



The Functions of Actors in the Tahtay Adyabo District of Tigray, Ethiopia's Small Ruminant Value Chain

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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

Even with the fact that Ethiopia in general and Tahtay adyabo district is characterized by populated livestock, actors' coordination are weak. The aim of the study was to see the function of actors in small ruminant value chain. Primary data were collected from a randomly selected 138 producers, 5 butchers, 6 large traders, 12 small traders, 8 collectors, 11 consumers and 7 hotels/restaurants interviewed through a semi-structured questionnaire and from key informant interview. The major actors in the district were small ruminant producers, input suppliers, farmers, collectors, small traders, large traders, butchers hotels/restaurants, and consumers. The main supporters of the

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small ruminant value chain in the study area are Office of Agricultural and Rural Development, Office of Trade and Industry, District Administrations, Dedebeit Saving and Credit Institution, Shire-Maitsebri Agricultural Research Center and Non-Governmental Organization. The result showed that 58.7%, 67.4% and 45.7% of sample respondents have got veterinary services, market information and taking credit respectively. There are weak parallel linkage among small ruminant producers and shortage of perpendicular relation of small ruminant farmers to the supplementary market actors. Therefore, there should be an intervention on establishing small ruminant producer cooperatives, discuss with stockholders about most important marketing problems, find general solutions and creating market relationship between small ruminant farmers and supplementary actors.

Keywords: Actors; function; tahtay adyabo; Tigray; Ethiopia.

1. INTRODUCTION

"Ethiopia is gifted with enormous livestock resource, natural resource and varied agro-ecological zones appropriate for livestock production. These potentials create the country well-known for animal genetic diversity" (Hussen et al., 2015). "Livestock production acts significant position to smallholder producers and in the nationwide economy" (Banda et al., 2021; Gebreyohanes et al., 2021; Management Entity, 2021).

"Sheep and goats are an essential economic and ecological place in the agricultural systems of developing countries as they make a big role to household profits, particularly for the rural poor" (Maikasuwa, 2014). "They play a key role, especially to the small holders, in the provision of products such as milk, meat, wool, and skin which are important sources of food and income" (Wodajo et al., 2020).

"Regardless of the fact that Ethiopia is characterized by populated livestock, its output is low, at least in terms of predictable products such as meat and milk and producers received small advantage for their livestock and livestock products production. This mostly due to poor breeds, insufficient feeds, diseases, poor market systems characterized by long marketing processes, high operation costs, shortage of perpendicular and parallel collaboration and connection among value chain actors. Demand fluctuations, shortage of improved feeds and weak extension service are also problems" (Biru et al., 2016; Desta et al., 2019). "Moreover, many live animals supplied to the market by producers do not convene the value attributes necessary by different markets. This is because of unfortunate relation of farmers and other actors in the chain to the significant support services" (Eyob, 2016; Dawit, 2016).

The Study focused on actors and their roles in small ruminant value chain becomes necessary to play substantial role towards the improvement of the market situation. Therefore, this study carried out to identify functions of actors in small ruminant value chain in Tahtay Adyabo District.

2. METHODOLOGY

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

Data sources: The data were collected from both primary and secondary sources. Primary data were collected from a randomly selected sample households, large traders, small traders, collectors, butchers, hotels/restaurants and consumers interviewed through a semi-structured questionnaire and from key informant interview.

Sampling Procedure and Sample Size: Multi-stage random sampling procedure was used to choose representative small ruminant producer kebeles and sample households. Total of 138 sample households were selected randomly using probability proportional to population size-sampling technique based on (Cochran 1977) formula.

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

Where,

n is the sample size

P is the estimated proportion of small ruminant producers from the total population

$Z = 1.96$ and $e = 0.05$

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

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.

Data analysis: Descriptive statistics were used to analyze the data collected from small ruminant producers, traders, hotels/restaurants, butchers and consumers. Descriptive statistical methods of data analysis was used for the use of percentages, χ^2 -test and to investigate and relating household characteristics, services and marketing functions.

3. RESULTS AND DISCUSSION

In the study area, sheep and goat value chain actors are those individuals who exchange money as well as animals, which mainly increases in worth with every operation.

3.1 Primary Actors

The main actors in small ruminant value chain in the study area were input suppliers, farmers, collectors, small traders, large traders, hotels and restaurants, butchers and individual consumers.

Input suppliers: Input suppliers are the initial actor in the small ruminant value chain and provide inputs to producers. At this phase of the value chain, there are numerous stockholders who are occupied to supply input like breeding stock and veterinary drugs which are crucial inputs in the production of small ruminants in the study area. Currently Office of Agriculture and Rural Development, NGO (Save the Children) and Private veterinary clinics and pharmacies are the major foundation of input supply. Small ruminant producers also highly participated in this stage especially for supplying breeding stock. With regard to source of breed, farmers obtained breed, from other farmers/neighbors and NGO (Save the Children).

Producers: Small ruminant producers are the major actors who perform most of the value chain functions right from inputs preparation on

their homesteads and procurement of the inputs from other sources to marketing. The major value chain functions that small ruminant producers perform include housing, feeding, herding and breeding. Farmers typically trade their small ruminants to several purchaser in the village, market places and on the road to the market.

Collectors: Collectors are smallholder farmers who buy small ruminant from remote rural markets and villages for the reason of resell it to small and big traders. They utilize either their possess capital or big and little trader's cash and their knowledge of local conditions and relationships to buy animals. Collectors are actors in the small ruminant value chain, accountable for the trading of goats and sheep from producers to small and large traders in the study area.

Small traders: Small traders are intermediate traders who purchase up to 20 small ruminant in a market from intermediaries and straightforwardly from farmers and supply them to butchers, hotels/restaurants and consumers in the study area. They purchase small ruminant from farmers and trade goats and sheep to entity and bulk consumers such as defense force. They are also responsible for trading of goats and sheep to butchers and hotels/restaurants from producers and collectors in the study area.

Large traders: Large traders are mainly involved in buying up to 60 small ruminants from collectors in the study area. Mainly, they utilize intermediaries to purchase huge amount of animals and are vigorously occupied in small ruminant marketing all over the year. They buy larger number of small ruminant than any other actors use Isuzu trucks to transport small ruminant and are permanent suppliers of big hotels and restaurants in large towns like Shire-Endaslase and Humera. They are responsible for trading of goats and sheep to Shire and Humera hotels/restaurants from collectors.

Hotels and restaurants: They are significant actors in the small ruminant value chain for the study area. They buy to slaughter sheep and goats from producers, small traders and larger traders. When buying small ruminant, they consider body extent and situation. They slaughter small ruminant and process them into different local dishes like *keywot*, *tibis*, *misto*, *minchet*, *kikil*, *dullet* and *gubetkualit* and sell them to their customers.

Butchers: They are key actors in the small ruminant value chain for the study area and buy

to slaughter goats and sheep from producers, small traders and large traders. When buying small ruminant, they offer grave concern to body extent and circumstance. They slaughter small ruminant and provide both uncooked and cooked meat at their location. In the study area, butchers sell raw meat for takeaway locally known as "medeb" other than on kilogram basis to individual consumers.

Consumers: Individuals are actors that buy either live animals or meat for their own household consumption. They buy live sheep and goats from producers and small traders to slaughter for holidays and particular cases. Individual clients typically pay money for butchery goats and sheep for special holidays. The sort of animals bought by individual consumers depends on their earnings and the time for which the animal is vital. Usually, rich consumers buy fattened male sheep and goats (*mukit*), while lower income groups buy male yearlings. Individual consumers in rural areas usually purchase live small ruminant from producers and in the cities, they buy from any seller. Individual consumers in the study area also buy uncooked meat from butchers locally known as "medeb" other than on kilogram basis.

Similarly, mass consumers in the study area are Ethiopian defense forces. They purchase live small ruminant from small traders and producers. The most important suppliers to such mass consumers are undersized traders. In order to gather the necessary number of animals, those traders utilize a set of connections of collectors. Farmers also make main section of the consumers since they consume part of their produces.

Farmers: Farmers are both producers and buyers of sheep and goat in the study area. They buy young female sheep and goat mostly for breeding purpose when they need to increase their herd size. Their favored sources of animals are farmers from recognized locations since they

want to make sure whether the animal will adapt to their situation. Concerning the time of purchases, farmers usually buy animals after crop harvesting from the end of October to December. Because they get cash by selling cash crops and other grains and availability of grazing pasture and crop residues.

3.2 Supporting Institutions

Supportive institutions are those who provide supportive services including training and extension, market information, veterinary services, financial and research services. Office of Agriculture and Rural Development, Dede-bit Credit and Saving Institution, Non-Governmental Organization (Save the Children) and Shire-Maitsebri Agricultural Research Center are main supporting institutions who play a central role in the provision of such services in the study area.

Veterinary services: The survey result showed that 58.7percent of sample respondents have got veterinary services (Table 1). Unlike the households nearer to towns, who can sometimes get veterinary service from privet veterinary pharmacies and specialists, greater part of the households get veterinary service from Office of Agriculture and Rural Development, Those sampled farmers got veterinary services from Office of Agriculture and Rural Development, and privet veterinary specialists and pharmacies.

Credit services: In the study area, Dede-bit Credit and Saving Institution and informal lenders have been identified as source for credit on a cash basis. The survey result showed that 45.7percent of sample respondents taking credit (Table 1). With regard to credit source farmers took credit from Dede-bit Credit and Saving Institution, cooperatives and from credit and saving groups. Sources of credit for all the interviewed traders, hotels/restaurants and butchers are also Dede-bit Credit and Saving Institution.

Table 1. Access to services by sample respondents

Variables	Items	Total sample (N =138)		χ^2 -test
		N	%	
credit	Have access	63	45.7	3.4829*
	Don't have access	75	54.3	
Veterinary	Have access	81	58.7	12.94***
	Don't have access	57	41.3	
Market information	Have access	93	67.4	10.59***
	Don't have access	45	32.6	

Note: *** and *are statistically significant at 1% and 10% significant levels respectively

Market information: Before selling their animals, producers search for information about market conditions through self-assessment by going to the markets and asking their neighbors. The source of the information was information from the previous week's market. The survey result showed that 67.4 percent of sample respondents got market information. The sampled farmers got market information from other farmers who are neighbors, friends and through personal observation (Table 1).

"Development agents, district office of agricultural and rural development, experts, Shire-Maitsebri Agricultural Research Center and Non-Governmental Organization were the main sources of small ruminant extension service in the study area. district office of agricultural and rural development through its development agents is the major actor who provides information and advisory service on small ruminant production. The type of extension service with regard to small ruminant was technical advice and training applied to small ruminant production and marketing" (Biru et al., 2016, Desta et al., 2019).

In the study area, the general pattern in small ruminant market is for producers to sell to different traders each time they go to the market. "Producers do not have any longstanding customer relationship with any of these buyers and they sell their products to anyone they can. Even the most frequent buyers of small ruminant in the markets do not have any contractual supply agreement with producers. This indicates absence of vertical linkage between producers and any buyer in the small ruminant value chain in the district. This is mainly because the production system is not market-oriented and producers are not following demand or the quality requirements of important market actors. Similarly, farmers lack strong horizontal linkages with each other and cause their poor bargaining power in the market. The horizontal linkages among traders are primarily by the use of common trucks for transportation of sheep and goats to the next level of the market. Since they collect a small number of sheep and goats from different markets, it is not economical to hire a truck on an individual basis" (Eyob, 2016).

"Generally, in the study area, there are weak horizontal linkage among small ruminant producers and lack of vertical linkage of small ruminant producers to the other market actors. Therefore, there should be an intervention

establishing small ruminant producer cooperatives, discuss with stockholders about major marketing problems, find common solutions and creating market linkage between small ruminant producers and other actors" (Dawit, 2016).

4. CONCLUSION AND RECOMMENDATIONS

Input providers, small ruminant producers, collectors, small traders, large traders (for breeding reasons), hotels/restaurants, butchers, and consumers were the primary value chain actors, according to a small ruminant value chain analysis of the study areas. The primary players and organizations engaged in small ruminant production and input supply activities were small ruminant producers, the Office of Agricultural and Rural Development, commercial veterinary pharmacies, and the Non-Governmental Organization (Save the Children). Small ruminants are purchased by collectors from rural marketplaces and sold to both small and large traders. Small-scale traders purchase small ruminants from farmers and collectors and resell them to customers, butchers, and hotels and restaurants. Large dealers primarily purchase small ruminants from collectors and resell them to butchers, hotels, and restaurants. There are also governmental and nongovernmental supportive institutions that support small ruminant value chain directly or indirectly. Value chain supporters or enablers provide facilitation tasks like creating awareness; provide credit, facilitating building strategy and the coordination of support. The main supporters of the small ruminant value chain in the study area are office of agricultural and rural development, Office of Trade and Industry, District administrations, Dedit Saving and Credit Institution, Shire-Maitsebri Agricultural Research Center and informal credit suppliers.

There was weak horizontal linkage among small ruminant producers and lack of vertical linkage of small ruminant producers to the other market actors. Therefore, there should be an intervention on establishing small ruminant producer cooperatives, discuss with stockholders about major marketing problems, find common solutions and creating market linkage between small ruminant producers and other actors.

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 the writing or editing of this manuscript.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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