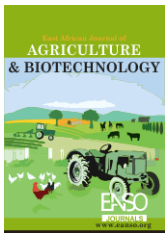

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Original Article

Cattle Market Channels and Determinants of Household Market Participation in Pastoral Area: The Case of Borana Zone, Southern Ethiopia

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Keywords: *Borana Zone, Cattle Market, Market Channel, Market Participation, Heckman, Two-Step Selection Model.*

ABSTRACT

The study was conducted to identify cattle market channels, determinant factors of household market participation and supply level based on data from 121 randomly selected households, export abattoirs, traders, collectors, and market experts. The result showed 4(four) informal cattle channels and about 9(nine) formal cattle market channels. Informal cattle marketing shares 47.6% of market volume, while 54.4% pass through formal cattle marketing channels. Only about 52.89% of sampled households participated in cattle marketing. Cattle market participants, on average, hold 9.81 cattle size in their herds and sell on average 1.93 in 12-month duration, which is a 1:9 ratio. The result of Heckman's two-step selection model showed that among other variables, market information, credit use, milk production, and herd size positively contributed to market participation. Off-farm income, aid receiver, by-product production and distance to market negatively affect market participation. Age of household, herd size, credit use, and market information positively contributed to cattle market supply, while education, off-farm income, milk production, and aid negatively affected cattle market supply. Focused group discussion and informal interview results showed water/feed, rangeland shrinkage, a single trade dimension, border and market conflict, long and complex supply channels, non-market-oriented production, and market information asymmetry problems hindering cattle production and marketing in the area. Thus, cattle market intervention and a modification of policy variables related to market participation and supply were suggested recommendations.

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INTRODUCTION

In pastoral areas, beyond the economic advantage as a source of income, cattle matters social prestige and status in the community (Coppock, 1994). Their livelihood predominantly depends on livestock and livestock products (Berhanu & Beyene, 2015). In the international market, Borana cattle dominate live cattle export from Ethiopia to Somalia, Kenya, Sudan, Djibouti, Egypt, UAE, Saudi Arabia, and Yemen (Management Entity, 2021). Informal livestock trade across the border consists of long trekking cattle almost from the Borana zone. As a result, Boran cattle, traced from the Borana zone, traverse a lengthy market chain to reach the market and ultimately contribute significantly to the generation of foreign currency (Faku, 2017; Haile et al., 2009). However, the pastoral households hardly benefit from their livestock marketing. Despite the demand for live cattle and meat by exporters from the zone, low buying prices of cattle and poor access to markets were ranked as top-flagged problems by pastoral households during the pastoral livelihood resilience project research intervention (Tadesse, 2017).

Market access is a key opportunity to overcome the effects of climate change, particularly during drastic climate change such as drought (Little et al., 2014). Predominantly, market access constraints are evidently visible in the Borana pastoral area, where market availability is seemingly only available during drought. Both the government and non-government parties view access to a cattle market as a household coping strategy for drought (Hurst et al., 2012). Although destocking the cattle through the drought-oriented market can somehow relieve the asset (cattle) losses during drought, well-performing and accessible markets can make the cattle markets in the regions more sustainable and profitable. Lack of access to key infrastructure and services, such as better roads to shorten the distance from the marketplaces, access to market information, and access to early warning information services by pastoralists, aggravate the effects of intermediaries to deteriorate the cattle marketing system (Pavanello, 2010).

However, there is limited research on the Borana cattle market denoting cattle market actors, functions, market routes, channels, and household market participation. Directed policy interventions towards the Borana cattle market without a pre-defined study and understanding of the market could result in an inefficient impact that could even mislead the targeted population. Therefore, this research was initiated to fill the information gap in the Borana cattle market and household participation in the cattle market with the primary goal of ensuring optimal and sustainable productivity from the market.

MATERIALS AND METHODS

Description of the Study Area

Borana is found in the southern part of Oromia regional state. It has thirteen districts where about 10%, 20% and 70% area located in highland, mid-highland, and lowland agro-ecologies respectively. The population of the zone according to the 2007 Central Statistical Estimation was 966,467 of which 489,001 (51%) were male and 477,466 (49%) were female (Central Statistical Agency, 2007). The economic basis of the community is based on livestock production and those near to town practice crop production.

Method of Data Collection and Sampling

The survey questionnaire was used to collect primary data from producers. In addition,

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informal interviews, and focus group discussions were conducted to collect data. Purposive sampling method followed by simple random sampling was employed to select sample households from the population in the districts. Accordingly, the study districts were purposively selected based on the potential cattle production. Then two peasant associations (PAs) from each district were again purposively selected based on production potential, accessibility, and proximity to the road. Then, the probability is proportional to the sample size from each PA selected using a simple random sampling method. Yemane (2001) sample size determination method with 9% degree of variability at 5% precision level was used to determine sample size (Adam, 2020).

$$n = \frac{N}{1+N(e^2)}$$

Where: n is the required sample size, N is the population size in the study area

e Represents the level of precision.

Accordingly, about 121 sample households were selected from three districts. Households Proportion to sample size selected based on simple random sampling method from each selected PA.

Method of Data Analysis

The study employed descriptive statistics and econometric analysis. To identify cattle market participation and cattle supply determinants, Heckman two-stage sample selection model was used. A sample selection model always involves two equations: (1) the regression equation considering mechanisms determining the outcome variable and (2) the selection equation considering a portion of the sample whose outcome is observed and mechanisms determining the selection process (Heckman, 1979).

Selection equation: $w^*i = z_i\gamma + u_i$, $w_i = 1$ if $w^*i > 0$, and $w_i = 0$ otherwise Prob (wi = 1|zi) = Φ (zi γ) and

Prob (wi = 0|z_i) = 1 − Φ($z_i\gamma$),

The equation for cattle market participation:

Regression equation: $y_i = x_i\ \beta + \varepsilon_i$, observed only if $w_i = 1$

Where x_i is a vector of exogenous variables determining the outcome y_i, and w^*i is a latent endogenous variable. If w^*i is greater than the threshold value (say value 0), then the observed dummy variable $w_i = 1$, and otherwise $w_i = 0$; the regression equation observes value $y_i =$ only for $w_i = 1$; z_i is a vector of exogenous variables determining the selection process or the outcome of w^*i; Φ(•) is the standard normal cumulative distribution function; and u_i and ε_i are error terms of the two regression equations, and assumed to be bivariate normal, with mean zero and covariance matrix Given incidental truncation and censoring of y, the evaluation task is to use the observed variables (i.e., y, z, x, and probably w) to estimate the regression coefficients β that are applicable to sample participants whose values of w equal both 1 and 0.

RESULTS AND DISCUSSION

Household Characteristics

From the total 121 households sampled, 72.7% were illiterate, while 27.3% were literate. The household mean family size was 6, with a range of 2–12. The age of sample households varies between 18 and 88 years, with a mean of 42.83 years. Most of the sample households were male-headed households, which constitute about 98.3% of the sample households, and only 1.6% of the sample households were female-headed.

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Table 1: Sex, education status, marital status, and livelihood practice

Variables	Categories	Sex of the respondents		χ^2
		Male	Female	
Education status	Illiterate	58	30	9.69 ***
	Educated	31	2	
Livelihood activities	Pastoralist	33	7	7.93*
	Agro-pastoralist	55	24	
	Trade	-	1	
	Labour work	1	-	

Access to Infrastructure

According to the survey results, about 23.20% of the respondent households travel more than 25 km to market their livestock. For example, Dubluk Market serves pastoralists in a far-reaching 75-kilometre radius, and the most distant households take three days trekking to market their cattle. Similarly, Elwaye market serves a radius of approximately 45 kilometres. Due to poor infrastructure, there were households that could not get access to transportation services for their cattle (Tiki, 2012). As a result, they failed to gate traders and were forced to sell their cattle at farm gates at lower prices for collectors.

Table 2: Access to infrastructure

Distance of infrastructures in km	N	Mean	Std. Error.	Minimum	Maximum
Livestock market	121	16.60	13.54	0.12	50
Town	121	13.50	9.30	0.6	40
Livestock water	121	6.60	7.30	0.01	30
Potable water	121	6.84	5.13	0.01	15
Public Veterinary post	121	6.72	7.21	0.01	35
Private veterinary	121	10.40	7.34	0.01	35
Dist of Pharmacy	121	8.70	6.40	0.05	30
Distance from Kebele	121	3.30	2.50	0.05	10

Livestock Production

The community has high respect for individuals who have a number of cattle. Cattle have high social and cultural values, where cattle gifts are considered to be the most recognized Cattle also play a legitimate role in indigenous institutions(Dabasso et al., 2022). Cattle punishment decisions are applied to individuals who intentionally disregard social and cultural norms or mistreat other people (Ta'a, 2016). Cattle milk fetches a high price and generates pastoral household daily expenditures.

Table 3: Livestock holding

Variable	N	Mean	Std. Error.	Min	Max
Cattle	119	8.70	5.70	1	29
Goat	79	8.76	5.80	2	30
Sheep	76	5.90	4.30	1	22
Camel	39	3.40	2.42	1	10
Poultry	47	4.04	3.55	0	16
Donkey	32	1.5	1.70	0	8
Horse	8	0.4	0.74	0	2

Among sample households, 74% reported diminishing cattle production per household. Among cattle producers, 69.74% reported decreasing trends of cattle at their hands beyond their efforts to maintain them. Only 25.21% of households reported increasing trends in their cattle herd. Among cattle-rearing households, 9.50%, 26.72%, and 52.60% were without goat, sheep, or camel ownership. Only 9.5%, 10.34%, and 8.40% have increasing cattle, with increasing

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camels, goats, and sheep, respectively. 10.34%, 19.82%, and 11.20% of households have decreasing cattle with increasing camels, goats, and sheep, respectively. About 4.31%, 11.20%, and 10.34% of households have increasing cattle with decreasing camels, goats, and sheep. About 15.51%, 41.40%, and 37.93% of respondents have decreasing cattle, with decreasing camels, goats, and sheep, respectively. In general, households produce 69.74%, 53.44%, 49.13%, and 19.82% of cattle, goats, sheep, and camels within their herds at the household level, respectively. Thus, this survey showed there was no diversification to other browsing livestock such as camels, sheep, and goat production at the expense of cattle.

Table 4: Livestock composition

Variables	N	Mean	Std. Error	Minimum	Maximum
Cows	118	3.33	2.43	3	20
Oxen	63	1.98	1.07	1	6
Heifers	79	2.34	1.22	1	7
Calves	89	2.60	1.61	1	10
Bulls	60	1.71	1.07	1	8
Male goats	77	2.80	2.12	1	10
Female goats	74	6.5	4.70	1	20
Female sheep	66	3.30	2.52	2	15
Male sheep	64	3.70	3.11	1	15
Male camel	23	1.43	0.72	1	4
Female camel	34	3.0	2.20	1	10

Livestock Products

Among livestock products, milk, especially cattle milk in pastoral households, is used as the main favourite food, for income, and for other social rituals (Dabasso et al., 2022b). However, the unavailability of cattle milk due to cattle feed constraints results in increased goat and camel milk production and use for consumption. The hide and skin trade stopped due to a market problem.

Table 5: Livestock product market

Description		Frequency	Percentage
Produce milk	Yes	83	68.60
	No	38	31.40
Produce butter	Yes	24	18.80
	No	97	80.20
Produce cheese	Yes	17	14.00
	No	104	86.00

Cattle Market Chain Actors and Their Functions

Numerous marketing actors are involved in the cattle marketing system along the cattle marketing chain. Cattle from the zone encompass two different market systems(Faku, 2017). The first was formal livestock marketing, and the second was an informal market system (Faku, 2017). Actors involved in Borana cattle marketing within the different marketing chains identified were producers, collectors, brokers, small traders, feed lotters, big traders, and export abattoirs.

Collectors: Collectors had a pastoral background to participate in the market at both on- and off-farm activities, with the ability to gate information on market demand and price in advance. Producers often have confidence in collectors to let their cattle go to market without advance payment. They buy animals demanded by traders, which they are confident will give them a good margin on one market sale. They serve for animal transportation from all around, especially far from the market road. However, they do not want to hold animals, even if they are taken as a risk, if they are not sold on market day, limiting their

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buying ability as they do depend on their own limited weekly revolving money. However, collectors reported being constrained by the limited available cattle they needed.

Brokers: They were people with the ability to negotiate producers with traders. There were a number of brokers in the market, especially Dubluk and Bake, with no license or tax for their activities. They entered and exited the market based on their own speculation at any time, and some of them had good relations with both producers and traders, while the rest were inclined to either side. Sometimes they receive cattle from producers and collectors outside the market to sell on their behalf(Bassa, 2018). In our market survey, in addition to producers, some traders complained about brokers escalating the livestock market and the deliberate interest of producers not to sell their livestock themselves. There were no registered or licensed brokers in live cattle marketing.

Small Traders: There were several those involved in the cattle trade and transport to the outside on a small scale, having no animal warehouse themselves. This group was the first informant of the central market price and price setter in the local markets of the area. They have a strong relationship with big traders who receive orders and organize transport to Maqi, Bishoftu, Mojo, and Adama, where big traders, feedlots, butchers, and hotels receive them. They have no formal animal resting place themselves. Many of these traders do not have a trade license except for good relations with their buying customers and have had experience acting as agents for other actors above the vertical line along the cattle market chain. Most of them were from Borana and West Guji pastoral backgrounds and stayed in Yabelo to consent with big traders, buy cattle, organize transportation, and send them to the central market. This type of trader reported that it is difficult to get regular customers at the central market without a blood relationship and knowing each other's backgrounds. Thus, it was difficult to enter and exit trades at this position.

Small Local Traders: These traders are characterized by their seasonal operations and are not formally known to be traders in any organization. These types of traders are involved in the market to capture market price differences as margins. They do not reach the producer's farm gate to collect cattle. They use cattle markets to resell to other local markets, especially Bake and Dubluk secondary markets, while some of them informally cross cattle to the southern states of Ethiopia, Somalia, and Kenya. Many of these types of traders but limited in financial capacity from border area inter-adjacent markets such as Taltale and Elwaye to cross-bull cattle to resell to Konso and others through the Arba Minch market route and female cattle to resell through the Moyale market route during the survey period. Most of these traders are responsible for playing informal trades.

Transporters: Many collectors use live animal transporters to transport animals from where pastoralists are located to bush markets and from bush markets to secondary markets. This type of transporter requires a per-animal payment and serves mainly as an informal animal trade route to transport cattle from different Borana Bush markets to countries where animals are informally traded. The other transporters use vehicles like ISUSU or FSR to transport animals from Bake and Dubluk live animal markets based on per-trip payment rather than per animal.

Feedloters: These actors are involved in the purchase of exportable cattle from lowland areas, especially Borana and other highland areas. Animals rest for about 2–3 months after purchase to add value to animals, and health management decreases animal rejection at the terminal market. As was the case, many traders and live animal exporters own or rent feedlot areas around Adama, especially at Arsi exit road and Mojo exit road (Naoma).

Big Traders: They have strong relations with traders and export abattoirs. Their merit was their resting animal place and enough capital that enabled them to wait for demand from export abattoirs while purchasing their previous order

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from small traders. Many of them were small traders who grew in capital to become big traders. They have their own animal resting place waiting for orders from export abattoirs, while many of them have live animal export licenses and supply animals to different angles than known cattle trade operations.

Export Abattoirs: There were export abattoirs exporting live animals and processed chilled cattle meat to the UAE, Saudi Arabia, Egypt, and Libya during our survey. They have limited contact with other market participants except for big traders, who are accustomed to their rules for supplying animal types demanded in quantity and quality. They use almost small male cattle with 1.5–3 years of Borana origin for chilled or frozen cattle meat export. However, there were no cattle-only export abattoirs in the country. They focus on small

Live animal exporters: These actors have a live animal export license at the federal level. Most of them have their own feedlots, and a few of them use rented feedlots. Many of them are located in Finfine City, and a few are in Adama Town. They are individuals, and few of them were organizations of cattle exporters in their nature. They participate in cattle value addition for 2–3 months at their feedlots or purchase cattle from other feedlots. Some of them reach Borana to purchase the type of cattle they need from small local traders and pastoralists at Bake and Dubluk, and others permanently purchase from traders at their operation. Even though they are involved in the seasonal cattle trade and have no regular live cattle customers at all, they were 37 in number in Ethiopia during our survey.

Butchers: These actors were located near zonal towns and slaughtered mostly female cattle. These butchers sometimes provide services for hotels and restaurants as market agents. They purchase mostly female cattle with good body condition through honest communication on cattle per animal price with hotels and restaurants in advance, then supply meat after slaughter. These actors have more skills and insight than any other hotels and restaurants. They help them get cattle with good carcass weight, organize hotels, and could enable them to gate meat based on their sales capacity.

Hotels and restaurants: Hotels and restaurants are market actors that sell meat-filled meals. Most hotels and restaurants rely on butchers, while few of them purchase at the market. Most hotels and restaurants use more cattle meat than any other livestock for serving customers, except during the long Ethiopian meat fasting period. The major functions of hotels and restaurants in the cattle trade include purchasing cattle, meat, and serving customers with prices locally determined by their monopolistic competitive price-setting mechanisms, in addition to their own sole service standards.

Consumers: Cattle slaughtering by pastoral households is hardly seen except during cultural ceremonies or on any other occasion. Cattle meat consumers are mostly customers of hotels and restaurants that purchase meat for home or use that served as a form of meal.

Government and non-government

The government is playing a multidimensional role in the livestock sector in the area. To protect animal health, the government provides vaccinations one to two times per year(Sori, 2005; Fedlu & Seid, 2019). Different market centres, emergence support services, feed support during risks, water support services, legal support, breed support services, range land improvement services, research services, policy support services, and other infrastructure services for the community. Thus, the government is providing vital support for the community even though the area needs further development support like ranching, pastoral output-related investment, export and import services, insurance, input-related investment, and improvement on previous existing services. Non-governmental organizations also have many interventions directed to rangeland improvements, dairy-related interventions, live-saving activities through different types of donation, enhancing pastoral resilience development and livelihood diversification (Mebre, 2015).

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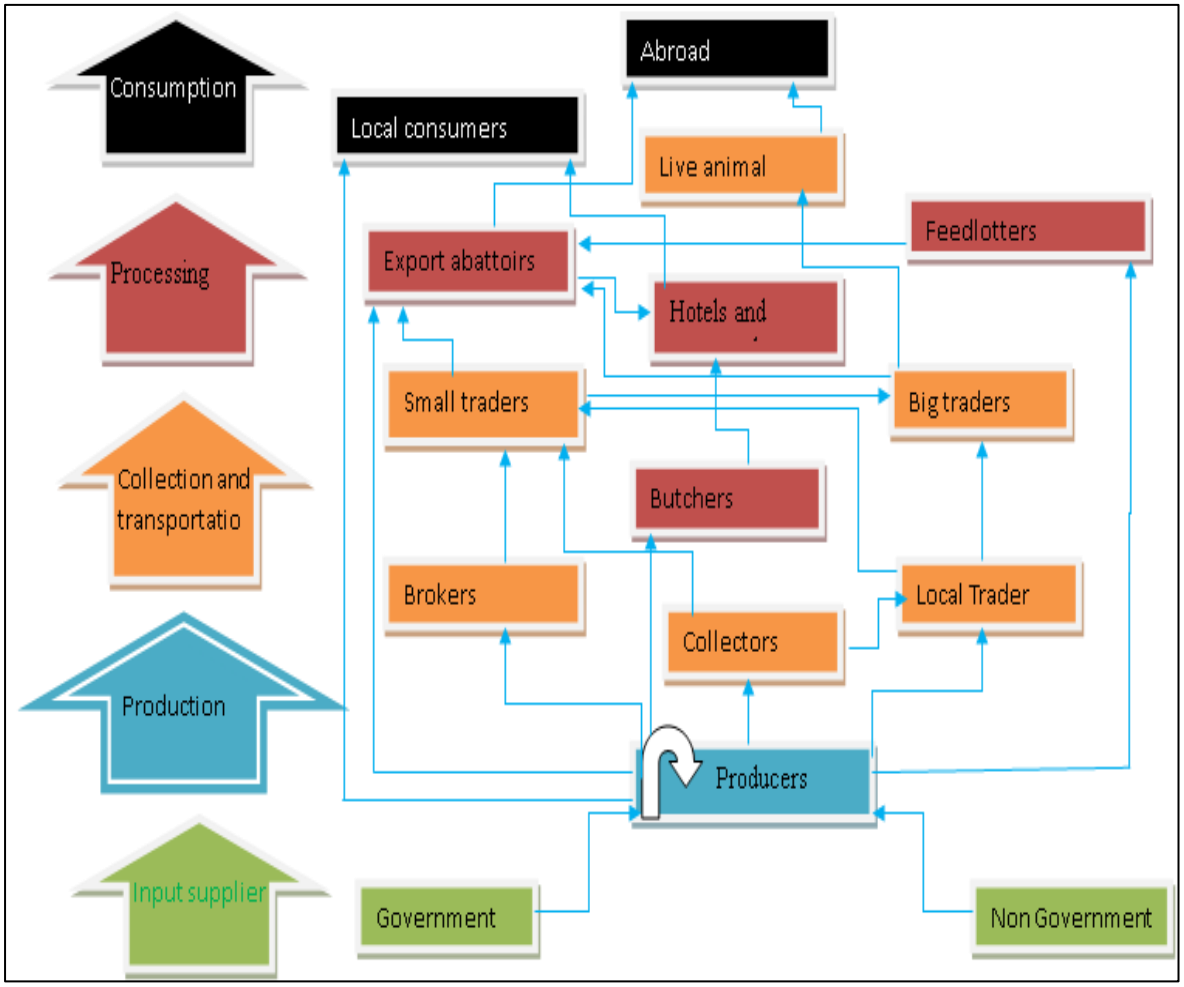
Figure 1: Actors linkage and function



Source: Own market survey result (2021)

In each district, there was bush market in the area and farm gate selling and buying was also common. Many bush markets were out of market facilities and there was only where local community with limited traders, many collectors and local traders participated. These marketplaces exclude export abattoirs and live animal exporters due to limited market facilities, especially roads. In some places, it was community-ideal agreed places rather than government-recognized. There were also regionally targeted cattle markets where almost huge different actors to the extent exporters participate such as Bake, Dubluk, Moyale and Elwaye livestock markets exist in the area. These markets are near the major road from Finfine to Moyale and Yabelo to Teltele woreda.

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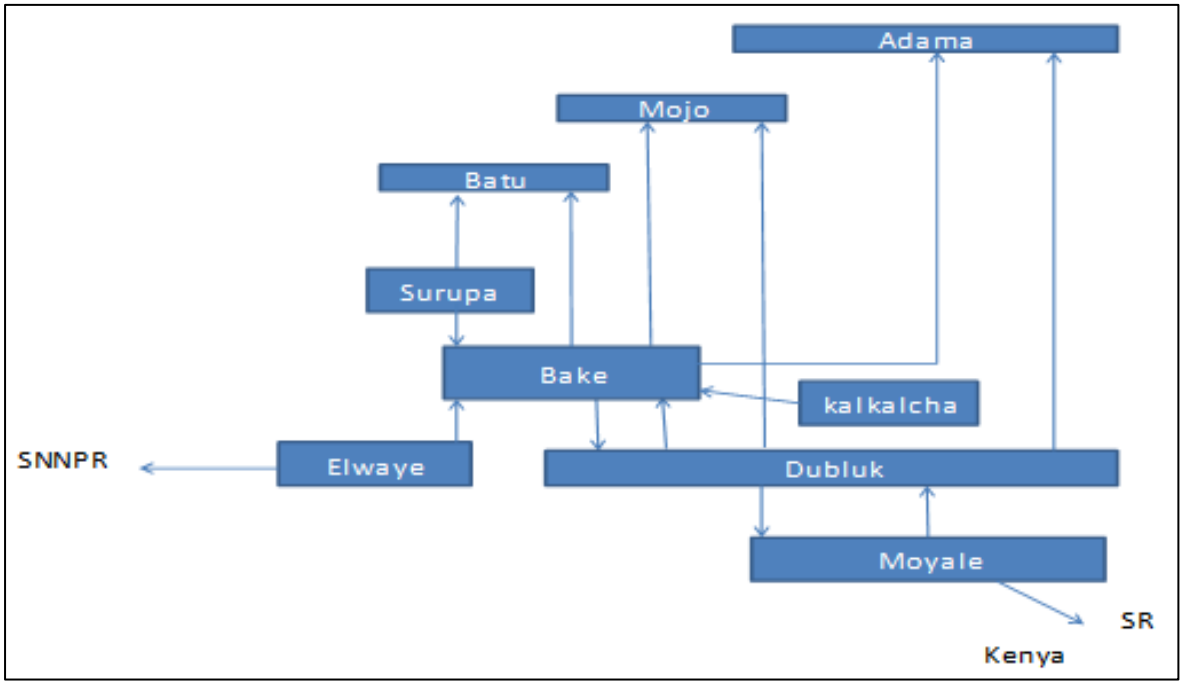
Figure 2: Borana cattle market route



Source: Own market survey result (2021)

Cattle Market Channel

Borana cattle markets and routes were completely complex as there were different market routes operated in the area. The pastoral of southern Oromia was bordered by neighbour country Kenya and two other regional states namely SNNRP and Somali that gave the opportunity for cattle to cross the border informally while central formal trade also focuses in the area due to Borana cattle beef demand in the export markets (Tiki, 2012). The cattle market routes operating in the area were the formal cattle market route and informal market route(Faku, 2017; Tiki & Little, 2023). The main cattle market through cattle pass was formal cattle trade even though there was much share of informal cattle trade. The informal cattle trade route starts from allround of bush markets from all directions to Bake, Dubluk and Moyale secondary markets finally reaching Mojo and Adama. The main informal market route takes to be responsible for cattle to cross-regional and national borders classified into two main routes. The first starts from Bake and passes to the Somali region (SR) and Kenya through Moyale (Tesfaye,& Angasa, 2018). The second starts from Elwaye Market pass to Konso.

Informal Market Channel I Producer → other producer

This market channel was the existing livestock trade channel among pastoralists selling to pastoralists, especially for breeding purposes. Small female cattle type is the main demand at all markets where bush markets serve as the potential. Pastoralists buy from pastoralists as producers during cultural ceremonies, breeding purposes and other gifts. During our market survey, for example, small female cattle type prices were high due to pastoral market demand for a cultural ceremony Called "*Gubbissa*". A child's father invites numerous kith and kin relatives to his eldest son's naming ceremony. Thus, the invited people mainly demand small female cattle for gifts as child's ownership in the ceremony. The other is that pastoralists have a high preference for cattle they know about their breed characteristics. Thus, they buy from their neighbours namely Olla at market price. This market channel share was 14.20% in the area.

Informal Market Channel II

Producer → Consumer

This channel is also one of the oldest and most informal channels. Here the producers sell cattle

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to other producers, urban dwellers, and consumer traders. Some pastoralists sometimes have high value for their cattle type and buy from other pastoralists for slaughter purposes. For example, small male cattle prices hit high due to pastoral demand during a cultural ceremony called "*Bufatto*" Gada system ceremony in the area. Cattle demand purpose for slaughter includes cultural ceremony, festivals, and home consumption. This market share was 3.72% market volume.

Informal Market Channel II

Producer → Collectors → Brokers → Local traders → Butchers/farmers → Hotels and Restaurants

This informal market channel was the longest channel. This market channel demands bull-type cattle with highly attractive and good body condition and trekking ability. Sometimes collectors of this area reach as far as Brinda7r 40 Km radius to the west of Elwaye market collecting and reselling to local traders from Konso across the regional border for slaughters.

This market channel also operates along the route across regional and national borders to Ethiopian Somali region, and Ethio-Kenya border respectively. Along this market channel female cattle type with age 4 to 7 years demand even reach secondary market Bake and Dubluk. Along this market channel, there was a limitation in identifying the exact number of cattle informally crossing to the Somali region and Kenya. This market channel share was about 11.20% in the area.

Informal market channel IV:

Producers →Collector → Transporter → Brokers → Local Trader →Informal Exporters

This market channel was operating along Ethio-Somali region market route. It is the leading informal cattle trade in the area. Cattle through this market channel pass through Somali land and finally mainly reach Yemen. It shares 28.21% market volume.

Formal Market Channels

Channel I

Producer → Collectors → transporters → Local traders → Brokers → small traders → big traderss → export abattoir

Here formal cattle trade means cattle traded with permit tax at the initial point and taken to central market along Yabelo to Finfine road. This market channel is the longest among the formal market channels where export abattoirs get animals for export to KSA, UAE, Egypt, and other countries like the Republic of Congo (Faku, 2017). Small traders stay in the local area interact, purchase animals and send them via transporters to big traders at Mojo, Adama, and Maki towns. Big traders supply to export abattoirs exporting cattle meat abroad. This cattle market channel shares about 8% of cattle market sales in the area.

This market channel had the most complaints arising between Somali region and Oromia region at Moyale town. Traders of this kind concentrate on the Somali region market demand for Borana cattle there. Thus, suppliers from Oromia region has a good preference for the Somali region market due to many buyers. Livestock market expert at Moyale town responded to this action said "Deliberate economic war on Oromia Moyale town not to benefit from our cattle tax irrespective of our sole producer supply"

Channel II

Producer → Collectors → Transporters → Local traders → Brokers → *S*mall traders → Feedloters → Export abattoir.

This market channel was the newly established market channel with emerging feed lotters being an opportunity enabling export abattoirs to use during their demand for export purposes. However, this market channel was not well developed where some export abattoirs themselves being feed lotters and export abattoirs not only to add value but also to treat animals according to their abroad customer demand

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criteria. This market channel share was about 2.32% in the area.

Channel III

Producer → Collectors → transporters → Brokers → small traders → export abattoirs

This channel was observed to operate during Export abattoirs who wanted to fill the gap created by sudden demand. There were some times due to disagreements between small traders with big traders; small traders shifted their sales to other export abattoirs. Thus, this channel was created due to these reasons. It was a seasonal channel rather than a regular one. Collectors from the primary market reach the secondary market got sell to small traders. Sometimes collectors who have a relation with small traders bring cattle to the secondary market with orders and pre-defined prices to small traders rather than local small traders. This market channel shares about 2% of the market in the area.

Channel IV

Producers → Collectors → Transporters → Brokers → Export abattoirs

This market channel was a newly developed channel due to the high level of export abattoir investment in the country. Export abattoirs with qualified experts with regard to animal health such as DVM reach secondary market at Borana to purchase cattle. They treat cattle at the initial point and reduce slaughter rejection at export abattoirs. Additionally, they intend to reduce animal disease spread and any other suspect on themselves in serving their abroad customers. However, due to export demand and price with regard to domestic this channel was also not observed to be a seasonal cattle market channel. This market channel share was about 1.7%.

Channel V

Producers → Collectors → Transporters → Brokers → Small traders → Hotels and Restaurants

This market channel was also formal market channel where hotels and restaurants purchase cattle from small traders themselves for slaughtering. Hotels and restaurants located near central country starting from Maki town got cattle through this market channel. The major cattle type involved in this market channel where big bull type with good body condition irrespective of their age category. This market share was 13% in the area confirm high domestic demand for cattle meat consumption in the country.

Channel VI

Producers → Collectors → Transporters → Brokers → Small traders → FFarmers

It was created to resell cattle on roads and markets outside of Borana. Individual consumers purchase for different purposes mainly for fattening, breed, and slaughter ordered based on importance. This market channel was channel where individual households from Adama, west and north of East Hararge gate, even compete export market, small male cattle type for fatten and resell mainly for hotels and restaurants, and other purpose. This market channel share was about 3.75%%.

Channel VII

Producers → Collectors → Transporters → Brokers → live animals

This market channel was the shortest through which live animal exporters reached the secondary market. Borana zones themselves or through their agents. They purchase and organize transportation and take cattle to exportable markets and also engage in to non-exportable cattle trade to different central urban areas. This market channel market share was about 2.3% in the area. These types of live animal exporters do not much focus on adding value to cattle rather they purchase cattle with good body condition at the initial point.

Channel VIII

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Producers → Collectors → Transporters → Brokers → small traders → live animal exporter

This channel was the usual channel through which live animal exporters got exportable cattle. Most live animal exporters participate in this market channel hold cattle for 2–3 months feed and treat cattle health for value addition at their own feedlot. Small male cattle type was their main demand. This market channel however is reported to be diminishing due to low abroad live animal demand which could not support live animals to hold animals with cost addition in adding value. This channel's market share was about 6% volume.

Channel IX

Producers → Collectors → Transporters → Brokers → small traders → big traders → feedloters → live animal exporters → Live animal exporter

This channel was the longest and newly developing market channel with the emergence of new feedloters being used as the place where livestock exporters rely on to gate exportable cattle. Some live animal exporters reported due to low demand for live animals abroad and have no regular customer feedlot would save them both capital and operating costs for holding animals where there was no demand at all. However, this channel was not well developed to the extent that feedloters were able to rely on live animal exporters and other customers to add value with high-quality service at their feedlots. Thus, the channel was operating under the potential of both feedlot and live animals export trader reliability. This market channel share was 3.4%.

Cattle Market Conduct

Cattle Pricing

Cattle price comes from the central market irrespective of pastoral production costs (Bassa, 2018). Pastoralists perceive that they could not have good relations with traders and could not play significant market price bargains. The collectors and brokers were well known to each other and sold on their behalf. *Producers are left to speculate seasons where prices might get high. The system is not only due to market imperfection in cattle trade but, according to information from exporters, it is due to less intervention in market development, the dependency of the country on abroad market prices, standards set by foreign traders of different countries and other competition from different countries. There was high domestic prices than abroad prices that export abattoirs reported. However, the domestic market could not accommodate all types of cattle producers want to sell. Producers themselves are not organized and no cattle market cooperative or union efforts made by producers. Thus, they are forced to be price takers and low final price share.*

Entry Barrier

Even though there was no known set entry barrier from the government, community and other institutions entry barriers arose from cattle trade nature. Cattle trade requires marketing skills, vertical and horizontal relations, and high risk due to high initial capital and high transportation costs. Local collectors and brokers need to be well-known to pastoralists. If these actors are pastoralists themselves, it might be more successful than the other. Thus, his/her bibliography might be a barrier to sustaining trade. Previous trade actors' network relation in the market affects new entries in the cattle trade. Export abattoirs and live animal exporters prefer to purchase from traders known to them to consider animal health. This makes other new traders unable to get destination place. Lack of appropriate government marketing service, lack of animal warehouse, limited input supply, local security problems and information symmetry are barriers to cattle trade entry in the area. In general, low-income pastoral community could diversify their income through different livelihood options like petty trade however, it is hard to gate to cattle trade. It helps the wealthier to expand their asset than serving the low-income communities as there is limited government intervention to enable low-income to enter high-income generating activities like cattle trade.

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Cattle Market Performances

Marketing Margin along Each Live Cattle Market Chain

Marketing margin is one of the approaches to be used as an indicator of marketing performance(Wohlgenant, 2001). Marketing margin, the ratio of the difference between selling and buying to the final consumer price, shows the percentage of gross marketing margin fall under particular market participants. In this analysis, the main costs incurred in animal trading were taken to be tax, permit tax (levies), transportation cost, broker commission, loading and unloading cost, resting cost (feeding and health management), guard fee and other service costs. The following table shows the marketing margin of bulls in different marketing channels.

Table 6: Big Bull market channel

Costs	Formal Market Channels								
	I	II	III	IV	V	VI	VII	VIII	IX
Buying	19500	19500	18500	19500	-	18500	-	-	19500
Tax	30	30	30	30	-	25	-	-	30
Permit tax	25	25	25	25	-	-	-	-	25
Transportation	700	700	700	200	-	100	-	-	700
Broker commission	100	100	50	-	-	50	-	-	100
Loading/unloading	35	35	30	-	-	-	-	-	35
Resting health feeding	45	110	-	-	-	-	-	-	110
Guard fee	5	50	-	-	-	-	-	-	50
Other expense	-	25	-	-	-	-	-	-	25
Selling price	27550	29000	27000	25500	-	-	-	-	29000
Marketing margin	8000	9500	8500	6000	-	-	-	-	9500
net marketing margin	7060	8425	7665	5745	-	-	-	-	8425

Table 7: Small cattle<=4 years

Costs	Formal Market Channels								
	I	II	III	IV	V	VI	VII	VIII	IX
Buying	8500	8500	8000	8500	-	-	8500	8000	8500
Tax	30	30	30	30	-	-	30	30	30
Permit tax	25	25	25	25	-	-	25	25	25
Transportation	312.5	312.5	312.5	250	-	-	312.5	312.5	312
Broker commission	50	50	50	50	-	-	50	50	50
Loading/unloading	13	13	13	13	-	-	13	13	13
Resting+health+feeding	40	300	30	25	-	-	-	-	40
Guard fee	5	50	-	-	-	-	-	-	5
Other expense	-	20	-	-	-	-	-	-	-
Selling price	13000	18000	11500	13500	-	-	13000	13000	13000
Marketing margin	4500	9500	3500	5000	-	-	4500	5000	4500
Net marketing margin	4024.5	8699.5	3039.5	4607	-	-	4069.5	4569.5	4025

Determinants of Cattle Market Participation and Market Supply

Heckman's two-step model (Heckman, 1979) was used in order to identify household market participation and intensity of market participation measured in the amount of cattle supplied to the market in one production year (2020). The other most important is being in pastoral areas, cattle production is assumed to be not market-oriented. As discussed by other scholars cattle is the means for asset accumulation in Borana pastorals even though there are changes in means of asset accumulation over time observed (Dabasso et al., 2022). The result of this study revealed that the majority of the pastoralists' function is just supplying cattle but their roles related to price determination are insignificant. Among the sample households selected, only about 64

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(52.89%) participated in cattle marketing. Cattle Market Participants on average hold 9.81 cattle size in their herds and sell on average 1.93 in 12-month duration which is a 1:9 ratio. This could hint cattle production purpose of the producer to not be for the market. Their production purpose preference also confirms that cattle was less market orientation as almost all of them own cattle first for milk and for breeding purposes second.

Heckman's two-step model is assumed to be appropriate as the participation decision (selection equation) and the decision on the intensity of participation (regression or outcome equation) are anticipated to be interdependent and estimated simultaneously. Accordingly, the variables expected to have an influence on both household market participation decision and cattle supply: household age, sex, education, extension contact, education, credit, other livestock holding (tlu), distance to live market, crop income, family size, off-farm income, distance to veterinary, cattle herd size, aid receiver, milk production, transaction cost. Two exclusionary variables: the household's distance to potable water and distance to town, variables that affect household market participation but not extent/or intensity of participation used in Heckman selection model. The result from the model showed the distance to town is a strong exclusionary variable.

Table 8: Factors Affecting Cattle Market Supply

Variables	Coefficients	St. Error.	z	P>z
Age of households	0.040*	0.0228	1.76	0.079
Sex of households	-0.405	0.7844	-0.52	0.606
Extension contact	.0592	0.6330	0.94	0.350
Education	-1.236*	0.7451	-1.66	0.097
Family size	-0.108	0.1347	-0.80	0.423
Herd size	0.226***	0.0590	3.85	0.000
Other livestock size (TLU)	0.132	0.1120	1.18	0.238
Distance to Public Veterinary	0.036	0.0500	0.74	0.458
Distance to market	-0.006	0.0210	-0.29	0.775
Crop income(sqrt)	0.001	0.0041	0.27	0.789
Credit use	2.015*	1.1350	1.77	0.077
Market information	3.571**	1.6500	2.17	0.030
transaction cost	-0.001	0.0012	-0.95	0.342
Off farm income (sqrt)	-1.543*	1.5900	-1.38	0.068
Milk Production	-2.431***	0.8482	-2.87	0.004
Aid	-1.168 *	0.7506	-1.56	0.090
DistTown	-0.023	.01960	-1.20	0.229
DistPotableWat1	0.040	0.0372	1.08	0.279
Constant	-1.354**	0.7567	-1.79	0.073
IM Ratio	2.2442**	1.1650	1.93	0.050

Table 9: Cattle market participation marginal effect

Variables	Coefficients	St. Error.	z	P>z
Age of household	-0.003	0.0040	-0.71	0.480
Sex household	-0.203	0.1340	-1.52	0.129
Extension contact	0.071	0.1270	0.63	0.530
Education	0.104	0.1440	0.72	0.469
Market information	0.570***	0.1100	5.18	0.000
Credit use	0.442***	0.0980	4.52	0.000
Other livestock size (Tlu)	-0.011	0.0230	-0.49	0.624
Distance to market	0.005	0.0050	1.20	0.231
Crop income	0.001	0.0009	1.43	0.153
Family size	0.025	0.0267	0.95	0.342
Off farm income(sqrt)	-0.363**	0.1690	-2.14	0.032

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Variables	Coefficients	St. Error.	z	P>z
Distance to veterinary	-0.007	0.0099	-0.66	0.511
herd size	0.026**	0.0109	2.41	0.016
Aid receiver	-0.280**	0.1238	-2.24	0.025
By-products	-0.244**	0.1225	-2.00	0.046
Production of milk	0.001**	0.0060	2.37	0.018
Distance to town	-0.019**	0.008	-2.31	0.021
Distance Potable water	0.023	0.0152	1.54	0.123
IM Ratio	2.2442**	1.1650	1.93	0.050
rho		0.9657 is much strong		
sigma	2.3240			

The significance of inverse mills ratios indicates that there was sample selection bias in groups of cattle market participants and non-participants even though there was an improvement in market access in the Borana pastoral area. This shows indigeneity that arises from sample selection bias had more concern than other sources of endogeneity even though it needs another test of the model whether there is another source of endogeneity or not. However, Rho the correlation of two side model errors (participation and intensity of participation in terms of sells in this model), near to unit (1) showing there was strong evidence of the existence of omitted variable that using ordinary least square (OLS) model leads to bias coefficient estimates. Thus, the Heckman model result above is used to present the study of cattle market participation and supply. From the result, households with market information sell more than households not able to get market information from any source. This finding is consistent with (Kibona & Yuejie, 2021) who found a positive relation between market information and household beef cattle sales. Household demands market information includes past week's price information (61.16%), the price at market place before sale (68.60%), coming week's price (29.75%), cattle type demanded (42.15%), type buyer involved in the market (38.02%), and foreign demand (9.09%).

Even though market information reliability remains a concern at the household level, market information source household use includes own observation, neighbours, traders, customers, and brokers. However, there is no responsible source of market information households rely on formally. Due to this, market information distortion is a common problem households are facing. During our survey period, households complained information disseminated regarding cattle type demand past week forced them to supply in contrast to market demand. Local traders intentionally distorted market information to raise the price of cattle at their hand as they have information before producers are informed. Source of information with cattle type demand and price informed vertically from top exporters, feedlotters and slaughters reach producers step by step as exporters do not directly have much contact with producers of the area. Thus, producers have no other chance to gate other sources of information but to adjust their supply and price to existing information. Household use of credit is another significant factor contributing to both household cattle market participation and supply. This finding is inconsistent with Kibona and Yuejie (2021) who found access to farm credit significantly and negatively affected beef cattle market participation. Access to credit might enhance the financial capacity of the cattle keeper to purchase necessary inputs to produce cattle.

The source of Credit services reported during the survey at the study area includes Oromia Credit and Saving Institution (OCSI), Bank, their own Credit and Saving Cooperatives (CCSC) and relatives (friends). However, formal credit is limited to urban areas where almost all rural areas have access to this credit and its terms remaining questionable. Even though formal credit can be used both for crops and livestock, the terms and conditions do not take into account the nature of animal production activities that need longer

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grace periods as compared to crops. Only about 16.53% of households used credit during our survey. The maximum amount a pastoralist can get from accessible credit (Oromia Saving and Credit Institution, OSCI) source is 2000 birr in the first round, increasing to 2400 if the pastoralist repays the first loan without difficulty. Interest is 15% p.a. The community members establish the credit and savings cooperatives. The source of their finance is members' contributions as share capital. There were also some individuals who got cash from friends during critical cash needs. Households with access to credit, despite microfinance purpose is for low-income households, are those who comparatively have more income.

The other result from the above model is households with more cattle holding participated more in the market and sold more. This finding is consistent with (Marandure et al., 2016) who found cattle size contribute to cattle sell. This might show cattle marketing not capture market margin irrespective of the size of production. Almost all households sell cattle during the dry season when cattle prices are spinning down though cattle demand and prices are high during and after the short rainy season before long dry season in the area. Price and selling season have no relation that could possibly be said cattle production is not market-oriented Households without education on average are elders and have high average family size. as there are significant differences in average age and family size between these groups of households. However, there was no significant difference in cattle holding. Age of household positively and significantly contributed to cattle supply. This finding is consistent with Kibona and Yuejie (2021) who found that age positively contributed to cattle sell. Education negatively and significantly affected the supply level. This finding is inconsistent with (Tilahun et al., 2023) who found education significantly contributed to the intensity of livestock market participation. Elder households were less likely exposed to education and might have higher family expenditures and risks than younger households with education. Thus, Households with more education either could have less family expenditures or build resilience capacity to risks help significantly supply less cattle to market being other factors held constant. Households with other income source like off farm activity, cattle products sell, and aid significantly less participate in cattle market and sell less. Households with other income can source extra cash to cover expenditures that would help not to sale their cattle. Pastoralists sell less preferred to sale cattle but they consider as assets which will be sold during only needy/risk time. Whether households have access or not to market have not brought significant change to cattle supply. From the above result, cattle production mainly not for market but used for to ease risks, consumption like milk, meat, and other social purpose.

Cattle Production and Market Constraints

Feed/Water

Pastoral group discussion with 11-20 members held at one kebel from each three districts selected used to list problems and prioritize cattle-related problems. Constraints identified include problems at the production, transportation, and marketing stages. At the production stage, households prioritize production challenges both uncontrollable and controllable problems. Borana Pastoral areas are susceptible to drought that results in feed shortage almost all households reported the problem result herd loss in long dry seasons of the area. As the short rainy season passed no sooner pastoralists regularly faced feed shortages following partial herd mobility. The feed situation worsened during this survey period. It caused the Moyale market cease due to cattle supply problem even before long dry season due to high mobility of herds to the northern parts of the zone for searching feed due to absent of rainfalls at southern part of the zone.

During this survey, the main rainy (*Ganna*) season, March-June, that expected to constitute an average of 60% of the annual rainfall in the zone, fell short, result in low pasture regeneration. This, particularly forced Moyale pastoralist loss their cattle herd or migrate to long distance where they

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were willing to give one out of ten cattle for others in return who keeps their cattle unaffected at Yabello. All cisterns to serve during dry season not support well enough water for livestock drink. Even during normal condition, the average distance to water for livestock drink reported to be 6.58 km which is a labour consuming. Water shortage for their livestock during dry season is hardest to force them desperate to their location and cause them to migrate as dry season prolonged to result in drought. About 88.43% households report the trends of increased drought from their production experience. Among participants in cattle production, about 68.60% of households report experiencing decrease in their herd. Among other factors reported, drought only is the main factors for cattle herd decrease reported by about 55.35% of households. Even, for other households the cause for their herd decrease is reported to be related to combination of drought with disease, and sell.

Range Land Shrinkage

Communal grazing land is common in study areas and personal grazing land is not available to individuals. Pastoralists were asked whether they perceived the trend of their communal grassing land in size and biomass. About 65.30% of the respondents perceived their grassing land is in trend of degrading. 67% of households report worsening trends of bush encroachment. About 83.47% of households report worsening trends of livestock feed from their communal grazing over time. Abate & Angassa (2016) reported rapid decline in grassland cover (7.7 %), increase shrubby grassland cover (86 %), and bare land (0.7 %) between 1987 and 2003 due to, from local communities' perceptions, recurrent drought, increased human population size, and expansion of cultivation were largely responsible for the observed land cover changes.

Single Dimension Trade

Among other range land in Ethiopia, Borana is the main source of exportable livestock supply and the major source for filling high domestic meat demand gab. Among livestock exporters contacted during our survey period, all of them reported their demand was lowland cattle to be amount about 97% of their purchase on average while Borana zone is the major share. In Bake and Dubluk there were many transportation buses to serve only to transport cattle, goat, and sheep to the central market, especially to Modjo, Adama weekly on Saturday. Among the traders asked, there was no single participant engaged in trading with pastoralists during pastoral critical times even though producers have demand in livestock feed and other input supplies. There is less government effort to fill the gap compared to Borana is the major supply to contribute to national meat and live animal export supply. For instance, there was no government pastoral-based production input or/by-product supply investment, even, no export abattoirs and live animal export in Borana due to, among other factors, the absence of airport proximity to support direct routes from producers to consumers. Borana was thought to be not fully exploited to market. The market will encourage producers to produce more cattle to respond to market demand where input especially cattle feeds in the area rely on the sole diminishing rangeland of the area. In this condition, rangeland might not be able to serve future markets in such only forward trade operating this time. In other way, pastoralists' margin from the market will deteriorate as more value-adding functions would be done after the farm gate due to pastoralists failing to meet consumers' criteria with diminishing inputs of production. Thus, backward trade mainly in agriculture inputs at pastoral areas and related investments will serve to sustain production to manage emerging market demand and supply gab.

Border And Market Conflicts

During our survey period, there were both market and border conflicts between Borana and Gerri ethnics to the extent that personal movement was restricted side by side along asphalt road of Moyale district one side being Gerri while the other side belongs to Borana. Due to this case, we could not enter to livestock exist in Gerri of Moyale (*Piazza*) for market visit. As information from local expert, the conflict is border conflict

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linked to questions of land ownership. There was no livestock supplied at Moyale market of Oromia region on market day at our arrival while it was reported to function at Gerri side. The other, reported by Moyale Market experts, was a market conflict created along these sides. They believed Gerri of Somali region with collaboration with traders targeted Oromia side livestock market. Traders used to inter Oromia side market to purchase cattle only during conflict rises to fill supply gab. The other market conflict is between illegal and legal markets legal traders locate at Adama city expressed their worry to a volume of live cattle illegally pass through Somaliland to other countries. They assume it will seriously affect their supply and eager government action to halt the illegal market as they pay taxes to the government.

Non-Market Oriented Production

There was a grievance of live animal exporters and others especially newly planted export abattoir (Halana) to suspend the operation for they could not get cattle demanded and they are function below their capacity. Contrarily, producers complain failed to gate traders to purchase their cattle at market place. There was also high market volume supply of Bake, Dubluk, and Elawye. However, cattle supplied to market failed to meet demand criteria The supply hence, not respond to market conditions but to other household socio-economic condition. Cattle supplied to market dominated with cattle demanded by domestic market that could not support all the supply despite increasing demand with other criteria for abroad export. There was no known organized supply and supply contract to buyers. Cattle Price and supply trends from Borana market development office shows there was no supply response to price when price created high producers' surplus.

Complex And Long Supply Channel

In addition to illegal market trade, legal market trade channel is complex involving numerous actors with little value addition as the area of supply covers wide location and its terminal point is far from production area. Most market actors do not have legal license to their specific action. There is also less market regulation to control individual market actor's works limited to defined market function. As the case, individual market actors except traders and exporter's agents from central market function is not stable and difficult to take responsible for illegal market function conducted. For some actors, market function is their off-farm activity. As a result, limited coordination among partners, poor information sharing, and inadequate market data, insufficient forecast techniques or other uncertainties are the major contributing channel inefficiency. Regulating market activity might be difficult for market regulators as such market actors' function is temporary and unrecognized. There was a complaint for those market actors not known by the bureau of trade have no trustworthy and increasing transaction cost to licensed traders.

Market Information Asymmetry

Demand and price of cattle sets at central market where its information comes down to reach producers through different intermediaries have connection with exporters or/traders. There are no formal organization pastoralists rely on to gate any market information. Pastoralist's access to reliable information about price and demand is the major challenge during our market visit at primary markets. Deliberate market information regarding price and type of cattle demand distortion created delusion to pastoralists what type cattle to supply at Dubluk market observed.

CONCLUSIONS

The study was conducted to identify the cattle market channel, determinant factors of household market participation, and supply lever based on data from 121 randomly selected households from three potential districts, export abattoirs at the country level, traders, collectors, and market experts.

Market channel analysis showed there were many cattle market actors performing different marketing activities, starting from collectors to exporters in the area. There were about four informal cattle channels and nine formal cattle

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market channels that were highly lengthy and complicated, with only limited value addition. Informal cattle marketing shares reach about 47.6%, while 54.4% of market shares pass through the formal cattle marketing channel. There was no competition among the channels as was the case; producers have no channel choice at all to maximize their price share from the final price. But producers' price share is significantly devalued at the channel through which cattle with less than 4 years of age passing as value addition are performed outside of the area.

There were only about 52.89% sample households participated in cattle marketing while 47.11% were non-market participants. Heckman two-step selection model result showed, among other variables included, market information, credit use, milk production and herd size positively contributed to market participation while off farm income, aid, by products production and distance to market negatively affects market participation., Age of household, herd size, credit use, market information positively contributed to cattle market supply, while education, off farm income, milk production and aid negatively affect cattle market supply. Producers complained for lack of buyers and price for their cattle while live animal and export abattoirs reported lack of animal supply with their quality needs. Some exporters had to suspend export of live animal due to supply problems.

The primary issues facing cattle in the area during extended droughts were water and feed. This drastically affects the number of cattle in the herd. A single channel from which producers gate back inputs to support their production does not exist, and the cattle trade dimension is merely one of several dimensions. Nevertheless, a large number of other actors make their living from it. Swelling of range land, among other things, from overgrazing, bush invasion, and farm expansion, is detrimental to cattle productivity. Conflicts arising from borders and markets undermine the area's pastoral economy.

There are currently opportunities for cattle production, including the establishment of a private feed processing unit and a recently formed pastoral commission, government recognition of the pastoral production system to the extent of adopting appropriate policies, increased investments in live cattle and meat exporters, non-government organization activities, and research projects to improve feed, cattle meat, and disease control techniques. Every household believes that having more cattle is a source of pride and a way of life. However, persistent drought and occasionally illness posed issues for cattle production. Thus, such production must be heavily supported and develop drought resilience, mitigation, cycle modelling, and range land management.

They can obtain greater added value with the support and training provided by pastoralists to sell in cooperatives and unions and to participate in various market channels, particularly the one where small cattle purchase is made. If there is a strong market linkage between pastoralists, exporters, and domestic hotels and restaurants, it can close the gap between supply and demand and alter the traditional production methods of pastoralists.

Government engagement in pastoral suitable investment initiatives that could produce animal feed as a by-product would play a significant role in reducing the cattle feed problem and improving access to other inputs.

There should be research through which government-reliable market information sources could be provided for pastoralists with a scattered, long radius from the market and less exposure to any media.

Through the use of legal terms, market actors and channels with lower value addition should be reduced through market intervention. Improving connections between domestic cattle markets and foreign governments, as well as obtaining certification for both cattle and cattle meat, may help temporarily lower the rate of cattle shipments being refused and boost demand on international markets.

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Most pastoralists showed a need for credit, but they reported credit terms and conditions that do not fit with their time-long production of cattle to settle their debt with short payment periods. Thus, producers should have access to credits that suit pastoral long-term production.

Livestock-indexed-based insurance should have to be scaled up through government involvement, supporting pastoralists through subsidies.

REFERENCES

Abate, T., & Angassa, A. (2016). Conversion of savanna rangelands to bush dominated landscape in Borana, Southern Ethiopia. *Ecological Processes*, *5*(1), 6. https://doi.org/10.1186/s13717-016-0049-1

Adam, A. M. (2020). Sample Size Determination in Survey Research. *Journal of Scientific Research and Reports*, 90–97. https://doi.org/10.9734/jsrr/2020/v26i530263

Bassa, Z. (2018). Market Structure Conduct and Performance of Live Cattle in Borana Pastoral area: The Case of Moyalle District, Oromiya Regional State. *Current Investigations in Agriculture and Current Research*, *4*(3). https://doi.org/10.32474/CIACR.2018.04.000189

Berhanu, W., & Beyene, F. (2015). Climate Variability and Household Adaptation Strategies in Southern Ethiopia. *Sustainability*, *7*(6), Article 6. https://doi.org/10.3390/su7066353

Central Statistical Agency. (2007). *The 2007 Population and Housing Census of Ethiopia*. Central Statistical Agency, Ethiopian Statistical Service. https://www.statsethiopia.gov.et/wp- content/uploads/2019/06/Population-and-Housing-Census-2007-National_Statistical.pdf

Coppock, D. (1994). *The Borana Plateau of Southern Ethiopia: Synthesis of Pastoral Research, Development and Change* (Systems Study No. 5.; p. 374). International Livestock Centre for Africa. https://digitalcommons.usu.edu/envs_facpub/242

Dabasso, B. G., Makokha, A. O., Onyango, A. N., & Mathara, J. M. (2022a). Beyond nutrition: Social–cultural values of meat and meat products among the Borana people of Northern Kenya. *Journal of Ethnic Foods*, *9*(1), 46. https://doi.org/10.1186/s42779-022-00160-5

Dabasso, B. G., Makokha, A. O., Onyango, A. N., & Mathara, J. M. (2022b). Beyond nutrition: Social–cultural values of meat and meat products among the Borana people of Northern Kenya. *Journal of Ethnic Foods*, *9*(1), 46. https://doi.org/10.1186/s42779-022-00160-5

Faku, Z. B. (2017). *Market Chain Analysis of live Cattle in Borana Pastoral Area: The Case of Moyalle District, Oromyia Regional State Southern Ethiopia*. Juniper Publishers. https://juniperpublishers.com/ebooks/Market%20Chain%20Analysis%20of%20live%20Cattle%20in%20Borana%20Pastoral%20Area%20the%20Case%20of%20Moyalle%20District,%20Oromyia%20Regional%20State%20Southern%20Ethiopia.pdf

Fedlu, M., & Seid, A. (2019). *Review on Community-Based Animal Health Workers in Ethiopia*.

Haile, A., JOSHI, B., Ayalew, W., Tegegne, A., & Singh, A. (2009). Genetic evaluation of Ethiopian Boran cattle and their crosses with Holstein Friesian in central Ethiopia: Reproductive traits. *Journal of Agricultural Science - J AGR SCI*, *147*. https://doi.org/10.1017/S0021859608008095

Heckman, J. J. (1979). Sample Selection Bias as a Specification Error. *Econometrica*, *47*(1), 153–161. https://doi.org/10.2307/1912352

Hurst, M., Jensen, N., Pedersen, S., Shama, A., & Zambriski, J. (2012). *Changing Climate Adaptation Strategies of Boran Pastoralists in Southern Ethiopia* (Working Paper no. 15). CGIAR Research Program on Climate Change, Agriculture and Food Security

Article DOI : https://doi.org/10.37284/eajab.7.1.2052

(CCAFS). https://mpra.ub.uni-muenchen.de/55865/

Kibona, C. A., & Yuejie, Z. (2021). Factors that influence market participation among traditional beef cattle farmers in the Meatu District of Simiyu Region, Tanzania. *PLOS ONE*, *16*(4), e0248576. https://doi.org/10.1371/journal.pone.0248576

Little, P. D., Debsu, D. N., & Tiki, W. (2014). How pastoralists perceive and respond to market opportunities: The case of the Horn of Africa. *Food Policy*, *49*, 389– 397. https://doi.org/10.1016/j.foodpol.2014.10.004

Management Entity. (2021). *Ethiopia's Livestock Systems: Overview and Areas of Inquiry*. Feed the Future Innovation Lab for Livestock Systems. https://livestocklab.ifas.ufl.edu/media/livestocklabifasufledu/pdf- /LSIL_Livestock_Systems_Overview_Ethiopia_2021_08.pdf

Marandure, T., Mapiye, C., Makombe, G., Nengovhela, N., Strydom, P., Muchenje, V., & Dzama, K. (2016). Determinants and opportunities for commercial marketing of beef cattle raised on communally-owned natural pastures in South Africa. *African Journal of Range and Forage Science*, *33*. https://doi.org/10.2989/10220119.2016.1235617

Mebre, S. (2015). *Peacebuilding or 'Development'? The Dynamics of Conflict and NGOs' Role in Borana, Oromia Region, Ethiopia*.

Pavanello, S. (2010). *Livestock marketing in KenyaEthiopia border areas: A baseline study* (HPG Working Paper). Humanitarian Policy Group (HPG), Overseas Development Institute. https://www.files.ethz.ch/isn/119436/2010-07_Livestock-marketing.pdf

Sori, T. (2005). *Contagious Bovine Pleuropneumonia (CBPP) Post-Vaccinal Complication in Ethiopia*. *3*(4).

Ta'a, T. (2016). *The Gadaa System and Some of Its Institutions among the Booranaa: A Historical Perspective*.

Tadesse, B. (2017). *Regional Pastoral Livelihoods Resilience Project (RPLRP): Stocktaking Study of Complementary Livelihoods Market and Value Chain Analysis for Identified Priority Products in IGAD Region Cross-Border Areas* (Assessment Report, April, 2017). IGAD Centre for Pastoral Areas and Livestock Development (ICPALD). https://resilience.igad.int/wp-content/uploads/2020/02/Study_ICPALD_Stocktaking-Study-of-Complementary-Livelihoods.pdf

Tesfaye, Angasa, Amaha, N., & Department of Animal Sciences, Haramaya University, Haramaya, Ethiopia. (2018). A Review on Cross-Border Livestock Trade Across Dry Land Borders of Ethiopia: The Trends and Implications. *Journal of Scientific and Innovative Research*, *7*(2), 36–42. https://doi.org/10.31254/jsir.2018.7202

Tiki, W. (2012). *Climate-induced Vulnerability and Pastoralist Livestock Marketing Chains in Southern Ethiopia and Northeastern Kenya (Chains): First Year Report* (Field Research Report 1). Emory University. https://devstudies.emory.edu/assets/reports/FieldReport_1-25-13.pdf

Tiki, W., & Little, P. D. (2023). Deception and default in a global marketplace: The political economy of livestock export trade in Ethiopia. *The Journal of Peasant Studies*, *50*(4), 1431–1454. https://doi.org/10.1080/03066150.2021.2010714

Tilahun, Y., Tadesse, B., Gebre, E., Haile, K., Bayu, M., Adimasu, Z., Tolera, Z., Zegeye, B., & Bayu, A. (2023). Factors influencing the intensity of market participation of smallholder livestock producers in southwest Ethiopia. *Cogent Economics & Finance*, *11*(2), 2258672. https://doi.org/10.1080/23322039.2023.2258672

Wohlgenant, M. K. (2001). Chapter 16 Marketing margins: Empirical analysis. In *Handbook of Agricultural Economics* (Vol. 1, pp. 933–970). Elsevier. https://doi.org/10.1016/S1574-0072(01)10024-1

