small ruminants, then specify sheep and goats....

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Comment [BM10]: This researcher didn't talk about small ruminant?? Also not relevant to your country 5. Girei, A. Dire, B and Bello, B. (2015) "Assessment of cost and returns of cattle marketing in central zone of Adamawa state, Nigeria". British Journal of Marketing Studies, 1(4).

Otherwise rephrase the whole paragraph showing this was the case elsewhere and your now bringing a gap of knowledge to your study

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ruminants demand is driven by; the high population growth rate, rapid urbanization, increased income, health consciousness and a shift in consumption patter [7].

Market participation and trade among livestock keepers are expected to be an important pathway out of poverty[8]. Livestock markets play a fundamental role in livestock production and provide a platform for the exchange of property and wealth[9].

In enhancing productivity, small ruminant producers needto consider the market as a principal aspect of production.The marketing system must provide information flows fromthe consumer back to the producer [10]. Moreover, there should be improve the infrastructural facilities and provide loan facilities at a low-interest rate to the trader that will boost the performance of small ruminant markets [11].

Small ruminant market performance is an important process that has not been investigated in the study area. Therefore, studies on small ruminant market performance become necessary to provide essential information on the operation of small ruminant marketing system, to aid effective research, planning and policy formulation. Hence, this study was carried out to examine market performance of small ruminant value chain.

Methodology

Study area: -The study was conducted in Tahtayadyabo district of North Western Zone of Tigray Region.

Data sources: -The data were collected fromboth primary and secondary sources. Primary data were collected from a randomly selectedsample households, large traders,small traders, collectors, butchers, hotels/restaurants while secondary data was obtained by interviewing consumers ~~andconsumers interviewed~~ through a semi-structured questionnaire and from key informant interview.

Sampling Procedure and Sample Size: -Multi-stage random sampling technique was used to select representative small ruminant producer kebeles and sample households. In the first stage, out of 18 kebeles of the district 10 small ruminant producer kebeles were purposively selected based on

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To reduce poverty?? Or ??

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the level of production. In the second stage, from the 10 small ruminant producer rural kebeles, four sample kebeles namely Adi-Aser, Gemhalo, Mentebteb and Zban-Gedena were selected randomly. In the third stage, total of 138 sample households were selected randomly using probability proportional to population size-sampling technique based on [12]formula.

$$n = \frac{z^2\, p(1-p)}{e^2}$$

Where,

n is the sample size

p is the estimated proportion of small ruminant producersfrom the total population

z =1.96 and e = 0.05

$$n = \frac{1.96^2 \times 0.9(0.1)}{0.05^2} = 138$$

For this study, data from traders were also collected.The sites for the trader surveys were market towns in which a good sample of small ruminant traders are available.A total of 6 large traders, 12 small traders and 8 collectors were randomly selected constituting a total of 26 traders from Sheraro, Tekeze, Adi-Hageray and Shmelba markets. Furthermore, 5 butchers, 7 hotels/restaurants and 11 consumers were interviewed from the district by selecting randomly.

Methods of data analysisG

Estimates of the marketing margins are the best tools to analyze market performance.Marketing margin was calculated by taking the difference between the final price paid by the consumer and the price received by the producer. ~~Calculating the t~~Total gross marketing margin (TGMM) was computed according to [13], by relating the final price paid by the end buyer and is expressed as a percentage. ~~otal gross marketing margin was done by using the following formula.Computing the Total Gross Marketing Margin (TGMM) is always relatedto the final price paid by the end buyer and is expressed as a percentage [13].~~

$$TGMM = \frac{Final\ Consumer\ \ price - \Pr oducer\ \Pr ice}{Final\ Consumer\ \Pr ice} \times 100$$

Comment [BM15]: You didn't explain how you computed the difference between actors after obtain these results from TGMM or GMM Descriptive statistics, by means or percentage? How about creating graphs ?? Will be interesting will give a clear clarification on your discussions

Comment [BM16]: Why?? Reference??

Where TGMM=Total Gross Marketing Margin

It is useful to introduce here the idea of "producer participation", "farmer's portion" or "producer's gross margin" (GMM) which is the portion of the price paid by the end consumer that belongs to the farmer as a producer. It should be emphasized that growers that as middlemen also receive an additional marketing margin. The producer's margin or share in the consumer price (GMMp) is calculated as:

$$GMM_p = \frac{Final\ Consumer\ \Pr ice - TGMM}{Final\ Consumer\ \Pr ice} \times 100$$

Where GMMp =Gross Marketing Margin of the producer

The consumer price share/portion of market intermediaries is calculated as:

$$GMM = \frac{Selling\ \Pr ice - Buying\ \Pr ice}{Final\ Consumer\ \Pr ice} \times 100$$

Where: GMM = Gross Marketing margin of intermediaries

According to [13], precise marketing costs are frequently difficult to determine in many agricultural marketing chains. The reasons are that these costs are often both cash costs and imputed costs, the gross and not the net marketing margin is advised to be calculated. In similar way, in this study, gross marketing margin was considered instead of net marketing margin, as it was difficult to estimate the implicit costs incurred during transaction of small ruminant.

Results and discussions

The performance of small ruminant market was evaluated by considering associated costs, returns and marketing margins.The analysis of marketing channels is intended to provide a systematic knowledge ~~of the~~ flow of goods and services from its origin of production to final destination. The flow of small ruminant from the production centers to the consumer end depends on the distance and market proximity, availability of infrastructures and the need and

Comment [BM17]: Producers to consumers???

purchasing power of consumers. In the marketing channel of goat and sheep the quantity sold to different actors and price of animals is different. Thus, the market channel and margin analysis was done separately on goat and sheep.

Goat marketing channels

Nine main alternative channels were identified for goat marketing. Small ruminant market participant of sample respondents were supplied 137.28 TLU(Tropical Livestock Unit) of goats to the market. Channel comparison was made based on total of goat that passed through each channel. Accordingly, the channel of producers – small traders –consumerscarry on the largest followed by producers – collectors – large traders – Sire hotel/restaurants– consumers; and producers – hotels/restaurants – consumers carry a quantity of 28.69 TLU, 21.96TLU and 18.8 TLU respectively.

I. Producers→ Consumers (**17.02 TLU)**

II. Producers → Farmers (for breeding purpose) (**10.71TLU)**

III. Producers →Butchers → Consumers (**14.3 TLU)**

IV. Producers → Hotels/Restaurants → Consumers (**18.8 TLU)**

V. Producers → Small traders → Consumers (**28.69 TLU)**

VI. Producer →Collectors →Small trader → Butchers → Consumer (**5.3 TLU)**

VII. Producers→ Collectors→ Small traders →Hotels/Restaurants → Consumers (**7.2TLU)**

VIII. Producers→Collectors →Large traders→Humera Hotels/Restaurants → Consumers (**13.29 TLU)**

IX. Producers→ Collectors →Large traders→Shire Hotels/Restaurants →Consumers (**21.96TLU**)

Each of the goat value chain actors adds value to the product as the product passes from one actor to another. In a way, the actors change the form of the product through creates place,time and form utility.Table 1 indicates different types of marketing cost related to the transaction of goat by collectors, small traders, large traders, butchers and hotels/restaurants; and the benefit share of each marketing actors.

Table 1: Goat marketing costs and benefit share of actors

Items (Birr/goat	Producers	Collectors	Small traders	Large traders	Butchers	Hotels/ Restaurants
Purchase price	325	870	938	1043	1062	1085
Production cost						
Feed cost	151	-	-	-	-	-
Labour cost	77	-	-	-	-	-
Herding cost	50	-	-	-	-	-
Veterinary cost	85	-	-	-	-	-
Total production cost	688					
Marketing cost						
Feed cost	-	4	22	16	-	-
Labor cost	-	5	5	5	40	50
Herding cost	-	-	11	7	-	-
Veterinary cost		5	9	8	-	-
Transport cost	15	-	12	42	5	5
Rope	-	2	2	2	2	2
Tax payment	-	-	5	5	5	5
Slaughtering cost	-	-	-	-	30	30
Cost of spices	-	-	-	-	43	89
Injera cost	-	-	-	-	52	105
House rent	-	-	-	-	7	11
Total marketing cost	-	16	66	85	184	297
Total cost	703	16	66	85	184	297
Sale prices	910	965	1132	1255	1517	1690
Selling price of hides and skins					23	23
Total selling price	910	965	1132	1255	1540	1713
Gross profit	207	79	128	127	294	331
% share of profit	17.7	6.8	11	10.9	25.2	28.4

Compared to ~~farmers~~producers, other actors (collectors, small traders, large traders, butchers and hotels/restaurants) operating expense was 48% but their gross profit was higher than producers. That means by simply buying from the farmers and selling to consumers, other actors took 82.3% of the total gross profit.While producers, doing all the work of producing goat and bearing the associated risks, took 17.7% of the gross profit margin. Collectors, small traders, large traders, butchers and hotels/restaurants are responsible for added 6.8%, 11%, 10.9%, 25.2% and 28.4%of the total value of goat in the district respectively.

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Comment [BM18]: How did you get these results ? Since you expressed in % as I suggested your supposed to explain in the methodology on how you will compare you results

I would suggest using a simplified graph with these values to clear show your results. HOW ABOUT GRAPHS?? MORE THAN A TABLE???

Marketing Margins of goat in different channels

The margin calculation was done to show the distribution throughout the various actors as small ruminant move from production to collectors, small traders, large traders, butchers, hotels and restaurants and finally to consumers. The relative size of various market participants' gross margins can indicate where in the marketing chain value is added or profits are made. In order to calculate the marketing margin of an agent, the average price of small ruminant for that particular agent was taken.Marketing margins of goat in the nine channels for each group of market player are shown in Table 2.

Table 2: Marketing margins of actors in different marketing channels of goat

Marketing margins	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
TGMM	0	0	40	46.1	19.6	40	46.1	40	46.1
GMMp	100	100	60	53.9	80.4	60	53.9	60	53.9
GMMc	-	-	-	-	-	3.6	3.2	3.6	3.2
GMMst	-	-	-	-	19.6	11	9.9	-	-
GMMlt	-	-	-	-	-	-	-	19.1	17.2
GMMb	-	-	40	-	-	25.4	-	17.3	-
GMMh/r	-	-	-	46.1	-	-	33	-	25.7

Note: TGMM is total gross marketing margin.
GMMp, GMMc, GMMst, GMMlt, GMMb and GMMh/r are gross marketing margins of producers, collectors,small traders, large traders, butchers and hotels/restaurants, respectively

The total gross marketing margin (TGMM) was found highest in channel IV, VII and IX, which is about 46.1%. Producer's share (GMMp) of the consumer's price was found to be highest along producers – consumers and producers – farmers (for breeding purpose) market channels (marketing channel I and II) followed by producers – small traders – consumers (marketing channel V) which is about 80.4%. Producer's share (GMMp) of the consumer's price was found to be lowest along producers – hotels/restaurants – consumers market channel (marketing channel IV) and producers – collectors – large traders –hotels/restaurants – consumers market channel (marketing channel IX), which is about 53.9%. Hotels/restaurants and butchers have got the highest gross marketing margin in channel IV and III respectively, whereas collectors have got the lowest gross marketing margin in channel VII and IX.

Comment [BM19]: discussion??? You didn't discuss your results, you just reported result

Sheep marketing channels

Nine main alternative channels were identified for sheep marketing. Small ruminant market participant of sample respondents weresupplied 107.25 TLU of sheep to the market. The channel of producers– small traders –consumers carry on the largest followed by producers – collectors – large traders – Humera hotels/restaurants - consumersand producers – consumers; carry a quantity of 24.9 TLU, 19.04 TLU and16.1 TLU respectively.

I. Producers → Consumers (**16.1 TLU)**
II. Producers →Farmers (for breeding purpose) (**5.9 TLU)**
III. Producers →Butchers → Consumers (**5.7 TLU)**
IV. Producers →Hotels/Restaurants → Consumers (**5.15TLU)**
V. Producers →Small traders → Consumers (**24.9 TLU)**
VI. Producer →Collectors→Small traders → Butchers →Consumer (**7.8 TLU)**
VII. Producers→Collectors →Small traders → Hotels/Restaurants →Consumers (**9.26 TLU)**
VIII. Producers→Collectors→Large traders→Humera Hotels/Restaurants →Consumers (**19.04 TLU)**
X. Producers→Collectors→Large traders→ Shire Hotels/Restaurants →Consumers (**13.4TLU)**

Sheep value chain has the same value adding behavior as goat value chain.Table 3 indicates different types of marketing cost related to the transaction of sheep by collectors, small traders, large traders, butchers and hotels/restaurants; and the benefit share of each marketing actors.

Table 3: Sheep marketing costs and benefit share of actors

Items (Birr/sheep	Producers	Collectors	Small traders	Large traders	Butchers	Hotels/ Restaurants
Purchasing price	312	815	890	965	1020	1035
Production cost						
Feed cost	165	-	-	-	-	-
Labour cost	77	-	-	-	-	-
Herding cost	40	-	-	-	-	-

Veterinary cost	85	-	-	-	-	-
Total production cost	679					
Marketing cost						
Feed cost	-	4	26	20	-	-
Labor cost	-	5	5	5	40	50
Herding cost	-	-	7	3	-	-
Veterinary cost	-	5	9	8	-	-
Transport cost	15	-	12	42	5	5
Rope	-	2	2	2	2	2
Tax payment	-	-	5	5	5	5
Slaughtering cost	-	-	-	-	30	30
Cost of spices	-	-	-	-	29	71
Injera cost	-	-	-	-	31	81
House rent	-	-	-	-	7	11
Total marketing cost	15	16	66	85	149	255
Total cost	694	16	66	85	149	255
Selling prices	864	938	1045	1138	1375	1512
Selling price of hides and skins					28	28
Total selling price	864	938	1045	1138	1403	1540
Gross profit	170	107	89	88	234	250
% share of profit	18.1	11.4	9.5	9.4	24.9	26.7

Compared to farmers, other actors (collectors, small traders, large traders, butchers and hotels/restaurants) operating expense is 45% but their gross profitwas higher than producers.This indicates that by simply buying from the farmers and selling to consumers, other actors took 81.9% of the total profit margin.While producers, doing all the work of producing sheep and bearing the associated risks, took 18.1% of the gross profit margin. Collectors, small traders, large traders, butchers and hotels/restaurants are responsible for added 11.4%, 9.5%, 9.4%, 24.9% and 26.7% of the total value of sheep in the district respectively.

Comment [BM20]: As my suggestions from goats

Comment [BM21]: discussion??? You didn't discuss your results, you just reported results

Marketing Margins of sheep in different channels

Marketing margins of sheep in the nine channels for each group of market player are shown in Table 4.The total gross marketing margin (TGMM) was found highest in channel IV, VII and IX, which is about 42.8%. Producer's share (GMMp) of the consumer's price was found to be highest in marketing channel I and II followed by marketing channel V,which was about 82.7%.

Producer's share (GMMp) of the consumer's price was found to be lowest in marketing channel IV, VII and IX, which was about 57.2%.

Comment [BM22]: discussion??? You didn't discuss your results, you just reported result

Table 4: Marketing margins of actors in different marketing channels of sheep

Marketing margins	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
TGMM	0	0	37.2	42.8	17.3	37.2	42.8	37.2	42.8
GMMp	100	100	62.8	57.2	82.7	62.8	57.2	62.8	57.2
GMMc			-	-	-	5.4	4.9	5.4	4.9
GMMst	-	-	-	-	17.3	7.8	7	-	-
GMMlt	-	-	-	-	-	-	-	14.6	13.2
GMMb	-	-	37.2	-	-	24	-	17.2	-
GMMh/r	-	-	-	42.8	-	-	30.9	-	24.7

Note: TGMM is total gross marketing margin.
GMMp, GMMc, GMMst, GMMlt, GMMb and GMMh/r are gross marketing margins of producers, collectors,small traders, large traders, butchers and hotels/restaurants, respectively.

Hotels/restaurantsand butchers have got the highest gross marketing margin in channel IV and III, respectively whereas collectors have got the lowest gross marketing margin in channel VII and IX.The performance of small ruminant market analyzed using marketing margins supplemented with analysis of costs incurred and gross profits generated for different actors, showed poor performance of the market. Therefore, producers must strengthen horizontal linkages with other producers and vertical linkages with other actors to get higher gross profit.

Comment [BM23]: discussion??? You didn't discuss your results, you just reported your result

DISCUSSION????

You jus reported the results neither of your results have been discussed??

Conclusions and Recommendations

Small ruminant in this area passes throughcollectors, small and large traders, hotels/restaurants and butchers, with value being added before reaching the end-users. The study indicates that the area has ninemarketing channel of small ruminant.The intermediate buyers obtain the animals from the farmers at a lower price and they sell to the consumers at a higher price. Each of the small ruminant value chain actors adds value to the product as the product passes from one actor to another. Collectors, small traders, large traders, butchers and hotels/restaurants were added

6.8%, 11%, 10.9%, 25.2% and 28.4% of the total value of goat and 11.4%, 9.5%, 9.4%, 24.9% and 26.7% of the total value of sheep in the district respectively. The highest total gross marketing margins were 46.1% and 42.8% for goat and sheep marketing channels respectively.Producer's share of the consumer's price was highest along producers – consumers, producers – farmers (for breeding purpose) and producers – small traders – consumers in both market channels. Hotels/restaurants and butchers have the highest gross marketing margin whereas collectors have got the lowest gross marketing margin in both market channels. The performance of small ruminant market analyzed using marketing margins supplemented with analysis of costs incurred and gross profits generated for different actors, showed poor performance of the market. Therefore, producers must strengthen horizontal linkages with other producers and vertical linkages with other actors to get higher gross profit.

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