



A pilot study on roles and operations of actors in the beef value chain in central and Western Uganda

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Abstract

This study assessed the roles and operations of different actors in the beef value chain in the districts of Kiruhura, Mbarara, Kampala, Nakasongola and Nakaseke in Uganda. A total of 93 respondents were interviewed using a structured questionnaire. The findings revealed that men play a major role in the beef value chain with a few tasks limited to women. Beef traders make double profit during festive seasons compared to ordinary days. Live cattle are sold to the main urban towns in Uganda including Kampala (42.9%) and Mbarara (14.3%) among others as well as to South Sudan (14.3%) with Kiruhura (22.2%), Mbarara (15.9%) and Nakaseke (12.5%) districts being the leading suppliers. There was a significant ($p < 0.05$) difference in prices of cattle categories. Cows cost higher (1,521,250 UGX) followed by mature bull (1,328,500 UGX), heifer (766,667 UGX) and immature bull (668,750 UGX). Some animal parts (bones, blood, claws, penis, brains) and intestinal ingesta are not utilized for economic gains. Live cattle trade should be abolished to realize more profits from beef sales and exports. Women should equally participate in the beef value chain. Different actors should be trained to add value on the unutilized animal parts and products to earn income. (Note: 1 USD=3693UGX)

Keywords: Farmers; Slaughter; Beef Traders; Transporters; Middlemen; Processers

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1. Introduction

Cattle form an important part of the economic life of many rural communities in Uganda although other animals such as goats, sheep, pigs and poultry are equally important (Mbabazi and Ahmed, 2012). Most of the livestock kept are the indigenous breeds (forming 95% of the national herd/flock) (Uganda Investment Authority, n.d.-a) with the pastoral herders located in the cattle corridor (McGahey and Visser, 2015; Stark, 2011). There are also small and promising commercial ranching systems where livestock are grazed over extensively fenced areas. However, there is a distinct, but not very strict, gender division of work in the farming systems (Yisehak, 2008).

Livestock production plays a significant role in Uganda as it is a source of livelihood to about 4.5 million people and contributed 9% of the Gross Domestic Product (GDP) of the country in 2009 (Mbabazi and Ahmed, 2012; Uganda Investment Authority, n.d.-b). Most households (51%) in Uganda depend on livestock as a source of livelihoods and 19 million people keep them (Oketch, 2016). The livestock provide food (meat and milk), draught power, manure, skin, hide, cash, security, social and cultural identity, medium of exchange and means of savings. In eastern and northern Uganda, bulls of cattle are also used for ploughing and other haulage tasks (African Centre for Economic Transformation, n.d.). Animal products such as meat and milk among others contribute 17% to the incomes of most households in Uganda. For example livestock contributes 18% of income in the rural areas and 12% in urban areas (Oketch, 2016). Unfortunately, the current per capita availability of meat in Uganda is low estimated at 12.1 kg, of which beef constitutes 6.3 kg compared to 50 kg of meat recommended by FAO and WHO (Mbabazi and Ahmed, 2012).

Beef is an important source of protein and it also provides vital income across the value chain, from herding to final retail sales in butcheries and supermarkets (African Centre for Economic Transformation, n.d.). The beef production value chain starts at the farm gate when the farmer /rancher decides to sell an animal to itinerant traders who come to villages (Ashley and Nanyeenya, 2002) or in livestock markets which operate on weekly basis (Ruhangawebare, 2010). The cattle are loaded on trucks destined for slaughter houses and can also be sold to another trader/middle man who offloads and keeps them in the holding facilities waiting for a butcher or another middle-man to buy them. The animals slaughtered in the city abattoirs come mostly from districts in the cattle corridor. Live animals are transported to metropolitan areas where they are slaughtered and the beef is offered for sale largely while fresh based on consumer preference (Mbabazi and Ahmed, 2012). Cattle farmers predominantly sell culled cattle followed by immature bulls to traders or butchers for beef in an attempt to reduce competition between female reproductive cattle for pastures and water (Ruhangawebare, 2010)

This study identified different actors in beef value chain namely cattle farmers, middlemen or agents, cattle market operators, slaughter house personnel, transporters, butcher operators (meat traders), processors and key informants in the sector like meat inspectors, veterinary doctors and veterinary drug dealers. Hence, in depth analysis was carried out to get a clearer understanding of what these actors do and how they operate.

It should be noted that, despite the extensive use of cattle for beef, there is limited information and documentation on the roles and operations of the different actors in the beef value chain in Uganda. The

actors are usually very busy and hard to locate and often neglected by many researchers yet they contribute greatly towards the country’s GDP. So this study documented the key roles and operations of the various actors in the beef value chain in Central and Western Uganda.

2. Materials and methods

2.1. Study area

The study was mainly in selected districts in Uganda’s cattle corridor namely; Kiruhura, Mbarara (Western Uganda), Mubende, Luwero, Nakasongola and Nakaseke (Central Uganda) as shown in Figure 1. Kampala, Wakiso and Mpigi were included based on the fact that they are the biggest destination for live cattle sales much as they are not in the cattle corridor. Kampala houses the biggest slaughterhouse (City Abattoir) located Old Port Bell Road which slaughters 500-700 cattle daily in addition to about 200 goats and sheep as well as several chickens (Thorell, 2014). The cattle corridor is semi-arid with high rainfall variability; periodic late onset rains/droughts and historical reliance on mobile pastoralism so as to cope with climate variability (McGahey and Visser, 2015)

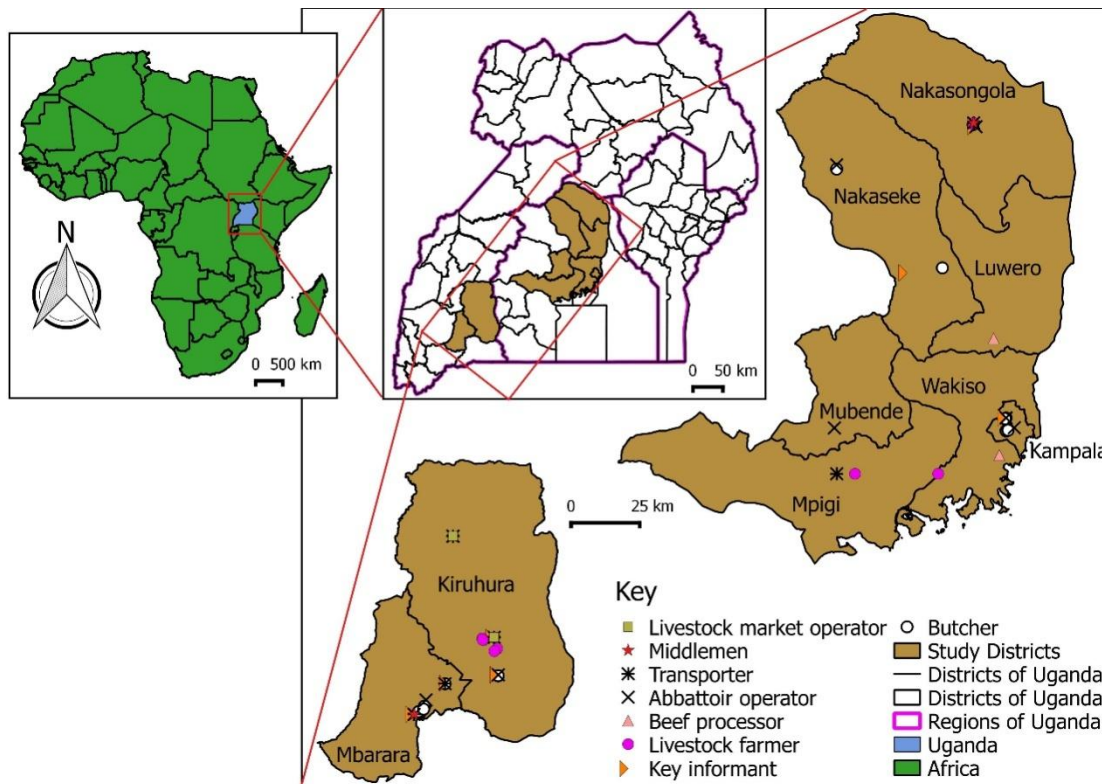


Figure 1. Map of Africa showing Uganda and the location of the main actors in the beef value chain in the study districts in Uganda

2.2. Data collection

A cross-sectional research design was used during this pilot study to obtain multiple variables at the time of the data snapshot. Beef production value chain actors are always busy and hard to locate, so this pilot study employed purposive sampling and limited numbers of respondents were selected to serve as primary data sources for the pilot. Interviews were conducted with a total of 93 respondents comprising of cattle farmers (17), middlemen or agents (9), cattle market operators (2), slaughter house personnel (11), transporters (11), butcher operators (meat traders) (34), processors (2) and key informants (7) in the beef value chain. The location of these actors are shown in Figure 1. Cattle farmers selected owned more than 100 heads of cattle on farm. In-depth interview guide and face-face semi-structured questionnaires were administered and observations conducted. Data was coded and subjected to statistical analysis using IBM SPSS statistics 20. The quantitative data were framed into tables and graphs to enable viewing the findings more clearly and from different perspectives and summaries were written to explain the representations. Descriptive statistics (range, mean and standard deviation) were computed for the different data obtained during the pilot study and the comparison of the mean values of the key variables across the various actors and cattle categories done using One Way ANOVA at 5% level of significance.

3. Results and discussion

3.1. 3.1 Demographics of the actors in the beef value chain

From the livestock farmers interviewed, males comprised 70.6% and females 29.4%. These findings are similar to a study carried out by Waithanji *et al.* (n.d.), where women's participation in livestock farming was found to be limited to marketing livestock products (milk, butter, cheese, ghee, hides and skins) not over the live animals themselves.

The highest number of slaughter operators (36.4%) were interviewed from Mbarara and Kampala (Table 1), while there were many butcher men interviewed in Mbarara (50.0%) followed by Kampala (26.5%) as shown in Table 1. Most of the livestock farmers interviewed were in Kiruhura (47.1%) followed by Mbarara (29.4%).

Table 1. Key Actors in Beef Value Chain (BVC)

District	Numbers (%)					
	Slaughter Operators	Butchers	Farmers	Transporters	Middlemen	Key informants
Kiruhura	1(9.1)	5 (14.7)	8(47.1)	3(27.3)	5(55.6)	2 (28.6)
Mbarara	4(36.4)	17(50.0)	5(29.4)	6(54.5)	3(33.3)	2 (28.6)
Kampala	4(36.4)	9(26.5)	2(11.8)	1(9.1)	1(11.1)	1(14.3)
Nakasongola	1(9.1)	1(2.9)	2(11.8)	1(9.1)	0 (0)	1(14.3)
Nakaseke	1(9.1)	2 (5.9)	0 (0)	0 (0)	0 (0)	1(14.3)

Most (54.5%) of the live cattle transporters interviewed were in Mbarara while the highest number of middlemen were in Kiruhura (55.6%). An equal number of key informants (28.6%) were interviewed from Kiruhura and Mbarara districts. Only two markets were visited in the district of Kiruhura where two market operators were interviewed. Two beef processing industries were visited in Wakiso and Luwero with each contact person at Fresh cuts (Kampala) and Egypt-Uganda food security (U) Ltd (Luwero) interviewed.

3.2. Education levels of key actors in beef value chain

Majority (72%) of the actors along the beef value chain (Farmers, Transporters, Middlemen, Butchers, Slaughter Operators, beef processors, market operators) in the pilot study had attained secondary and primary education. On the other hand, key Informants had tertiary education and University education. Though the actors in the value chain had attained some form of education, it was not clear whether they had agricultural literacy i.e. knowledge and understanding of agriculturally related scientific and technologically-based concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity (Meischen and Trexler, 2003).

3.3. Gender and livestock production

Livestock markets were operated and managed by only men as well as the transportation of live cattle. The respondents regarded transportation as a masculine job from the pilot survey. Similarly, slaughter houses/abattoir operations were run by men among the slaughter places visited in the pilot districts. The proportions of males to females running butcheries (meat trading) were 97.1% to 2.9%. Beef processing plants were managed entirely by males while middlemen/ agents were mainly males (88.9%) and a small proportion of females (11.1%). Relatedly, the majority of the key Informants (meat inspector, veterinary doctor, production officer, meat cooperative union manager) interviewed were males (71.4%) and a few females (28.6%). These findings are similar to a study which found out that culturally men dominate livestock production including ownership of large number of livestock (Njuki and Sanginga, 2013), especially cattle while women mainly provide the main source of labour for all livestock production activities (Oluka *et al.*, 2004). Men are largely the decision makers for livestock production and are in charge of general herd management (Yisehak, 2008).

Ownership of land is often related to ownership of the larger animals. However, gender related question is that how can a woman own a livestock while the land she uses belongs to her husband? (Yisehak, 2008). On the contrary, women in Ghanzi, Botswana own cattle (Petitt, 2016).

3.4. Key roles and operations at the beef value chain

The leading districts supplying cattle to slaughter houses were Kiruhura followed by Mbarara, Nakaseke / Isingoro and Nakasongola as shown in Table 2 below. Other areas supplying cattle were Rakai, Luwero, Arua, Kotido, Pakwach, Sembabule, Kiboga, Gulu, Bushenyi, Masindi, Ibanda, Mpigi, Gomba, Ntugamo and Rubirizi. Some cattle were brought as far as from Tanzania and South Sudan. These districts have highest cattle

numbers kept and the findings are similar to (UBOS, 2008; Rugadya, 2007; Stark, 2011 and Mbabazi and Ahmed, 2012).

Table 2. Leading Suppliers (sources) of Cattle for Slaughter in Central and Western Uganda

Sources	Number (%)		
	Abattoir operators	Transporters	Key Informants
Kiruhura	4 (14.3)	10 (30.3)	4 (22)
Mbarara	6 (21.4)	5 (15.2)	2 (11)
Nakaseke	4 (14.3)	2 (6.1)	3 (17)
Isingiro	2 (7.1)	5 (15.2)	2 (11)
Nakasongola	2 (7.1)	2 (6.1)	3 (17)

3.4.1. Destination of cattle in the beef value chain

The destination of cattle slaughtered in Central and Western Uganda was also assessed. Results showed that the beef is channeled to several destinations. The highest amount (42.9%) being consumed in Kampala district. Results also revealed that South Sudan is one of the destination of cattle taking 14.2% as shown in table 3 below.

Table 3. Destination of Cattle after transportation

Destination	Number (%)	
	Key Informants	Transporters
Kampala	6(42.9)	8(36.4)
Mbarara	2(14.3)	6(27.3)
Kasese	1(7.1)	5(22.7)
South Sudan	2(14.3)	1(4.5)
Arua	1(7.1)	1(4.5)
Jinja	1(7.1)	0(0)
Mukono	1(7.1)	0(0)
Kiruhura	1(7.1)	1(4.5)

The findings obtained relate with the new vision article which noted that 75% of cattle brought to Kampala slaughter houses come from western Uganda and are later bought by dealers from South Sudan and the DR Congo, Kenya, Tanzania and Rwanda (Ssempijja, 2011).

3.4.2. Type of cattle readily available on market

The type of cattle that are readily available on market and at slaughter houses are indigenous type (93.5%), then cross breed and exotic e.g. Boran. Most farmers keep dairy animals and a few participate in beef farming (but even the dairy farmers' end up selling the cattle at some point). The indigenous type of cattle was mainly the Ankole long horned cattle similar to a study by (Ruhangawebare, 2010) because they are easy to keep

than the exotic and are better adapted to semi-arid conditions thus do not require expensive investments in water points and veterinary care. The exotic animal breeds pose a high risk as they cannot cope with unpredictable fluctuations in the environment or disease outbreaks (Vision Reporter, 2012).

3.4.3. Weight of Cattle, Cost and Sale Price

The range of the mean estimated weights (kg) of the various cattle categories were as follows; a mature bull (352-403), immature bull (99-179), cow (272-320) and Heifer (82-172) (Table 4). There was no significant difference ($p>0.05$) between the estimated mean weights of the cattle categories mentioned by the different actors along the beef value chain. Several factors influence weight of animals including feeding and management and it was the size and weight of cattle that determined the price of cattle similar to the findings of Mpairwe *et al.* (2015).

Table 4. Estimated weight (kg) of categories of live cattle and carcass

Actors		Mature Bull	Immature Bull	Cow	Heifer	Carcass
Abattoir Operators	N	6	4	4	3	2
	Range	180-600	80-230	150-340	70-230	100-200
	Mean±SD	363.33±167.53	127.50±68.98	272.50±83.82	140.00±81.85	150.00±70.71
Transporters	N	11	9	11	8	-
	Range	150-500	70-250	120-500	80-450	-
	Mean±SD	352.73±126.81	128.89±60.92	319.09±110.04	171.25±126.31	-
Middlemen	N	6	7	8	7	-
	Range	190-500	30-200	120-500	30-150	-
	Mean±SD	373.33±101.08	101.43±56.03	292.50±132.13	82.14±41.62	-
Key Informants	N	7	6	7	6	-
	Range	225-600	80-365	190-475	80-325	-
	Mean±SD	403.57±150.30	179.17±100.67	320.00±104.52	172.50±86.18	-
Farmer	N	11	12	12	13	-
	Range	150-750	60-200	150-800	60-150	-
	Mean±SD	365.00±178.54	99.17±40.05	387.50±202.40	95.00±23.81	-
ANOVA	F	0.131	1.848	0.784	2.492	
	P	0.970	0.143	0.543	0.063	

*SD-Standard Deviation; N-Numbers of responses

During the pilot study, there were no steers mentioned (a steer is a male bovine (or bull) that had been castrated before reaching sexual maturity and was primarily used for beef. The cost of cattle sold at the source and the selling price of the cattle sold when it reaches the slaughter house in Kampala was evaluated. Results indicated that there were different categories of cattle that are purchased at different costs with mean prices (UGX) ranging from 976,000-1,280,000 (mature bull) 520,000-616,667 (immature bull), 1,140,000-1,575,000 (cow) and 575,000-650,000 (heifer) as shown in table 5 below. There was a significant ($p<0.05$) difference in prices for mature bull, immature bull, cow and heifer.

Table 5. Estimated Cost and Sale Price of various categories of cattle by Transporters and Middlemen

Actors		Mature Bull	Immature Bull	Cow	Heifer	ANOVA
Cost Price (UGX)						
Transporters	N	10	3	4	4	F=7.377 p=0.002
	Range	800000-2300000	450000-900000	1500000-1800000	400000-900000	
	Mean±SD	1280000±439191	616667±246644	1575000±150000	650000±238048	
Middlemen	N	5	5	7	4	F=8.967 p=0.001
	Range	600000-1280000	350000-900000	800000-1500000	400000-800000	
	Mean±SD	976000±280856	520000±225278	1140000±227743	575000±206155	
Overall mean		1128000	568334	1357500	612500	
Sale Price (UGX)						
Transporters	N	10	3	4	3	F=7.391 p=0.003
	Range	920000-2400000	500000-1000000	1600000-1870000	800000-900000	
	Mean±SD	1532000±447358	700000±264575	1692500±127377	866667±333333	
Middlemen	N	4	4	6	3	F=7.302 p=0.004
	Range	800000-1400000	450000-1000000	875000-1700000	500000-900000	
	Mean±SD	1125000±320156	637500±249583	1350000±283284	666667±208167	
Overall mean		1328500	668750	1521250	766667	
Profit (Sale-Cost) (UGX)		200500	100417	163750	154167	
Overall mean weight (Kg)		363	115	306	127	

*Note: 1 USD=3693UGX

Estimated cost price mentioned by both transporters and middlemen shows that cows cost higher followed by mature bull, heifer and finally immature bull (Table 5 above). Similarly, cows are sold more expensively than bulls and this is contrary to the findings by Tada et al. (2012) who found that prices of calves, bullocks, in-calf heifers, cows were not significantly different.

At the slaughter house/abattoir, it was also found out that the purchase price of beef from cow was higher than for the bull but the cow beef was always preferred by the meat traders.

In a related study, it was found out that bulls are reared for income from sales, meat for home use and ceremonies, aesthetic value and to maintain cultural heritage while cows (female cattle) are mainly kept for milk production, income from sales, heritage and aesthetics, and in few cases, for home use as meat. Other functions included savings, manure and butter production (Kugonza et al., 2012). Probably, the cost of a cow is higher due to the many multiple purposes realized than a bull.

3.4.4. Operations at the slaughter houses/abattoir

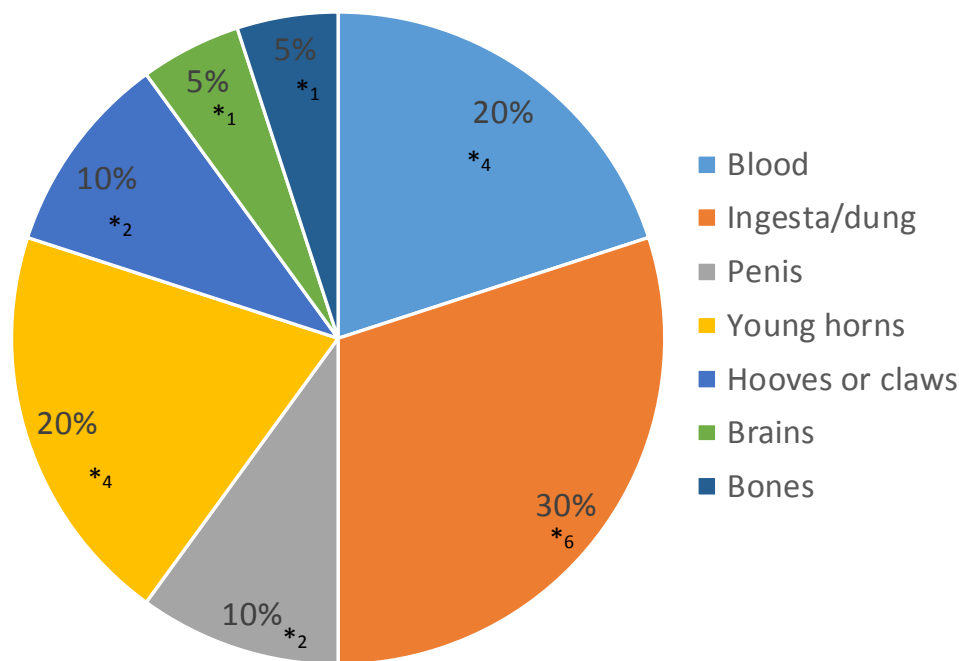
To study the different operations that take place at the slaughter houses/abattoir, only the main operating slaughter houses/ abattoirs in the pilot district were visited. A total of 9 slaughter houses /abattoir were visited namely; Nsanga slaughter house (Kiruhura), Mbarara slaughter house (Kiruhura), Kampala meat

packers (Kampala), City abattoir (Kampala), Nsooba slaughter house (Kampala), Nakasongola slaughter slab, Kashaka slaughter slab (Mbarara), Bwizibwera slaughter slab (Mbarara) and Goma slaughter slab (Nakaseke).

Of all the slaughter houses or abattoirs visited during the pilot, it was found that vehicles in form lorries (Fuso type) are mainly used to deliver the cattle to the slaughter houses or abattoir. Out of 10 sampled cars that were found transporting cattle, 8 were fuso type. Of all the slaughter houses visited during the pilot study, there were meat inspectors employed to carry out inspection of meat and make sure that meat taken for consumption is safe. There was no knife and panga sharpening machine and no sterilization of slaughter equipment and similar scenario was reported by Mummied and Webb, (2015) in a related study in Ethiopia. Live cattle were not weighed before slaughter but there was only a weighing scale of the carcass. All the slaughter houses visited carried out “batch slaughtering” where slaughtering, bleeding, skinning, and evisceration are performed in the same area similar to a study by (Cook et al., 2017).

3.4.5. Parts disposed off in slaughter houses

Of the respondents interviewed, 70% said they disposed off some parts (as wastes) after slaughter while 30% utilized all the other part remains. The disposed off parts are left to rot or picked by marabou stork (*Leptoptilos crumenifer*) and slaughter houses visited had a bad smell. Some of the animal parts (wastes) are not utilized for economic gains include bones, intestinal ingesta, blood, claws, penis and brains as recorded in Fig. 2. Fearon, Mensah and Boateng (2014) in a study in Ghana noted that tonnes of blood, intestinal contents and waste tissue and bones after slaughter are left to degrade, producing bad stench.



*Is number of respondents who reported the body part not utilized for commercial purposes

Figure 2. Unutilized parts of animals in slaughter houses

The unutilized parts are either thrown away or eaten by dogs. Young horns are disposed off while mature horns are sold. Ranchers are usually unaware of the economic value of the horn unlike middlemen in the slaughterhouses of Kampala. There is a raw horn market by the Chinese who buy in bulk and export them back to Asia to mass produce buttons for their textile industry. Besides, the Ankole cattle horn is durable, making it an ideal material for carving solid designs, cutting eyewear frames, or drilling holes for custom wardrobe accessories (Hoey, 2015).

3.4.6. Transport of beef from slaughter houses/abattoir

Beef is transported by use of motor cycle or vehicle as well as shoulder logs from the slaughter house to selling points. The largest percentage of meat transport is by motorcycle (63%) followed by vehicle and shoulder to shoulder logs (18.2%) and this result agrees with Chepkemai et al. (2015) in a study in Kenya where the motorcycle was the most preferred means of transport from slaughter houses to butchery. Inspection of meat was done by meat inspectors in all the slaughter houses visited to guarantee the safety of meat for human consumption before transportation similar to results from a study by Mumed and Webb, (2015).

3.4.7. Mode of storage of meat at slaughter house/abattoir

Of all the abattoirs visited, 45.5% sell all their meat stock in a day while 54.5% remain with a balance of meat at the end of the day. The balance of meat at the end of the day is either left hanging left hanging in the slaughter houses or is preserved in freezers.

3.4.8. Mode of operations of butcheries

Most of the butcheries (76.5%) purchase meat from the licensed slaughter houses and a few (23.5%) buy cattle and slaughter for themselves. All butcheries/ meat traders visited during the pilot survey were licensed by the local authority with all the meat at the butcheries having a meat inspection mark similar to a study by Cook et al., 2017 where it was mentioned that much of the meat inspection occurs at the butchery.

Once meat arrives at the butchery, it is hung for display during sales which is the same as in a study by Bafanda et al. (2017). Any balance of meat at the end of the day is also either stored in the freezer (52.9%) or left hanging in the butchery (32.4%) and while the rest of butcheries sell off the balance cheaply to avoid carry-over to another day. This result is similar to a study conducted in Kenya where meat was stored by hanging it in open space in butchery (Chepkemai et al., 2015)

3.4.9. Profit margins realized from beef sales at butchery during ordinary and festive seasons

The variations in prices of beef during festive seasons (e.g Christmas, Easter, New year, Idd etc) and ordinary days were assessed. The results of the pilot surveys among butcheries indicated that the cost price of beef was 7000-8000UGX per kg during both ordinary and festive seasons while the sale price was dependent on the season. Beef sales at the various butcheries showed remarkable findings as shown in table 6 below.

Table 6. Beef prices in butcheries during the ordinary (n=33) and festive (n=24) seasons

No.	Category	Range	Mean
1	Amount of meat bought daily (Kg)	12-300	120.21
2	Cost price of meat per Kg (UGX)	7000-8000	7600
3	Total cost price (UGX)	84000-2400000	926545.45
4	Sale price per Kg (UGX)-Ordinary	7500-10000	8909.09
5	Total sale price (UGX)-Ordinary	96,000-2700000	1079803.03
6	Profit (UGX)-Ordinary	12000-400000	153257.58
7	Sale price per Kg (UGX)-Festive	8000-12000	10291.67
8	Total sale price (UGX)-Festive	108000-3000000	1250958.33
9	Profit (UGX)-Festive	24000-900000	331541.67

**Note: 1 USD=3693UGX*

In festive season like Easter, Christmas and Idd days, the sale price of beef was 8,000-12,000UGX and on ordinary days the sale price was 7,500-10,000UGX. As a percentage of the total cost price, beef traders realize almost double profit during festive seasons (35.78%) than during the ordinary days (16.54%).

3.4.10. Operations of livestock farmers/ranchers

All the livestock farmer respondents interviewed kept above 100 heads of cattle. These farmers tend to sell off their cattle during the dry season (68.8%), when children are going back to school (25.0%) and festive season (6.2%). A lot of cattle are sold off during the dry season because of limited feeds (pasture) and water. Farmers actually reported that many cattle starve and die as a result of prolonged drought. There is a lot of cattle available for sale in the dry season and at a cheap price (due to high supply).

3.4.11. Operations of the live cattle transporters

The interviewed cattle transporters had stayed in the business for 2-30 years and were knowledgeable about the business. A Fuso truck is the common vehicle used to transport the animals and is loaded with 15-22 heads of cattle. The trucks are loaded beyond the carrying capacity and this leads to injury of the animals on route. From the study, it was found that loading and off-loading of cattle to the Fuso employs between 3-12 strongly bodied men. Other vehicle types used included Canter and Elf. Loading and off-loading cattle could cost 25,000-250,000UGX and is dependent on the number of cattle.

There were a few occasions at Mbarara slaughter house when cattle were bought from areas near the slaughter. These cattle were trekked (1-5 cattle at a time) to the slaughter houses. All the person involved in transporting animals had a movement permit and these are issued by the vet officer in each district. Of the eleven (11) live cattle transporters interviewed, ten (10) mentioned that they pay for a cattle movement

permit which costs 2500-10,000UGX per head of cattle while one (1) respondent said that the movement permit was for free. Because of the long distances to the slaughter place, the costs of transporting live cattle and the risk of disease spread are therefore relatively high and a similar trend was reported by (Nalubwama, 2014) who noted that a truck loaded with cattle may take five hours or more, during which time animals suffer from stress and injury. Long-distance transport could increase the fecal shedding of disease agents (Greger, 2007) and leads to degradation of animal welfare (Kempener, 2009). Once at the abattoir, animals may be slaughtered immediately or can stay for 2 to 10 days depending on the demand for beef (Mbabazi and Ahmed, 2012)

3.4.12. Operations by middlemen/agents

Middlemen/agents are businessmen whose aim is to derive as much profit as possible from their dealings. During the pilot study, nine (9) middlemen/agents were identified and interviewed and they dealt in different breeds of cattle namely, indigenous cattle (Ankole or zebu), cross and exotic types. These middlemen buy cattle from farmers or cattle markets (fattens them) by keeping for some time and later sell them to butchers and transporters at a higher fee. However, the middlemen/agents can also buy cattle from farmers, as well as from up country cattle markets and transporter and re-sale them to butcher men at a higher fee. They target to buy their cattle in seasons when prices are very low and re-sale when there is demand.

3.4.13. Livestock markets

During the pilot survey, only 2 livestock markets were visited namely; Kazo market and Kibuuza market and these markets are owned by government and tendered to private individuals and at a market levy of 14000UGX per head of cattle sold. These are regarded as primary markets and traders from different areas bring to sell their cattle and it was found that there sales at farm gate, secondary market and terminal markets and this relates to studies by Ayele et al. 2003; Ruhangawebare., 2010; Newman and Newman., 2014. At marketing of live cattle, women's participation was much lower than men (Waithanji et al., n.d.). It is important to note that women's participation at each level of the value chain is influenced by a number of factors, including: their access to capital and credit, their skills, capacities and ability to organise; and constraints on their mobility compared to the men counterparts (Njuki and Sanginga, 2013). The live stock markets are open to all buyers and sellers and consist of people buying for household use, butchers, commercial farmers and dealers or middle men (Musemwa et al., 2008). During the pilot survey, the respondents operating the markets mentioned that livestock markets have challenges like receiving the stolen animals in the market and people's reluctance in paying the market levy and findings are related to Newman and Newman, 2014 who noted that at livestock markets there were sales but also a few theft cases.

3.4.14. Beef processors

A few beef processing industries exist in Uganda namely, Fresh cuts (fully operating) and Egypt-Uganda food security (U) Ltd (not yet operational). Fresh cuts target both local and international markets and there is still limited operation in international markets in terms of exporting beef in Uganda.

During the pilot study, Fresh cuts (located in Seguku, Wakiso, Uganda) and Egypt-Uganda food security (U) Ltd were visited. The later has not yet started its operations though it was commissioned in August 16, 2015. The plant has potential to slaughter 1,000 cows daily and can hold up to 5,000 animals waiting to be slaughtered. The plant was constructed to process and package meat mainly beef both local and export markets (Mastiko, 2015), but has never been in operation since commissioning (Wandera, 2018).

Fresh cuts get its beef supplies from middle men as well as directly from farmers who supply cattle to Kampala meat packers where they are slaughtered. Fresh cuts purchases 2.5 tonnes (7500/= per kg) of beef on daily basis. For quality meat, they utilize muscle meat and less fat, bones, offal/fifth quarter (Walsh, 2014), as they do not need them in the processed products. At fresh cuts, meat is chilled, de-boned and packed for high grade consumers in a highly hygienic environment. Fresh cuts processes beef products eg sausages, patties, kebab (3.5-4 tonnes), cooked ham (150kg), Viennas (100kg) on daily basis while fermented sausages (200kg) and dried beef biltong (50kg) on weekly basis. They target both local and international markets.

4. Conclusion

The beef value chain sector is dominated by men while women only participate in a few tasks which are limited to providing labour and marketing a few animal products. There are middlemen/agents also called businessmen at every stage in the beef value chain whose aim is to derive as much profit as possible from their dealings. The transporters of live cattle are always issued with a movement permit that enable them to move cattle across districts. The cattle are always loaded on the truck which is loaded beyond the carrying capacity in order to maximize profits.

Cows are sold more expensively than bulls and this could be due to the multiple purposes realized including milk production, income from sales, heritage and aesthetics, manure and butter production. In beef trade, a lot of profit is released in festive season than during the ordinary days. Some of the animal parts such as bones, blood, claws, penis, brains and intestinal ingesta are disposed off and not utilized for economic gains.

5. Recommendations

Based on results, it was found out that Uganda still allows live animal exports in East Africa. This study recommends that the government should ban live cattle exports so as to maintain a sustainable number of livestock herd in the country and to realize more profits from beef exports.

Animal welfare should be improved to reduce the physical and emotional stress during loading, transport, unloading of cattle. Transporters should be sensitized about animal welfare at all stages during transport and associated events can both improve carcass quality. The government through MAAIF needs to promote beef export and work with the interested businesses and Uganda National Bureau of standards (UNBS) to make sure they process high quality beef.

Women should be encouraged to equally participate in the beef value chain. Projects or Non-Government Organizations should work towards promoting the role of women in this sector. Different actors should be trained to add value on the unutilized animal parts (e.g. bones, blood, claws, penis, brains) and intestinal ingesta for more economic gains.

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