



The market chain analysis of live cattle in South Omo Zone, Southern Ethiopia

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ABSTRACT

This study focus on market chain actors and their functions they play in the market, to analyze the S-C-P of live cattle in the study area. Few traders dominated the market structure of live cattle in the study area. Degree of competition between traders varies and the live cattle market structure varies from loose oligopoly to tight oligopoly. This shows that in the study area few traders dominated market shares and earns abnormal profit. Entry barriers of the market are high market distant, characterize the market of live cattle and high transportation cost. In addition, market the structure varies for each cattle type.

Keywords: Live cattle, Market margin, Market structure, Conduct and performance

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Introduction

Ethiopia is a home for livestock population in Africa, but excluding some non-sedentary area of country such as agro-pastoral and pastoral areas of Afar and Somali regions, having approximately 56.87 million of chickens, 56.71 million of cattle, 29.33 million of sheep, 29.11 million of goats, 7.43 million donkeys, 2.03 million of horses, 1.16 million of camels and 0.40 million of mules populations (CSA, 2015).

In Ethiopia, the livestock production sector has been contributed about 19% to the total Gross Domestic product (GDP) of the country and earnings 16-19% of foreign exchange to the country, in which the agricultural share of the GDP ranging 35-49% (IGAD, 2013). Moreover, the livestock production sector serve as source of food, transportation, production of manure, raw materials, investment, generating cash income and mainly serve as social and cultural identity for the society. Despite of these roles played by livestock, the production and productivity of livestock is in general is very low (Duguma *et al.*, 2012).

The supply of livestock originates pastoralists and agro-pastoralists in small numbers because they are highly dispersed and supply non-homogenous products to the local markets. Due to the low production and productivity of livestock and the absence of market-oriented

livestock production systems in the areas, the volume supplied to the market is very low. In addition, the live animals supplied by different producers such as pastoralist, agro-pastoralists and farmers to the market do not meet the quality standards and attributes required by diverse market actors. This is due to poor interlink age of livestock producers and other actors in the production as well as marketing chain to the critical support services. Among the problems that are related to the support services includes: absence of commercial animal health services, lack of appropriate transportation system, lack of sufficient air-cargo capacity, lack of proper feeding system, and lack of improved and highly organized fattening systems (Adina and Elizabeth, 2006).

However, in Ethiopia there are various alternative options initiated by different governmental and non-governmental organizations. These initiatives undertaken by governmental and non-governmental organizations are often regional and encompassing more than one country in east Africa and attempt to find sound solutions to overcome production-marketing barriers. East African countries like Ethiopia and others could effectively use their rich livestock resources to improve the livelihood of their populations living in poverty (MOI, 2005).



The marketing system and its information provided in the pastoral and agro-pastoral areas is out dated, unreliable and it cannot provide the real figure of the economic contribution sector for the national economy of the country and the community who engaged in the sector. More over the main problem for live cattle marketing sector is formulation of appropriate policies and procedures to increasing production and marketing efficiency in the sector. To conduct research on market chain analysis of live cattle for the pastoralist and agro-pastoralist community believed to enhance its production and productivity by locating economical live cattle marketing routes. Evidence also shows that limited numbers of investigations have been made on local and regional cattle markets in pastoralist and agro-pastoral areas and the market chain is mainly dominated by brokers at primary, secondary and terminal markets level (Ayele *et al.*, 2003). Most studies of live cattle market chain tend to focus on the market chain of the live cattle at aggregate level than dealing the market chain of live cattle at an individual cattle type. Some studies have tried to link this gap by disaggregating the live cattle into various types and have tried to see the market chain opportunities and problems for each type of live cattle separately. Therefore, this study mainly focus on market chain analysis of live cattle and provide relevant information with respect to the market chain of various live cattle types based on the following general and specific objectives.

General Objective

To assess the market chain analysis of live cattle in south omo zone of Southern Ethiopia.

Specific Objectives

- To overview structure, conduct and performance of cattle trade.
- To sort out the major market chain actors and their function in the market.
- To identify the major market channels of live cattle trade in the study area.

Methodology

Description of the study area

South Omo Zone is among one of the Zones found in SNNPRS in Ethiopia. Astronomically it is located at 4° 27' - 6° 26' North and 34° 57' - 37° 49' East bordering Keffa, Gofa and Gamo Zones; Besketo and Konta special districts to the North; Konso Zone and Derashe special districts to the East; Borana Zone to the Southeast; Kenya to the South; Sudan to the Southwest, Mirab Omo and Bench Shego Zone to the west. The Zone covers an area of 22,360.76 km² and its altitude ranges from 380 to 3,300 m.a.s.l. (DAO, 2003).

The study was in Bena Tsemay and South Ari districts in South Omo Zone. Three kebeles were selected from each district statistical criteria and secondary data gathered from animal and fishery as well as trade and industry office of the districts. Bena-Tsemay and Debub Ari districts are among the districts found in South Omo Zone of SNNPRS. Bena-Tsemay district have a border with Hamer district on the South, Selamago district on the West, Debub Ari and Malle district on the North, district on the Northeast, Konso Zone on the East, and the Oromia Region on the Southeast; the River Weito separates it from Konso Zone and Oromia Region. The western part of Bena-Tsemay is included in the Mago National Park (Kutoya *et al.*, 2018). The city of the district Key is located 739 Km from Addis Ababa the capital city of Ethiopia. The district has a huge number of livestock populations in the Zone, which is 490,739 cattle, 443179 goats, 174786 sheep, 94,056 poultry, 29,240 donkeys and 249 camels, respectively. Whereas South Ari district is among one of the ten districts in South Omo Zone. The district is bordering with Semen Ari district in North, Mago national park in South, Wub Ari district in West, Malle district in East and Baka Dawula Ari district in South East. Gather is the city of the district, which is located 798 Km from Addis Ababa the capital city of Ethiopia. The district has an estimated animal population of about 202,018 cattle, 117,519 chickens, 108,167 sheep, 52,160 goats, 14,113 equines, and more than 15,000 bee families. (Bizuayehu *et al.*, 2016).

Source and method of data collection

This study was conducted in two districts of AGP II supporting such as South Ari and Bena-tsemay of South Omo Zone. The study both secondary and primary type of data sources. The major data collection methods used during the study periods includes individual household interview, FGD and KII. Before starting household survey preliminary assessment was held to collect basic information about the study districts in order to select representative kebeles and the major live cattle marketing centers. First, the market chain actors of live cattle operating at district level were identified in consultation with each district Trade, Industry Office, undertaking pre survey field visit, and assessments. The household level survey questionnaire was prepared and pre-tested for each chain actors operating in each district starting from production up to exporting.

Sampling methods and sample size

Multistage sampling techniques were employed, at the first stage and the study districts were selected purposively based on AGP-2 mandated districts of South Omo Zone. At the second stage, the study kebeles from each district were selected purposively in relation to their number of live

cattle, access and supply to market. Then the sample household respondents from each kebele were selected proportionally to the total number of households found in each kebele. The sample size determination technique used for this study was Rule of Thumb Techniques (Yount, 2006). Finally, each respondent household was selected by a simple random sampling method. During the study time a total of 120 sample producer households and 27 traders were covered. In this study, the number of traders was based on their availability.

Data analysis

This study uses simple descriptive statistics such as mean and percentage and Std. deviation to analyze data. Data was analyzed using Statistical Software (SPSS Verstion.16). KII interviews and observations were also used to support the primary data gathered during the survey.

Results and Discussion

Socio-economic characteristics of sample respondents

Table 1. Sex, educational level and marital status of sample respondents.

Variables		Respondents (N=120)	Percentage
Sex	Male	116	96.7
	Female	4	3.3
Educational level	Illiterate	42	35.0
	First cycle	29	24.2
	Primary school	35	29.2
	Secondary school	8	6.7
	Diploma and above	5	5.0
Marital Status	Married	118	98.3
	Single	2	1.7

Source: Survey Data Result, 2011

In the table above data were collected based on the demographic characteristics of sample households' to provide information about the key variables included in this study. The main variables examined in this section were the household heads' sex, education level and marital status. The results shows about 96.7% of sample households were male-headed households, the remaining 3.3% were female-headed households in the study area. In terms of their marital status, 98.3% of sample households were get married and only 1.7% of households were single. The education level of the sample respondents was

believed to be one of the important features that determine the readiness of respondents to accept new ideas and technologies. Farmers that are more educated were expected to adopt new technologies immediately than less educated in order to improve cattle production. The education categories implies that 35.0% of the sample households were illiterate, 24.2% first cycle, 29.2% primary school, while 6.7% of the respondents were attained secondary education and the remaining 5.0% were diploma and above diploma, respectively.

Table 2. Age category, family size and cattle ownership of sample respondents.

Variables		Respondents (N=120)	Percent
Age of respondents	< 25	12	10.0
	25-35	59	49.2
	36-45	38	31.7
	46-55	7	5.8
	> 55	4	3.3
Family size	≤ 5	42	35.1
	6-10	61	50.8
	> 10	17	14.1
Cattle ownership	1-10	80	66.7
	11-20	24	20.0
	21-30	5	4.2
	31-40	6	5.0
	41-50	1	0.8
	51-60	1	0.8
	61 and above	3	2.5

Source: Survey Data Result, 2011.

As shown in table 2 above, the age of sample households categorized into five intervals, based on this 10% of the total respondents have the age of < 25, and those having age between 25-35, 36-45 46-55 and >55 were 49.2%, 31.7% and 5.8%, respectively. While the age of respondents > 55 were 3.3% of the total respondents. Regarding the family size about 35.1% of the sample households have family size of ≤ 5 and 50.8% have family size 6-10, while the rest 14.1% of

them have family size of > 10. According to cattle ownership of the respondents, they were classified into seven levels. From this levels 66.7% of respondents have cattle size between 1-10, 20.0% between 11-20, 4.2% between 21-30, 5% between 31-40, 0.8% were those between 41-50, while 0.8% were between 51-60 and the rest 2.5% were between 61 and above.

Table 3. Socio-economic characteristics of traders.

Variables		Respondents (N=27)	Percent
Sex	Male	26	96.3
	Female	1	3.7
Age	≤ 30	10	37.0
	31-45	15	55.6
	46 and above	2	7.4
Education level	Illiterate	3	11.1
	First cycle (1-4)	5	18.5
	Primary (5-8)	14	51.9
	Secondary and Preparatory (9-12)	5	18.5
Family size	≤ 5	14	51.9
	6-10	10	37.0
	>10	3	11.1
Trading experience	1-5	19	70.4
	6-10	6	22.2
	11-15	1	3.7
	16-20	1	3.7

Source: Survey Data Result, 2011.

In table 4 above the socio-economic profile of cattle traders shows that 96.3% of them were male and the other 3.7% were female. The age of traders classified into three categories this means ≤ 30 with 37.0%, 31-45 having a 55.6% and the final 46 and above with 7.4%, respectively. Based on education level about 18.5% of sample traders attained first cycle education (1-4), 51.9% attained primary education (5-8) and 18.5% attained secondary and preparatory education (9-12), respectively, while 11.1% of traders were illiterate. This implies that education is very important in live cattle trading, for it determines information dissemination among the traders themselves, to the producers and important for early technology adoption among traders in diverse cultural, socio-economic and biophysical environment. According to their trading experience about (70.4%) of the traders have a

trading experience of 1-5 years, the others 22.2%, 3.7% and 3.7% have a trading experience of 6-10, 11-15 and 16-20 years, respectively. The result also reveals that 51.9% of traders have family size ≤ 5, 37.0% have family size of 6-10 and the others 11.1% have family size of >10, respectively.

Production of live cattle

The study was conducted in Agro-pastoral and Agrarian areas of South Omo Zone, in which the more of the time the livelihood of Agro-pastoralists depends on livestock production whereas; the livelihood of Agrarians more of the time depends on crop production. The type of live cattle the respondents owned during the study time in 2010-11 E.C. were indicated in the table below.

Table 4. Type of Live cattle respondents owned in the year 2010-11 E.C.

Type of Cattle owned	Number of Cattle Owned			
	Minimum	Maximum	Mean	Std. Deviation
Cow	1.00	50.00	5.05	7.81
Ox	1.00	20.00	3.03	3.13
Bull	1.00	20.00	3.12	2.99
Heifer	1.00	15.00	2.91	2.48
Calves	1.00	5.00	2.00	1.15

Source: Survey Data Result, 2011.

Table 4 above shows the type and number of live cattle the producers owned in the year 2010-11 have listed according to their importance. Based on this the producers have owned a minimum of 1.00 and a maximum of 50.00 with a mean of 5.05 and Std. Deviation ± 7.81 Cows, a minimum of 1.00 and a maximum of 20.00 with a mean of 3.03 and Std. Deviation ± 3.13 ox's, a minimum of 1.00 and a maximum of 20.00 with a mean of 3.12 and Std. Deviation ± 2.99 Bulls, a minimum of 1.00 and a maximum of 15.00 with a mean of 2.91 and Std. Deviation ± 2.48 Heifers and a minimum of 1.00 and a maximum of 5.00 with a

mean of 2.00 and Std. Deviation ± 1.15 Calves, respectively.

Marketing and transportation of live cattle

Marketing

Marketing is selling, merchandising or the exchange of live cattle for an agreed sum of money between the seller and buyer of the live cattle supplied to the market. The type and amount of live cattle sold and bought in the year 2010-11 was indicated in the table below.

Table 5. Type and amount of live cattle respondents sold in the year 2010-11 E.C.

Type of live cattle sold	Amount of live cattle sold			
	Minimum	Maximum	Mean	Std. Deviation
Cow	1.00	7.00	1.79	1.67
Ox	1.00	8.00	1.82	1.37
Bull	1.00	7.00	1.79	1.67
Heifer	1.00	3.00	1.60	0.84
Calves	1.00	2.00	1.40	0.55

Source: Survey Data Result, 2011.

The results in the table above shows that respondents sold a minimum of 1.00 Cow, Ox, Bull, Heifer and Calve, respectively and a maximum of 7.00 Cows, 8.00 Ox, 7.00 Bulls, 3.00 Heifers and 2.00 Calves with a mean of 1.79 Cows, 1.82 Ox, 1.79 Bulls, 1.60 Heifers and 1.40 Calves. From this, the Std. deviation for each live

cattle is 1.67 for Cows, 1.37 for Ox, 1.67 for Bulls, 0.84 for Heifers and 0.55 for Calves, respectively. During the study time, a number of markets were assessed from Bena-tsemay district; Woyito, Aliduba and Key Afer markets and from South Ari district Gather and Shishir. The type of cattle marketing were shown as follows in the picture below.



Plate 1. Pictures taken during marketing of Ox's, Bulls and Cows.

During the study time, the markets assessed from both districts were Woyito, Aliduba and Key Afer from Bena-tsemay district where as Gather and Metseri from South Ari district.

Transportation of live cattle

Traders truck the live cattle by Izuzu and transport it to the central markets such as Addis Ababa, Debre Zeyit and Mojo.



Plate 2. Pictures taken during marketing of Heifers and Calves.



Plate 3. Pictures taken during trucking and exporting of live cattle.

Market structure, conduct and performance of live cattle

Market structure of live cattle

Market structure of cattle in Bena-tsemay and South Ari districts of South Omo Zone is characterized by different producers and marketing actors including pastoralists and agro-pastoralists, brokers, local collectors, medium scale traders large scale traders, butchers, exporters, local hotels and restaurants, so each market actor has its own function. Pastoralists and agro-pastoralists are the first marketing actors in the chain of live cattle. The major duties and responsibilities of live cattle producers include supplying cattle and telling initial selling price cattle. Brokers are actors in the market chain of live cattle and they play a role in

facilitating of market, price-setting mechanisms, contacting traders with producers and mainly them acting as the delegates of traders. Trader's role is purchasing and providing currency, price setting, giving final market price and controlling the marketing process.

In the zone, formal and informal marketing channels of live cattle were identified in the study districts. If actors in the marketing chain pay taxation fee for legal tax collecting organizations in the market chain, the live cattle traveled to other bordering zones, central markets of Ethiopia and to outside countries are referred as formal live cattle market channels. While live cattle traders those who trek live cattle from the study area to other zones and to Kenya through Dasenech district and do not pay tax to

government and transport through unknown route is defined as informal live cattle market channels. Both of the marketing channels are dominant in relation to the actors willing and the reasons why he/ she supply the cattle. Informal market channels are common in the study area.

Channel 1: Pastoralists/ Agro pastoralists- other Pastoralists/ Agro pastoralists: In this live cattle market channel producers sell the live cattle to producers and it is usually known for restocking purpose and undertaken around farm gate. The marketing system undertaken through this channel is informal type marketing system. The main aim of this practice is for the replacement of the aged ones. In this channel, about 16.2% producers marketed their cattle through this channel. This channel mainly comprised of calves, heifer and bulls and the marketing system in this channel was undertake based on friendship, kinship and neighborhood pattern.

Channel 2: Pastoralists/ Agro pastoralists-Collectors-Small/Big traders-Exporters: This type of channel is formal way of marketing channel. First producers sell to collectors, then collectors to small/big traders finally traders sell to exporters, who export live cattle to central markets of Ethiopia such as Addis Ababa and Mojo. In this channel, about 19.8% of producers marketed their cattle through this channel, which comprised of calves, heifer and bulls.

Channel 3: Pastoralists/ Agro pastoralists-Festivals: This type of marketing channel is one of the oldest and informal ways of marketing channel. The category of live cattle marketed through this channel comprised of fattened cows and ox, slaughter and culled for aged oxen and barren cows. In this channel, about 7.4% of interviewed pastoralists/agro-pastoralists marketed their cattle. The purpose of live cattle buyers in this channel is for festival consumption.

Channel 4: Pastoralists/ Agro pastoralists-Restaurants/ Hotels-Consumers: In this channel value addition were undertaken this is due to the existence of smuggling activity and the settlement of peoples from other areas for this activity. The type of cattle marketed in this channel is similar to that of channel three, that means fattened cows and ox, slaughter and culled for aged oxen and barren cows. Among the interviewed respondent's about 10% of the sample households sell their live cattle through this channel.

Channel 5: Pastoralists/ Agro pastoralists-Abettors-festival consumers: This marketing channel is categorized under one of the informal

channel. Here live cattle producers sell their products to abettors, and then the abettors resell to festival consumers. The main purpose of live cattle buyers in this channel is for festival consumption. In this channel, about 5.6% of sample respondents sell their live cattle.

Channel 6: Pastoralists/ Agro pastoralists-Small/ Big traders-exporters: These cattle marketing channel was practiced formally by the actors. Here, pastoralists sell their live cattle to small/big traders, then small/big traders' resale the live cattle they bought to formal exporters that come from the central markets of Ethiopia. Through this channel, about 13% sample households sell their live cattle. A type cattle marketed in this channel was ox, bulls and also sometimes cows and heifers.

Channel 7: Pastoralists/ Agro pastoralists-Abettors-Restaurants/ hotels-consumers: This cattle market channel is mainly practiced by pastoralists. Here, pastoralists/ agro pastoralists sell to abettors, then abettors process it and sell meat to restaurants/hotels, finally restaurants/hotels sell raw meat to consumers or process it, the consumers consume in the form of "Dulate, Tibse and Misto." Through this channel, about 10% pastoral/agro pastoralists sell their live cattle.

Channel 8: Pastoralists/ Agro pastoralists-Abettors-Cooperatives-Consumers: This is one of the market channels, where producers sell their live cattle to abettors then abettors slaughter it, sell meat to those cooperatives, finally cooperative process, and sell in the form of food to consumers. Through this marketing channel, about 8% of the households sell their live cattle.

Channel 9: Pastoralists/Agro pastoralists-Small/Big trades-Abettors-Restaurants/Hotels-Consumers: This one-way marketing channel practiced in the study area. Here, pastoralists/ agro pastoralists sell to traders, traders to abettors, then abettors slaughter it and sell meat to restaurants/hotels, finally restaurants/ hotels sell raw meat to consumers or process it, the consumers consume in the form of "Dulate, Tibse and Misto." Through this marketing channel, about 12% pastoral/agro pastoral households sell their live cattle.

Channel 10: Pastoralists/ Agro pastoralists-Small/Big trades-Abettors-Ceremonials. In this marketing channel, pastoralists/agro pastoralists sell cattle to trades, traders sell to the abattoirs and abattoirs then to ceremonials. Through this channel, about 10% sample households sell their live cattle.

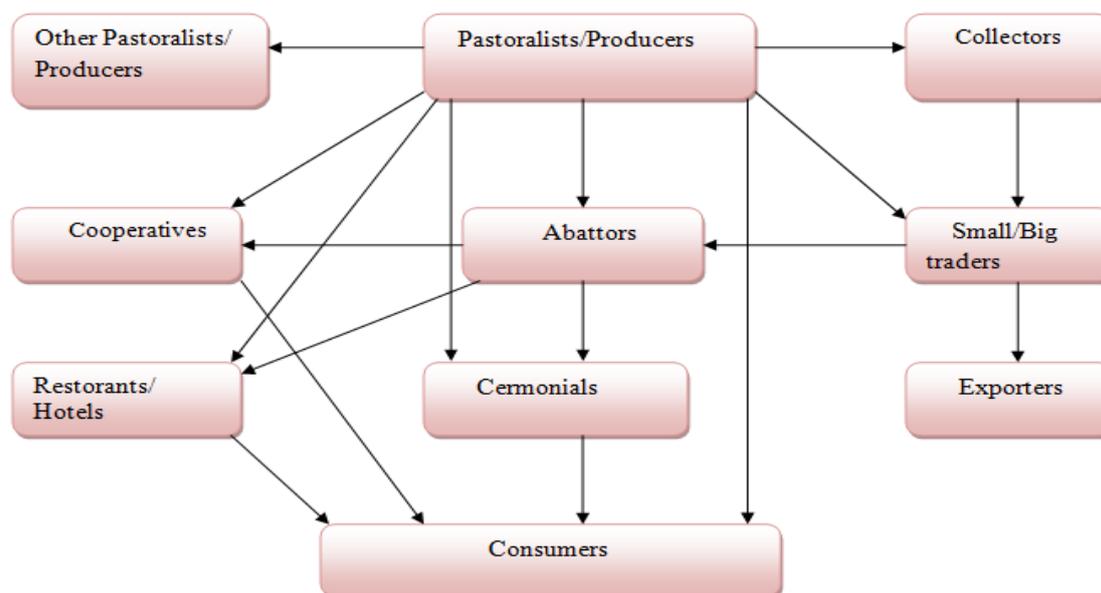


Figure 1. Map of Market chain of live cattle.

Source: Survey data result, 2011.

Degree of live cattle market concentration

The live cattle market concentration ratio in the study area is presented and discussed below. As indicated in table 6 below the live cattle market concentration ratio was calculated by using two usual known techniques. The two main known techniques employed for estimating live cattle market share were Concentration ratio and Herfindahl Index. The concentration ratio calculated by summing up the share of the top four traders as well as HI index is the sum up of the squares of the market share of live cattle traders.

$$C = \sum_{i=1}^r S_i$$

Where, C indicates the concentration ratio, Si indicates the percent share of the top four traders. Whereas HHI is expressed as $HHI = (S_1)^2 + (S_2)^2 + (S_3)^2 + \dots + (S_n)^2$ (where as S_n indicate the market share of the i^{th} firm involved in the live cattle marketing). The value of HI index can also be calculated by the formula indicated as $HI = \text{sum of } 1^n \text{ (percent share)}^2$ when the product of HHI index is less than 1,000 the market is regarded as competitive. When HHI ranges below 1000 it indicates that the market have low concentration, and when it ranges between 1000–1800, this implies a moderate concentration, when it ranges above 1800 it implies the marketing system is highly concentrated, while the value that is equal to 10000 indicates a monopoly marketing system (Iveta, 2012).

Table 6. Concentration ratio and market structure for live cattle trading.

Cattle type	CR4	Sum of HI index	Market Structure
Calves	47.43	1024.38	Loose oligopoly
Heifers	48.96	1046.22	Loose oligopoly
Bulls	61.25	1643.06	Tight oligopoly
Cows	48.27	1114.28	Loose oligopoly
Ox	66.67	1933.08	Tight oligopoly

Source: Survey Data Result, 2011.

The market structure was shown according to the type of cattle marketed between the market agents in the market as shown in table 4 above. The market structure for oxen and bulls in the study area is tight oligopoly and it is a loose oligopoly for cows, calves and heifers trade in the area, because heifers, cows and calves more of the time marketed among the pastoralists for restocking and sometimes by traders in the study area also pastoralists prefer to sell Ox’s or bulls

than cows, heifers and calves. The market structure for oxen and bulls in the marketing of cattle is tight oligopoly, because pastoralist is preferred to supply bull and oxen to get cash to fulfill their needs, which are usually more demanded by traders and exporters. This implies that tight oligopoly means there is a low competition between traders and the entire market remains a “few traders game” the profit earned do not shared at equal ratio among the

marketing actors. So, the concerned bodies 'intervention should be needed to overcome such kind of imbalance trade benefits and enhance productivity through the formation of strong market inter and intra linkage, focus on value adding activities, provision of timely market information and producers 'cooperative formation at local level.

Entry and exit conditions in the live cattle marketing

Low quality supply of live cattle to the market illegal and informal trading and lack of access to credit are the main entrance and exit obstacles of the live cattle trading. The amount of live cattle supplied to markets during religious holidays, festivals and wedding occasions are higher when compared to other occasion. Therefore, illegal trading system, lack of access to markets, low access to infrastructures and transportation systems, high transaction cost and high demand for capital are among the major barriers to entry and exit from live cattle trading.

The market conduct of live cattle

Market conduct or behavior refers to the way of acting or controlling the marketing systems in order to gain benefits from the market. Furthermore, market conduct includes mechanisms such as price setting systems and the terms of payment in the marketing system.

The market price setting mechanisms of live cattle

Market price setting mechanisms of live cattle in the study areas is complicated and carries out by various marketing actors. In this study about 53.4% of pastoralists/ agro-pastoralists said that the price of live cattle is set by producers then brokers and traders bargain based on the price set by the producer finally they sell to the price they have reached an agreement. The proportion of producers who recognized the price set by buyers in the market is based on central market information, brokers based on the central market information, traders by their own and sellers by their own respectively is 2.5, 10.0, 8.3 and 25.8%. This implies that, the market actors have their own level of influence in the role they played for market price setting in various levels. It was

observed that producers set primarily the market prices then selling takes place upon negotiation.

Terms of payment for live cattle producers

Based on this study, the terms of payment for producers in the study area shows that the live cattle marketing system of pastoral/agro pastoral households have been undertaken in the form of direct cash payment or hand-by-hand currency. This is due to the lack of access for institutions such as commercial bank of Ethiopia serving the pastoralists or agro-pastoralists in the area. This study shows that 100% of the producers sell their cattle in the form of direct cash payment. This implies that all of the producers in the market sell their cattle in the form of direct cash payment.

The market performance of live cattle

The market performance of live cattle is mainly the impact of live cattle market structure and conduct, which was measured in terms of the variables such as market prices, marketing costs, and the volume of output. The market margin of the live cattle is the market price difference between the revenue from the final sales of live cattle and the costs that were incurred during the running of the marketing system operation. The net market margin of live cattle was calculated as the percentage over the final market price earned by the marketing actors as his/her final net income, once his/her all marketing costs are deducted. It is one of the best tools to analyze performance of live cattle marketing. Marketing margin was calculated by using the market price difference between the live cattle producers and exporters or traders prices. The producers' share can be calculated as the ratio of live cattle producers' price share to traders' price share. It is mathematically represented as:

$$P_s = \frac{P_p}{P_t} = 1 - \frac{MM}{P_t}$$

Whereas P_s is the producers 'price share, P_t is the traders' price share, and MM is the marketing margin of actors. It is also possible to calculate the live cattle gross marketing margin as follows, which is equal to the traders Price - pastoralists price/traders price*100 (Zekarias, 2017).

$$GMM = \frac{P_t - P_p}{P_t} \times 100$$

Table 7. Market Margin of Oxen across the marketing channels.

Market actors and costs	Marketing channels for Oxen							
	Ch 2	Ch 4	Ch 5	Ch 6	Ch 7	Ch 8	Ch 9	Ch 10
Producers Price	7,250	10,345	11,420	15,345	10,412	11,280	13,403	12,340
Traders Price	11,315	15,650	15,965	17,870	14,817	16,162	16,915	15,809
Gross Margin	4065	5305	4545	2525	4405	4882	3512	3469
Marketing Cost	1345	720	935	1045	855	855	855	855
Net Market Margin	2720	4585	3610	1480	3550	4027	2657	2614
Producers Share	64.07	66.10	71.53	85.87	70.27	69.79	79.24	78.06

Source: Survey Data Result, 2011.

The Gross Market Margin along the different marketing channels is different according to the participants. Ox traders in the study area get the highest gross market margin at channels such as channel 2, channel 4, channel 5, channel 7 and channel 8. They get the lowest gross market margin at channel 6, channel 9 and channel 10.

The marketing cost of live cattle traders is higher at channel 2 and channel 6 because of the involvement of intermeddlers and transportation costs. The producers share is higher at channel 6, channel 9 and channel 10 because producers directly connected with big/small traders as indicated in table 5 above.

Table 8. Market Margin of Bulls across the marketing channels.

Market actors and costs	Marketing channels for Oxen							
	Ch 2	Ch 4	Ch 5	Ch 6	Ch 7	Ch 8	Ch 9	Ch 10
Producers Price	6986	7624	8261	8325	7215	7892	9517	9672
Traders Price	10503	11769	11991	11792	10915	11697	12037	12652
Gross Margin	3517	4145	3730	3467	3700	3805	2520	2980
Marketing Cost	1015	415	617	815	509	750	725	725
Net Market Margin	2502	3730	3113	2652	3191	3055	1795	2255
Producers Share	66.51	64.78	68.89	70.60	66.10	67.47	79.06	76.46

Source: Survey Data Result, 2011.

The results in the table above show that, The Gross Market Margin of different participants along different marketing channels is different. Bull traders get the highest gross marketing margin at channels such as channel 2, channel 4, channel 5, channel 6, channel 7 and channel 8. They get the lowest gross market margin at channel 9 and channel 10. The live cattle marketing cost of traders is higher at channel 2 and channel 6 because of the involvement of intermeddlers and transportation costs, which is the same as that of Ox's. The producers share is higher at channel 6, channel 9 and channel 10 because producers directly connected with big/small traders as indicated in table 6 above, which is the same as that of Ox's marketing channel.

In the study area, Cows, Heifers and Calves were traded as for a restocking purposes. Pastoralists and Agro-pastoralists in the study area supply their Cows, Heifers and Calves to market then sell them to other Pastoralists or Agro-pastoralist for the restocking, their culture also not allow to sell this cattle types. Same times aged Cows are sold for neighbors to celebrate festivals in the study area.

Conclusion

South Omo Zone was endowed with huge livestock resources in SNNPRS, especially the pastoral and agro pastoral districts of the Zone. These areas were majorly a source of live cattle for exporting to the central markets of Ethiopia and also the market needs continuous supply of quality cattle. However, pastoralists and agro-pastoralists in the study area cannot continuously supply live cattle of required quality due to consecutive drought and traditional means production practices due to this reasons the cattle they supply do not fetch attractive prices.

Mostly in the zone pastoralists and agro-pastoralists loses their animals, either by selling to purchase food for their households and lack of feed for their left animals during occurrence of droughts or due to the pastoralists, agro-pastoralists; poor management systems such as feeding system, watering system, housing system and health caring systems etc. in the study area. In the restocking activities, the pastoralists/ago-pastoralists buy the local breeds from markets or neighboring areas and keep them for a reproduction. These problems causes' low production and productivity of live cattle in the zone. So strong intervention of governmental and non-governmental organizations were needed to improve the production, productivity and marketing practices of the pastoralists and agro-pastoralists, as well as the development of appropriate breeding strategies were also needed.

Recommendations

It recommended that, Pastoralists and agro-pastoralists can shorten the marketing chain by cutting out the intermediaries and increasing the number of value adding activities they undertake for themselves such as rearing, cattle fattening, access to transportation and trading. They also strengthen inter and intra-group formation and linkages by organizing into cooperatives rather than acting as an individual in the market, they could have greater control and bargaining power over the supply of live cattle to the markets. Introduction of improved technologies, interventions, timely delivery of veterinary service and cattle improvement through breeding and an introduction of appropriate strategies to the study area through agricultural research centers, NGOs and concerning bodies of zonal and district livestock and fisher resource offices, breeding of the local cattle with the improved once will also improve the future production and productivity of existing local livestock.

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