



Effects of Inter-community Conflicts on Beef Cattle Production among Pastoral Communities of Marsabit County, Kenya

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The focus of this research was to determine the effects of inter-pastoral communities conflicts on beef cattle production, to determine the effects of livestock diseases on beef cattle production among pastoral communities in Marsabit County. The study employed a descriptive survey research method. Our study's target population was made up of 1210 beef cattle keepers with a total population of 118,755 beef animals. Marsabit County was chosen at random using purposive sampling techniques. After stratification, 60 out of 200 registered farm groups was chosen at random. The researcher conducted a pilot study to determine the instrument's suitability. Data was statistically handled, manipulated and analyzed by Statistical Software for Social Sciences (SPSS) version 25. To achieve the objectives of the study, the researcher employed both descriptive and inferential statistics where correlation analysis, chi-square analysis and standard multiple regression

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analysis was used to explore the relationship between the variables as well as for making generalizations about the data. Diagnostic tests were checked to ascertain violation of assumptions. The study found out that these conflicts not only directly reduced cattle numbers but also instilled an atmosphere of fear and instability, discouraging investment and effort in cattle rearing. Proactive measures to mitigate inter-community conflicts, such as conflict resolution initiatives and improved security measures, are essential for safeguarding both livestock and human lives. The study recommends investing in conflict resolution measures and programs.

Keywords: Inter- community; conflicts; beef cattle; production; pastoral communities.

1. INTRODUCTION

Globally, Livestock production was a major source of livelihood in Arid and Semi-Arid Lands Davies (2018). Global, livestock production hired 2.3 billion persons, providing incomes for 2 billion of the world's poor persons, and which accounts for 60 percent of global farming GDP [1]. A study by Allan [2] indicated that, the livestock that were practiced in the dry areas for food and income generation are; cattle herds, sheep, goats and camels. Another study by Strapasson et al. [3] on Limits to cows' production in a semi-arid pastoral system in London confirmed that livestock kept in semi-arid lands served as source of food, income and a social security. However, the social security from livestock was predominantly non-monetary and unreliable assets because of limited production due to drought, conflicts and diseases that led to massive loss of animals Espinosa et al. [4] report. In East African countries like Uganda, the deliberate efforts were made by the government of Uganda to commercialize beef cattle production through market and trade liberalization [5]. In addition to food and income, livestock farming provided social sanctuary that was taken as mobile banks, wealth accumulation, and social esteem. A study on the economic significance of beef farming in Tanzania and found that, at the moment, investments in butcheries that process beef were growing in the nation as a result of higher profits, which had produced stable employment, income, and living conditions. The meat was carefully packaged and supplied to a variety of specialty markets, including mini markets, supermarkets, and mining districts. Notably, the cost of the meat in these markets was greater than in butcher shops, which provide high-paying jobs for Tanzanians [5].

In Kenya, Beef production was the main source of livelihood particularly under Pastoral management that was practiced by pastoralists in the Arid and Semi-Arid areas Veronica et al. [6]. The sector provided a livestock's base of

approximately 9 million beef cattle that generally provide meat source to the rapid growing population [7] A further study by Ndiritu [8] indicated that the majority of beef cattle production occurs in Kenya's Arid and Semi-Arid (ASALs) counties, which were home to 75% of the nation's livestock herd. Marsabit County was one of the ASAL counties where beef cattle production was a large economic activity and a major source of household livelihood, according to the Household Baseline Survey Report [HBS]. Mochabo et al. [9] claimed that the primary slaughterhouses in Nairobi County receive a significant amount of their beef cattle from Marsabit County. Despite of the importance of beef cattle for food (meat) provision, income, poverty reduction and employment, the production was face with many challenges that led to low production. Understanding the factors that affect the beef cattle production was relevant as it provided a framework to improve the production and there, this study was very useful to the pastoralists in Marsabit in particular to understand the factors that might affect their beef cattle production.

1.1 Purpose of the study

To determine the effects of inter- community conflicts on beef cattle production among pastoral communities of Marsabit County.

1.2 Objectives of the Study

The objective of the study determined the effects of inter- community conflicts on beef cattle production among pastoral communities of Marsabit County.

1.3 Research Question

What the effects are of inter- community conflicts on beef cattle production among pastoral communities of Marsabit County?

2. LITERATURE REVIEW

Livestock contributed to the livelihoods of Kenyan farmers in a variety of ways, including providing food, traction, manure, raw materials, investment, monetary revenue, foreign exchange profits, and social and cultural identity Shayo [10]. Over 80% of Kenya's population in ASALs was dependent on pastoralism. Beef cattle have been a substantial source of revenue for many years, particularly in rural and agricultural communities. The Kenya Meat Commission (KMC) launched a self-sufficiency strategy in beef meat with the purpose of developing a ready market for local livestock farmers and supplying consumers with high-quality meat and meat products [11]. The project looked to have collapsed as a result of a terrible management crisis, but it was also deeply in debt, unable to pay its workers and livestock suppliers, the bulk of which have discontinued deliveries in favor of KMC's well-heeled competitors.

Livestock were an integral part of pastoral communities' cultural, economic, and social fabric, as they confer social status and prestige [12]. A study in Europe by Doubleday and Adams [13] unearthed that; livestock was used to settle dowries, compensate victims of crime, and resolve disputes, as well as to preserve wealth. According to the literature, pastoralists rarely sold livestock, resulting in large herds [1] leading to natural resources depletion. As a means of securing grazing pastures, restocking after cattle raids and outbreaks of livestock disease, and rising bride wealth rates all contribute to intercommunity conflict (Said, 2020). This conclusion was supported by another study, which claimed that cattle raiding were a very successful weapon of war since it robbed the targeted populations of their most valued resources, both socio-culturally and economically

According to Mayik [14], "the pastoral communities of the Nuer, Dinka and Murle in South Sudan were prone to cyclical cattle raiding". According to Idris (2018), tribes engaged in cattle raiding as a result of decreased access to arable land, grazing areas, and watering points for livestock, as well as compensation missions. Additionally, Wasike [15] stated that growing cycles of violence motivated by vengeance exacerbate community conflicts and cattle raiding originated due to cattle's central role in livelihoods, as well as social and cultural systems of pastoralists. The attack of one community on another study by Waldman

[16] resulted in the latter's retaliation, and so on. In pastoral regions where such raids were not benign, cattle rustling occurred on a small scale and involved little violence. Additionally, Waldman [16] noted that the majority of conflicts were sparked by minor incidents but resulted in a cascade of serious consequences for human lives, property, and other resources. Raids posed a serious threat to pastoralists' health and well-being, as well as the health and well-being of their communities. Pastoralists moved their livestock away from waterlogged/flooded areas or during dry spells to gain access to better grazing land. They believed that livestock health, milk and meat yields, and productivity all benefit from access to such land and water points. This consistent movement resulted in a high number of intercommunity conflicts, which have shown to have a negative effect on beef cattle production where meat-hunting raid warriors, not cattle raids with restocking missions, were the primary target of beef cattle raids.

3. METHODOLOGY

A descriptive survey study design was employed in the study. The methodology of the study allowed it to extrapolate its conclusions to the whole population that was being studied. This was so that the researcher could gather data on respondents' attitudes, beliefs, actions, and values related to the research question through survey research. Furthermore, the descriptive survey design allowed the researcher to use both quantitative and qualitative methods; the latter were based on the verifiability principle and necessitated systematic data collection, analysis, and interpretation in order to yield results that were applied to the target population. Quantitative methods were based on the principle of verifiability and required the researcher to gather a significant amount of data or conduct statistical analysis.

Primary data for the study was gathered through standardized surveys. A questionnaire, which consisted of a series of questions written or typed in a certain order on a form or set of forms, allowed for the collection of a high volume of data in a comparatively short amount of time. The questions that were designed to elicit the necessary data were formalized in a questionnaire. The purpose of these questionnaires was to provide detailed information and increase response by allowing respondents to express their opinions and make suggestions. They were made up of a series of

specific, typically brief questions. The questions could be answered independently by the respondent or verbally by the interviewer.

We employed a structured questionnaire because it was a cost-effective and time-efficient way to collect data compared to other approaches. The goals and research questions of the study informed the customization of the questionnaire. There were both open-ended and closed-ended questions in it. While unstructured questions allowed respondents to express themselves more pragmatically, closed-ended questions limited respondents to the variables in which the researcher was interested.

The group population of beef cattle farmers who were registered with the Marsabit county government was 200 out of this number, I sampled 60 farm groups judgmentally since a sample size of 10-30 percent was reasonable for a descriptive survey design cite. Later, I stratified the groups in their respective sub counties through stratified random sampling. Afterwards, I employed Probability Proportionate to Size formula to get population proportions in every sub-county. This ensured greater statistical efficiency and reduce sampling error. Therefore, a sample of 320 respondents altogether was selected to participate in the study.

4. RESULTS

Of the 320 surveys distributed to beef cattle farmers registered with the Marsabit county government, 298 were completed and returned, resulting in a response rate of 93.1%. This response rate surpasses the benchmarks recommended by Mugenda and Mugenda [17], who suggest that a rate of 50% is sufficient for analysis and reporting, while 60% is generally considered good, and anything above 70% is excellent.

4.1 Inter-community Conflicts

The study evaluated the impact of inter-community conflicts on beef cattle production, as summarized in Table 1. The results revealed substantial concerns among respondents regarding various aspects of these conflicts.

The safety of livestock and humans was a significant issue, with a mean score of 4.0638 and a standard deviation of 1.29982. This high mean score indicates a strong perception among the respondents that safety concerns, both for themselves and their livestock, adversely affect

beef cattle production. The fear of losing beef cattle due to inter-community conflicts further emphasized this concern, with a mean score of 4.0268 (SD = 1.31270). Farmers expressed considerable anxiety about their cattle being stolen or killed during conflicts, which directly impacts their willingness and ability to engage in cattle rearing.

The fear of human life loss during inter-community conflicts also significantly affected beef cattle production, with a mean score of 3.4698 and a standard deviation of 1.44743. While this score is slightly lower than others, it still reflects a substantial concern about the risk to human lives, which indirectly influences cattle production by deterring farmers from fully committing to cattle rearing due to safety concerns.

Frequent raids were identified as another major factor impacting beef cattle production, with a mean score of 4.0805 (SD = 1.31306). The high frequency of these raids not only leads to the direct loss of cattle but also creates an environment of constant fear and instability. Human killings during these conflicts had an even higher impact, with a mean score of 4.1879 (SD = 1.25190). This highlights the severe disruptions caused by such violence, as the loss of human life has profound implications on the community's social structure and economic activities.

The perception of conflicts by pastoralists also played a crucial role, with a mean score of 3.7919 (SD = 1.48970). This reflects how the general atmosphere of fear and tension influences cattle production, even if direct incidents are not occurring frequently. The inability to recover stolen stock was another critical issue, with a mean score of 3.9362 (SD = 1.42582). The economic losses from stolen cattle that are never recovered significantly impact the livelihoods of pastoralists, discouraging investment and effort in cattle rearing.

Inefficient resource utilization due to inter-community conflicts was identified as the most critical issue, with a mean score of 4.2785 and a standard deviation of 1.20309. Conflicts often lead to restricted access to essential resources such as pasture and water, which are vital for cattle production. The inability to effectively use these resources due to the fear of conflict results in lower productivity and increased costs for pastoralists.

Table 1. Inter-community conflicts

	N	Minimum	Maximum	Mean	Std. Deviation
Safety of livestock and humans affect the beef cattle production	298	1.00	5.00	4.0638	1.29982
Fear of beef cattle loss by farmers due to Inter-community conflicts affect beef cattle production affect its production	298	1.00	5.00	4.0268	1.31270
Fear of human live loss due to Inter-community conflicts affect beef cattle production	298	1.00	5.00	3.4698	1.44743
Frequent raids affect beef cattle keeping	298	1.00	5.00	4.0805	1.31306
Human killing during Inter-community conflicts affect beef cattle production	298	1.00	5.00	4.1879	1.25190
Inter-community conflicts perception by pastoralists affects beef cattle production	298	1.00	5.00	3.7919	1.48970
Failure to recover stolen stock influence the beef cattle production	298	1.00	5.00	3.9362	1.42582
Inefficient resource utilization (pasture, water) due to Inter-community conflicts affect beef cattle production	298	1.00	5.00	4.2785	1.20309
Valid N (listwise)	298				

Table 2. Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.889	.895	5

Table 3. Correlations

		inter community conflicts
inter community conflicts	Pearson Correlation	1
	Sig. (2-tailed)	
	N	298
Cattle Production	Pearson Correlation	.622**
	Sig. (2-tailed)	.000
	N	298

** Correlation is significant at the 0.01 level (2-tailed).

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.950 ^a	.902	.901	2.32702	.902	677.188	4

a. Predictors: (Constant), inter community conflicts

Table 5. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14667.952	4	3666.988	677.188	.000 ^b
	Residual	1586.602	293	5.415		
	Total	16254.554	297			

a. Dependent Variable: Cattle Production

b. Predictors: (Constant), inter community conflicts

Table 6. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.299	.690		4.779	.000
	inter community conflicts	-.024	.033	-.025	-.747	.455

a. Dependent Variable: Cattle Production

These findings illustrate the profound negative impact of inter-community conflicts on beef cattle production in Marsabit County. The multifaceted nature of these impacts, ranging from direct violence and theft to broader socio-economic disruptions and resource inefficiencies, underscores the urgent need for interventions that address both the root causes and the consequences of these conflicts to support and stabilize cattle production in these communities.

4.2 Reliability Statistics

The reliability of the questionnaire items was assessed using Cronbach's Alpha, as shown in Table 2. The analysis yielded a Cronbach's Alpha coefficient of 0.889, indicating high internal consistency among the items. Additionally, when considering standardized items, the Cronbach's Alpha coefficient increased slightly to 0.895. These coefficients suggest a reliable and consistent measurement of the constructs under investigation. The questionnaire comprised a total of five items, contributing to the assessment of various factors influencing beef cattle production among pastoral communities in Marsabit County.

4.3 Correlations

Table 3 presents the correlations between different factors influencing beef cattle production among pastoral communities in Marsabit County. There is a strong positive correlation between inter-community conflicts and livestock diseases ($r = 0.766$, $p < 0.01$),

indicating that areas experiencing higher levels of inter-community conflicts also tend to have more prevalent livestock diseases. Similarly, there is a moderately strong positive correlation between inter-community conflicts and feed supplements ($r = 0.604$, $p < 0.01$), suggesting that conflicts may also impact the availability or effectiveness of feed supplements for cattle.

4.4 Model Summary

Table 4 presents the model summary for the regression analysis conducted to assess the relationship between various predictors inter-community conflicts and beef cattle production among pastoral communities in Marsabit County.

The F Change statistic assesses the overall significance of the regression model. The obtained value is 677.188, which is statistically significant ($p < 0.05$), indicating that the regression model as a whole provides a good fit for predicting beef cattle production based on the included predictors.

4.5 ANOVA

Table 5 presents the analysis of variance (ANOVA) results for the regression model used to predict beef cattle production among pastoral communities in Marsabit County. In the ANOVA table, the regression model's performance is assessed by comparing the sum of squares between the regression (explained variance) and residual (unexplained variance) components.

For the regression component, the sum of squares is 14667.952 with 4 degrees of freedom, resulting in a mean square of 3666.988. This indicates that the predictors included in the model collectively explain a significant amount of variance in beef cattle production. The F statistic, calculated as the ratio of mean square regression to mean square residual, is 677.188, which is highly significant ($p < 0.05$). This suggests that the regression model as a whole is a good fit for predicting beef cattle production based on the included predictors.

The residual sum of squares, representing the unexplained variance not accounted for by the regression model, is 1586.602 with 293 degrees of freedom. This provides an estimate of the variability in beef cattle production that remains unexplained after considering the predictors included in the model.

The total sum of squares, representing the total variability in beef cattle production, is 16254.554 with 297 degrees of freedom. The ANOVA results support the conclusion that the regression model, including inter-community conflicts as predictors, significantly contributes to explaining variability in beef cattle production among pastoral communities in Marsabit County.

4.6 Coefficients

Table 6 provides the coefficients for the predictors in the regression model used to predict beef cattle production among pastoral communities in Marsabit County. The coefficients represent the estimated effects of each predictor inter-community conflicts, on beef cattle production, holding all other predictors constant.

For the intercept (Constant), the coefficient is 3.299, indicating the estimated value of beef cattle production when all predictor variables are zero. The coefficient for inter-community conflicts is -0.024, with a standard error of 0.033. However, this coefficient is not statistically significant ($p = 0.455$), suggesting that inter-community conflicts do not have a significant effect on beef cattle production after accounting for other predictors in the model.

5. DISCUSSION OF FINDINGS

The study delves deeply into the multifaceted impact of inter-community conflicts on beef cattle production among pastoral communities in Marsabit County. The findings, as summarized in Table 4, paint a vivid picture of the myriad challenges faced by respondents. Notably, concerns about safety, both for humans and livestock, emerge as paramount, with respondents expressing a strong perception of the adverse effects of safety concerns on beef cattle production. This sentiment is mirrored in the literature, which emphasizes how conflicts disrupt traditional pastoralist practices and jeopardize the well-being of both communities and their livestock (Said, 2020). Moreover, the fear of cattle loss during conflicts looms large, with respondents expressing considerable anxiety about the susceptibility of their herds to theft or harm. This fear resonates with historical accounts of cattle raiding as a pervasive threat to pastoralist livelihoods and cultural heritage [18].

The study sheds light on the broader socio-economic ramifications of conflicts on beef cattle production. Frequent raids, often accompanied by violence, not only result in direct cattle losses but also engender an environment of fear and instability. Such disruptions have far-reaching implications for pastoralist communities, as evidenced by respondents' concerns about the impact of conflicts on human lives and the community's social fabric. These findings align with literature that underscores the cyclical nature of violence in pastoral regions and its detrimental effects on community cohesion and well-being [14]. Furthermore, conflicts hinder pastoralists' access to essential resources such as pasture and water, exacerbating livestock health issues and impeding productivity. This resonates with broader discussions on the nexus between resource scarcity, conflict, and pastoralist livelihoods, highlighting the urgent need for holistic interventions to address these complex challenges [19]. In sum, the study's findings provide valuable insights into the intricate dynamics of inter-community conflicts and their profound impact on beef cattle production in Marsabit County, underscoring the imperative for comprehensive strategies to promote peace and stability in pastoralist landscapes [20-22].

6. SUMMARY, CONCUSSION AND RECOMMENDATIONS

The study's first objective investigated the ramifications of inter-community conflicts on beef cattle production in Marsabit County, revealing significant apprehensions among respondents. Safety concerns, evidenced by a mean score of 4.0638, emphasized the perceived threat to both livestock and human well-being during conflicts, undermining farmers' confidence in cattle rearing. The fear of cattle theft (mean score: 4.0268) and the potential loss of human life (mean score: 3.4698) further exacerbated these concerns, impacting production decisions. Additionally, the frequency of raids (mean score: 4.0805) underscored the persistent disruption caused by conflicts, instilling an atmosphere of fear and instability. These findings illuminate the multifaceted challenges posed by inter-community conflicts, emphasizing the urgent need for interventions to safeguard both livelihoods and beef cattle production in Marsabit County.

6.1 Conclusions to the Study

The study revealed that inter-community conflicts pose significant challenges to beef cattle production in Marsabit County. Safety concerns for both livestock and humans, fear of cattle theft or killings during conflicts, and frequent raids were identified as major issues. These conflicts not only directly impact cattle numbers but also create an environment of fear and instability, hindering investment and effort in cattle rearing. Addressing the root causes of conflicts and implementing measures to enhance security and stability are essential to support beef cattle production in the region.

6.2 Recommendation of the Study

There is a need for proactive measures to mitigate inter-community conflicts, including conflict resolution initiatives, community dialogues, and improved security measures to safeguard both livestock and human lives. Strengthening local governance structures and promoting peaceful coexistence among different community groups can also contribute to reducing conflict risks.

6.3 Recommendation for further Studies

Conducting further studies in these areas can contribute to the development of evidence-based

policies and interventions aimed at promoting sustainable beef cattle production and enhancing the resilience of pastoral communities in Marsabit County.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

I Galm Waqo Roba hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

CONSENT

As per international standards or university standards, Participants' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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