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Original Article

The Influence of Marketing Theory and Practice on Supply and Demand Forces in Turkana's Livestock Markets: A Case of Kakuma, Lokichar and Kalemng'orok Secondary Markets

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Abstract: *The study of the influence of marketing theory and practice on supply and demand forces in selected secondary markets in Turkana aimed to demonstrate the relationship between market forces and the role of theory and practice in achieving a balance between them to improve livestock production and marketing activities. Participants in the study included 168 active livestock traders from the Kakuma, Lokichar, and Kalemng'orok livestock markets, as well as 24 government and civil society professionals who support livestock development programs in Turkana. The study discovered that, while livestock trading occurs daily in Turkana and livestock traders can be found in all market categories, it is unclear whether the available livestock in the area is sufficient to sustain the supply and demand for livestock and products for local and external markets. While most animals taken to the market by herders are purchased by traders, such purchases remain for an extended period before being sold, putting traders' business capital resources at risk. Prolonged drought, insecurity in potential livestock production zones and along trade corridors, livestock diseases, market volatility, and high living costs are among the primary challenges impeding the viability of livestock production, marketing, and consumption of animal products in Turkana. Affluent external traders, although being potential market entrants, outcompete local traders and thus dominate local marketplaces. The study also found that the theory and practice tenets are not used in the modeling of livestock production and marketing interventions in Turkana. As a result, the programming of livestock development does not rely on strong and competitive business models. The absence of theoretical and practical underpinnings complicates the management of internal and external market forces. This condition is due to an imbalance in supply and demand in markets, which results in disorganized livestock trading and minimal profits for farmers and traders. The study highly suggests using a theory and practice framework when modeling livestock development programs and determining the relationship between supply and demand, which are also identified as important subjects for future research.*

Keywords: *Theory, Practice, Supply, Demand, Modeling, Livestock Marketing, Market Functionality, Market Access.*

I. INTRODUCTION

The livelihoods of pastoral and agropastoral communities, as well as their social, cultural, and economic well-being, depend heavily on livestock farming, which accounts for almost 12 percent of the country's overall GDP and 40 percent of agricultural GDP, and employs about half of the agricultural labor force. The pastoral economy can be transformed to become more viable and competitive by enhancing traditional livestock farming methods, creating a stable livestock market economy, and influencing the knowledge and attitudes of players in livestock development. However, the food, finance, and nutritional security of pastoralists are at risk due to inadequate livestock production and market access infrastructures exacerbated by the increasingly severe impact of climate change phenomena. Pastoralists' marginalization and limited social and economic inclusion opportunities; long-standing traditional livestock production and trade systems; ineffective environmental and land-use policies; limited conventional knowledge of livestock husbandry and marketing practices; stressful coping strategies; and inefficiencies in the management of the livestock sector's climatic, political, and economic shocks continue jeopardizing livestock development efforts in many drylands.

The performance of livestock markets in pastoral areas is further hampered by inconsistent stakeholder livestock price-setting mechanisms, a lack of coordination between marketing and sales strategies, a lack of awareness of the importance of marketing systems, and a lack of sufficient resources for producers and traders to cover the costs of livestock marketing and

livestock insurance. Many rural populations lack literacy and are not aware of their rights and entitlements, which impairs their capabilities to make maximum use of their economic activities. Additionally, even in places with strong production and consumption potential, livestock business operations are hampered by a lack of market segmentation, a lack of commercialization of livestock production, a lack of capital resources, and a lack of confidence in the quality of livestock and products created from pastoral areas. Governments and civil society are working to close the gaps that have been uncovered.

Modeling and implementing market-oriented and results-based livestock development programs require both theory and practice, which are essential for the efficient examination of Turkana's livestock production and trade systems, empowering livestock-based livelihoods for the displacements, and facilitating comparisons of domestic and international production contexts for purposes of improving knowledge and practices applied in Turkana. By questioning what is already known, identifying issues and potential resolutions, and applying them to the planning and execution of changes in the livestock and trade industries, it can help people better comprehend livestock sector challenges and development opportunities. The best way to properly think through and execute efficient and sustainable livestock production and marketing systems and components is through theory and practice. Partnerships and the resources they provide, networking opportunities, evidence produced, decision justification, and freshly gained experience are all advanced through theory and practice to bring about change that can guide future practices.

II. LITERATURE REVIEW

A) Livestock Commercialization in Pastoral Areas

The attempts of livestock keepers to maintain their livelihoods and business operations are significantly impacted by a range of production, marketing, and structural problems that have socioeconomic and political ramifications and hinder the livestock industry in the drylands (Yuzaria and Rias, 2017; Hardstaff et al., 2015). Livestock producers' access to markets and competition in the expanding business sector would be facilitated by a thoughtful paradigm shift in livestock marketing (Little, 2015; Motta et al., 2017). According to Ayele (2019), Ameso et al. (2018), and Shibia (2018), this shift will not only impact the way animals are sold but also improve marketplace functionality, level up the playing field for different kinds of livestock businessmen and strengthen stakeholder coalitions and collaboration.

Local traders find it more difficult to remain in the livestock industry, be competitive, and earn enough money as a result of the various issues brought on by competition in livestock markets (Abay et al., 2019; Sarkar, 2020). According to Hatab et al. (2019) and Kembe and Omondi (2016), these issues jeopardize the unity of market parties, jeopardize financial resources, and restrict the chances that arise when traders strive toward the same objective. Thus, diversifying business endeavors, growing and expanding the livestock business agenda, and educating livestock producers and entrepreneurs about the value of their livestock supplies and available possibilities for profit all depend on managing concurrence in the market (Roba et al., 2019; Kassa et al., 2017).

B) Capabilities of the Local Traders in the Turkana Livestock Economy

In order to create a healthy livestock economy, market penetration is a factor that expands access to financial benefits that are bolstered by the capacity of both local and external traders to do business in a cooperative and dignified manner (Cheteni, 2019; Kariuki and Birner, 2015; Sala et al., 2020). Extreme competition in livestock markets makes it difficult to obtain market capitalization, which restricts opportunities to improve the relationship between supply and demand market dynamics. This is necessary to increase the productivity of livestock enterprises, boost sales and profitability for entrepreneurs, and guarantee that consumer requirements and objectives are met, as suggested by Kihiu et al. (2017) and Adem (2019). Participation in markets, trading activities, and product consumption are all influenced by the morale of market stakeholders (Awan et al., 2018; Ayele, 2019). According to Kgosikoma and Malope (2016), given the current level of competition in livestock markets and the consequences for the entire Turkana livestock economy, an absence of coordinated business strategies and livestock marketing protocols leads to performance inefficiencies and disarray in marketing activities, which discourage entrepreneurs and make potential livestock markets inoperable.

C) Viability of Livestock Marketing Systems

According to Dido (2019) and Berihun (2017), a good marketing system must be free of negative competition and other malpractices that could negatively impact market relations and product consumption. However, in Turkana, rivalry among vendors is openly instigated by traders among their native markets, causing them to lose out on good commercial possibilities that might otherwise quickly enhance the socioeconomic progress of pastoralists by motivating them to produce good cattle that can export well in a variety of market groupings. According to Berihun (2017), Nyariki and Amwata (2019), and Mwangi, Ngigi, and Mulinge (2015), the livestock market structure in Turkana is made up of itinerary investors who operate in livestock production areas, primary livestock traders who operate at regional markets in peri-urban areas administered by Livestock Marketing Associations (LMA), and secondary livestock investors who operate at the main livestock marketplaces in Turkana that are supervised by both the LMA and the county's Livestock Marketing Council (CLMC).

The market chain's valued upward flow of animal resources is exemplified by Turkana's cattle marketing structure. Extreme rivalry, however, has led to the creation of britches in livestock marketing strategies, which confuses the apparent upward flow of livestock and products produced by traders who engage in unsafe competitive practices to take advantage of market opportunities at the expense of other stakeholders and market development. Although these market difficulties are evident in Turkana, they also impact market accessibility in numerous livestock-keeping regions throughout Eastern Africa and Sub-Saharan Africa (Cheteni and Mokhele, 2019). Negative market results in pastoral regions are caused by a number of factors, including conflicts of interest, poor startup management, high levels of ignorance among livestock producers and traders in drylands, exploitative patterns, a lack of policies and laws governing local market management and marketing activities, and per capita issues, especially during times when there is a shortage of livestock in markets (Hatab et al., 2019).

D) Cost Factors in Livestock Trading

Due to the unfavorable competitive climate, livestock farmers, entrepreneurs, and markets have all had to pay for government regulations in the cattle trade, such as tariffs and non-tariff barriers. According to studies on the advantages of agro-pastoralism and non-livestock sectors in the expansion of pastoral areas by Nyariki and Amwata (2019) and Ameso et al. (2018), haphazard trade among buyers and sellers renderings it unattainable for them to collect much money in their markets, which messes up the supply and distribution chain for livestock. In addition to serving as a vehicle for livestock auctions and offtake, secondary traders' purchases of animals from producing regions deprive itinerary and primary traders of their validity as livestock trading and their self-worth. Standardized marketing practices, such as weight measurements and price markups, lead to benefits that are not fairly distributed due to competitive rivalry and inadequate coordination of cattle trading. As in markets in Ethiopia and Somalia, trade cartels frequently employ this strategy to create a monopoly in Turkana's cattle-selling system (Berihun, 2017; Abay et al., 2019; Dido, 2019).

E) Supply and Demand Needs of Cross-Border Livestock Markets

The fierce rivalry is making it difficult for local traders to reach other possible markets in Kenya as well as in neighboring South Sudan, Ethiopia, and Uganda. According to Napp et al. (2018), local traders and markets cannot compete in local and international marketplaces and become successful and sustainable if they engage in individualistic and exploitative trading practices. A well-designed and executed livestock marketing system that exemplifies a business model intended to organize marketing activity, unite and coordinate market stakeholders, instil competition that is beneficial, and facilitate smooth market access—as advised by Kgosikoma and Malope (2016) and Omollo et al. (2018)—is crucial to resolving Turkana's livestock market disputes.

The best possible functioning of livestock markets and healthy competition can be achieved through programs designed to change the livestock industry. Modernizing marketing infrastructure, integrating and utilizing information technology, ensuring that all market operations are morally right, establishing checks and balances to guarantee accountability and transparency, and establishing change management capabilities are all part of the livestock sector transformation action. According to Kgosikoma and Malope (2016), focusing on competition management will bring stability back to Turkana's livestock markets and boost stakeholder trust in livestock business practices, similar to Ethiopia's regional markets (Bachewe et al., 2018); Botswana's beef export market; and the protection of up-and-coming rural livestock entrepreneurs. The practice of healthy concurrence in the market, a tactic used to plan cattle marketing events in Ethiopian rural areas, will benefit greatly from a comprehensive marketing strategy that restrains the current trend toward bad competitive rivalry.

F) Management Factors of Livestock Trading

Land, Labour, Capital, and Entrepreneurship management factors of trade play a crucial role in the development of livestock marketing activities in Turkana. In addition to guaranteeing customer satisfaction and promoting business ethics throughout all market segments, managing the issues related to rivalry in cattle markets will make it easier to gain long-term, profitable, and easy access to markets. Reducing negative rivalry in livestock markets and advancing market-demanded commodity value chains will improve the pastoral economy and entrepreneurship agenda, which are essential for the success of livestock markets, according to the success stories presented by Kelly et al. (2016), Stephen et al. (2018), and Clark and Tilman (2017). Lack of sound theoretical and practice integration in the modeling of livestock production and marketing activities would mean that the economies of pastoral and agropastoral communities and local entrepreneurs will continue to be traditionally governed, disorganized, uncompetitive, and not appealing to livestock value chain investors. According to Anno and Erukon (2024), the lack of a functioning agricultural system has compounding effects on food, income, nutrition security, and development, which will continue to define the living conditions of pastoral communities, refugee populations, and the state of their livelihoods.

III. RESEARCH METHODOLOGY

A) Sampling and Data Collection

The study participants were active livestock traders from Turkana County's three secondary markets, Kakuma, Lokichar, and Kalemng'orok, totaling 180 people (Sampling Frame). Statistical sampling used a margin of error of 2% and a desired confidence level of 95%, resulting in a sample size of 168 traders, or 93% of the study population, who all participated in the study. Twenty-four (24) tertiary participants from government and civil society organizations were purposefully chosen to participate in the study. Structured and semi-structured questionnaires were administered to study participants individually and via Focus Groups (FGDs). To create extra information and validate the study findings, a variety of Participatory Rural Appraisal (PRA) procedures were utilized, including visualization, ranking and scoring, secondary data and literature studies, and triangulation processes.

B) Data Analysis

a. Quantitative data analysis

For numeric variables, data was first analyzed by means and standard deviation, where frequencies and percentages were used for categorical variables which also involved a chi-square test for determining the significance of the difference between variables and the three markets. Kruskal-Wallis H test was used to compare numeric variables between respondents in three markets with post-hoc pairwise comparisons using the Dunn-Bonferroni approach applied since data did not meet normality and homogeneity test of variance to allow the use of one-way Analysis of Variance (ANOVA). The level of significance was set at 0.05, and Bonferroni adjustment was used to account for multiple comparisons. Before analyzing the frequency of Likert scale statements on supply, demand, and theory application, Cronbach's alpha was used to assess the internal consistency of the items (statements). Statements with Cronbach's alpha of 0.5 and above were retained for further analysis.

b. Qualitative data analysis

The qualitative data analysis methodology included data preparation and organization, data review and exploration, the development of codes and reviews into themes, and themes presented in a cohesive manner that represented aspects of livestock markets, supply and demand forces, theory application, and strategy. The resulting qualitative information was combined with quantitative data to ensure consistent submission of study results.

C) Validity and Reliability of Research Instruments

a. Validity

Three experts in marketing management and analysis were chosen through the use of purposeful sampling. On a 5-point Likert scale, each expert assessed the research tools to determine the completeness, organization, and convenience of use of the tool, as well as the relevancy of the questionnaire items. An item content validity index (I-CVI) was calculated after the Likert-scale item responses were examined in a table. By examining the expert panel's answers to the survey questions on the tool's appearance—that is its organization, usability, and completeness—face validity was determined. Conversely, content validity was determined by examining the expert panel's answers to survey questions regarding the appropriateness of coverage of the items on the topic under study (measuring the correct things). The findings are reported in Table 1.

Table 1: Validity from expert panel

Validity index	Values
Content Validity Index (CVI)	0.90
Face validity	1.00
Proportion relevant	
Expert 1	1.00
Expert 2	1.00
Expert 3	0.91
Average congruency percentage (ACP)	0.97

The experts completely agreed that the items were extremely significant, as evidenced by the items' I-CVIs of 1.0. A superior indicator of expert agreement in a panel of three experts was the average congruency percentage (ACP), also known as the mean proportion of agreement. In the panel review, the ACP (0.97%) was higher than what was considered acceptable.

b. Reliability

Test-retest reliability coefficients (also called coefficients of stability) were analyzed by computing the correlation coefficient from two sets of data that were generated during the pilot study. The test-retest reliability coefficient of 0.821 was computed. According to Everitt and Skrondal (2010), retest reliability coefficients should be as follows: 1 (perfect reliability), ≥ 0.9 (excellent reliability), $\geq 0.8 < 0.9$ (good reliability), $\geq 0.7 < 0.8$ (acceptable reliability), $\geq 0.6 < 0.7$ (questionable reliability), $\geq 0.5 < 0.6$ (poor reliability), < 0.5 (unacceptable reliability) and 0 (no reliability). This implies that the reliability

of the instrument used in this study was good.

Table 2: Test-retest reliability analysis

		First set of data	Second set of data
First set of data	Pearson Correlation	1	.821**
	Sig. (2-tailed)		.049
	Number of variables	22	22
Second set of data	Pearson Correlation	.821**	1
	Sig. (2-tailed)	.049	
	Number of variables	22	22

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

c. Cronbach's Alpha Reliability Analysis

The degree to which data-gathering methods or analysis processes produce consistent results is referred to as reliability. The reliability of each scale was assessed in this study. A Cronbach's alpha ratio of 0.7 or above was deemed a suitable sign of a scale's reliability. Everything that wasn't making a significant contribution to that scale was eliminated. The Likert scale was used as the data-gathering tool in this study. The study used metrics from earlier research that had undergone reliability testing. This came after the measurement tool was modified to make sure it was pertinent to the study.

Table 3: Cronbach's Alfa for the questionnaire

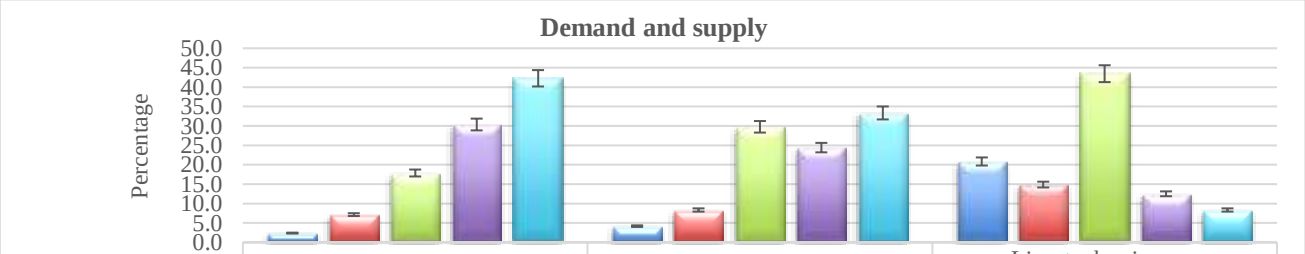
Scale	Number of items	Cronbach's Alpha
Livestock production and market access	7	0.818
Trader's competitive rivalry	9	0.836
Demand and supply	3	0.883
Theory and livestock production and marketing	3	0.792
Overall		**0.832**

An index of 0.832 was determined for the questionnaire using Cronbach's alpha. A very high degree of reliability was revealed by the reliability results, which were above the 0.7 level of acceptability. This suggested that the dependability of the tool was important.

IV. RESULTS AND DISCUSSION

A) Supply and Demand relations

Most respondents (72.7%) agreed that season-long livestock marketing is exercised in their markets. The majority of respondents (43.5%) held a neutral view that livestock and livestock product prices are stable and reasonably priced throughout the year, while the majority (57.7%) agreed that traders have maintained and broadened their investments through livestock marketing efforts (Figure 1).



	Livestock marketing is season-long	Traders diversifying their businesses and livelihoods	Livestock prices are consistent and affordable throughout the year
Strongly Disagree	2.4	4.2	20.8
Disagree	7.1	8.3	14.9
Neutral	17.9	29.8	43.5
Agree	30.4	24.4	12.5
Strongly Agree	42.3	33.3	8.3

Figure 1: Demand and Supply relations in markets

The Kakuma Livestock Market had the highest mean score (2.74), while the Kalemng'orok Livestock Market had the lowest mean (2.17), according to a review of the average mean score of the livestock market's demand and supply equilibrium. A one-way analysis of variance found a substantial difference in mean supply and demand scores in the livestock market among the three markets. (F(2,165) = 25.124; P-value = 0.000).

Table 4: Summary of Demand and Supply Relations

Statements	N	Minimum	Maximum	Mean	Std. Dev.
Livestock marketing is season-long	168	1.00	5.00	4.03	1.05
Traders diversifying their businesses and livelihoods	168	1.00	5.00	3.74	1.13
Livestock prices are consistent and affordable throughout the year	168	1.00	5.00	2.73	1.17
Overall	168	1.00	5.00	3.50	0.83
1 Kakuma Livestock Market	56	2.33	5.00	3.74	0.53
2 Kalemng'orok Livestock Market	56	1.00	4.67	2.93	0.88
3 Lokichar Livestock Market	56	2.33	5.00	3.82	0.75

Calculated F(2,165) = 25.124; critical F(2,165) = 3.050; P-value = 0.000

A substantial disparity in the mean score among respondents was found at the 5% level between Kalemng'orok Livestock Market and Lokichar Livestock Market, as well as between Kakuma Livestock Market and Kalemng'orok Livestock Market, according to a post hoc analysis of multiple comparisons using Tukey. Between responders from Lokichar Livestock Market and Kakuma Livestock Market, there existed no discernible difference in their assessments.

Table 5: Post Hoc Multiple Comparisons

(I) Market_Two Market	(J) Market_Two Market	Mean Difference (I-J)	Std. Error	Sig.
1 Kakuma Market	2 Kalemng'orok Market	.80952*	.13860	.000
	3 Lokichar Market	-.07738	.13860	.842
2 Kalemng'orok Market	1 Kakuma Market	-.80952*	.13860	.000
	3 Lokichar Market	-.88690*	.13860	.000
3 Lokichar Market	1 Kakuma Market	.07738	.13860	.842
	2 Kalemng'orok Market	.88690*	.13860	.000

*. The mean difference is significant at the 0.05 level.

a. Qualitative results on demand and supply relations

The findings of the qualitative study on supply and demand dynamics in Turkana's livestock markets indicate that Turkana may have enough animals to meet present market demand if efficiently produced and commercialized. In contrast, most traders are unfamiliar with the market's features. As a result, traders are unable to establish whether the available animals will sufficiently suit their commercial requirements. Herders believe the supply and demand balance is ideal because every animal they bring to the market is purchased. Despite purchasing almost all animals brought to market by herders, traders take long before selling these animals to other traders in secondary and tertiary marketplaces, thus putting their operating capital at risk. Traders, particularly in Kakuma Market, argue that high buying prices harm local traders' ability to sustain livestock offtakes to tertiary markets, while Lokichar traders attribute their frequent livestock offtakes to tertiary markets to fair livestock prices in southern Turkana.

The study discovered that competitive rivalry reduces the frequency of purchases and sales, as well as traders' ability to reinvest operating capital and earn a profit. Traders with less capital are more likely to trade livestock for lower net returns than those with more market gains. The difficulty of achieving a perfect balance of supply and demand has hampered traders' efforts to increase livestock marketing activities. There is also a prevalent assumption that livestock traders are finding it increasingly difficult to navigate the complexity of supply and demand forces. Many traders admit to operating without supply-and-demand control frameworks in their markets. Primary market traders stated that they have yet to reach a point in their operations where they can consistently offer the appropriate quantity and quality of animal resources to potential marketplaces. Many study participants were unsure how the lack of market sales affects stockpiles in production zones that are awaiting sales. Because of the apparent weight loss, drought, and insecurity issues, traders were aware that failing to trade animals in marketplaces reduces farm production rates and puts capital investments at risk.

In times when the market is limited, herders use market-weight animals for sociocultural objectives such as dowry payments, traditional rituals, bartering with other items, and trading with other livestock species. Over half of the research

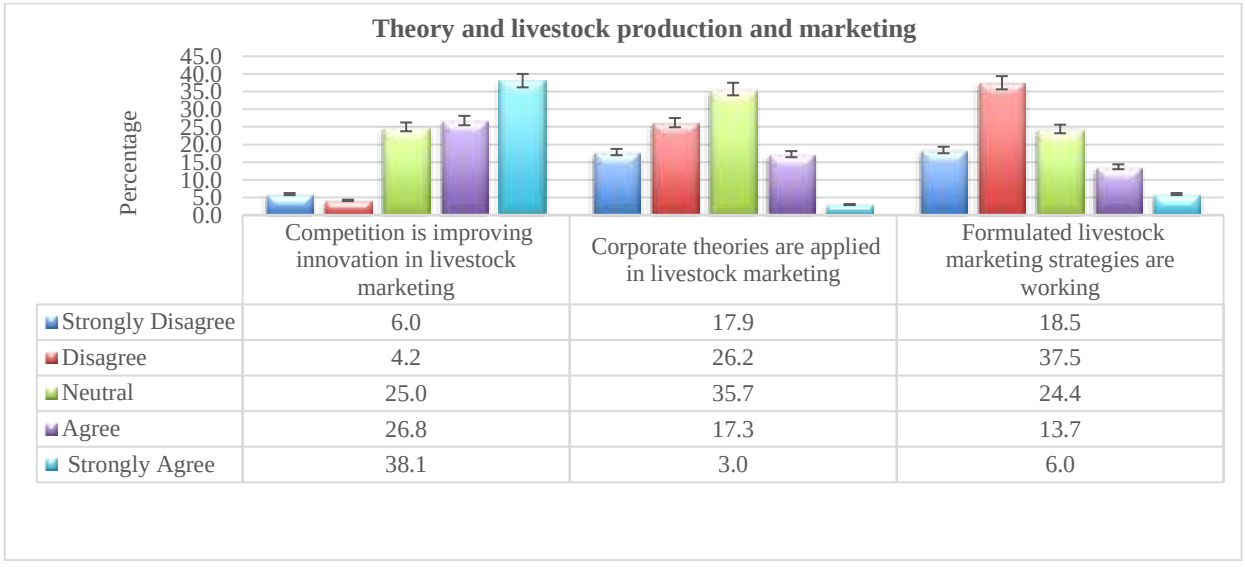
respondents in the three secondary markets were aware of what happens to market-weight animals in production areas if they are not sold at the appropriate time. Traders agree that holding market days in high-potential livestock-producing areas could improve the supply of livestock available for sale. However, market days are likely to hinder herders' access to marketplaces for their daily financial needs because they are accustomed to marketing livestock daily. Additionally, the market-day setup may allow herders to sell huge quantities of animals at once. Given the status of household socioeconomic indicators, profitable and long-term business models for livestock marketing are necessary to constantly regulate livestock supply and demand in Turkana markets. A bit more than half of primary market respondents said that livestock prices were inconsistent and even increased throughout market seasons.

Most of the study participants voiced concern that a lack of financial resources is jeopardizing the pastoral economy, and many households reported being unable to afford meat products for animal protein due to high prices at local butcher shops and restaurants. Cross-border trade opportunities cause increased supply in markets near production areas during the wet seasons. Many study participants believed that the availability of animals at marketplaces was governed by the prices offered. When supply is low, such as during a drought period, producers and traders must pay a premium price to shelter, feed, treat, and secure animals for sale. During droughts, traders' capital declines, prohibiting them from competing with traders from other marketplaces. They also agreed that prices should be low enough to encourage livestock farmers to sell and traders to continue buying livestock regularly and in large numbers.

To compete in varied markets, a significant number of the study participants stated that livestock traders must diversify their financial resources and enterprises and that more access to livestock markets should be promoted and healthy market competition enhanced. Making livestock meat products affordable will increase the number of animals available for slaughter, as well as the increase in the number of butchers, eateries, and families able to consume livestock products. Improving the operation of local markets and connecting secondary markets to tertiary markets would help livestock farmers and traders benefit from marketing activities. The study found that Turkana herders need to understand livestock trade and market performance to make better production and marketing decisions. Also, examining the potential relationship between supply and demand in Turkana will help stabilize market dynamics that are crucial to the operation of livestock markets.

B) Theory and Livestock Production and Marketing

64.9% of all responses indicated that many respondents strongly agreed that competition is fostering innovation in livestock marketing. The purpose of this study was also to find out how participants responded to the statement, "Livestock marketing uses corporate theories." Although 35.7% of those surveyed had no opinion about the statement, 44.1% disagreed with it. On the statement that formulated livestock marketing strategies are working, most of the respondents (56%) disagreed with it, while 24.4% were neutral about this statement. It is only 19.7% of the study participants who agreed with the statement (Figure 2).



	Competition is improving innovation in livestock marketing	Corporate theories are applied in livestock marketing	Formulated livestock marketing strategies are working
Strongly Disagree	6.0	17.9	18.5
Disagree	4.2	26.2	37.5
Neutral	25.0	35.7	24.4
Agree	26.8	17.3	13.7
Strongly Agree	38.1	3.0	6.0

Figure 2: Theory and Livestock Production and Marketing

Table 6 summarizes the mean score for the theory and livestock production and marketing statements in each of the three livestock marketplaces. With a mean of 3.87 and a standard deviation of 1.15, the statement "Competition is improving

innovation in livestock marketing" was calculated. The statement "Livestock marketing uses corporate theories" received a mean score of 2.61 and a standard deviation of 1.06. At 2.51 with a standard deviation of 1.12, the statement "Formulated livestock marketing strategies are working" received a mean score. The sample as a whole received a mean score of 3.00 on all three statements, with a standard deviation of.86. The calculated F-Ratio (20.528) was higher than the essential F-Ratio (3.05), indicating a significant difference in the three marketplaces' scores. With a mean score of 3.40 and a standard deviation of 0.59, Lokichar Livestock Market received the highest rating. Kakuma Livestock Market had the highest score (mean of 3.11 with a standard deviation of 0.85), placing it in second place. Kalemng'orok Livestock Market came in last in the ranking with a mean of 2.48 and a standard deviation of 0.85.

Table 6: Summary of Theory and Livestock Production and Marketing

Statements	N	Minimum	Maximum	Mean	Std. Deviation
Competition is improving innovation in livestock marketing	168	1.00	5.00	3.87	1.15
Corporate theories are applied in livestock marketing	168	1.00	5.00	2.61	1.06
Formulated livestock marketing strategies are working	168	1.00	5.00	2.51	1.12
Overall	168	1.00	4.67	3.00	.86
Kakuma Livestock Market	56	1.00	4.67	3.11	0.85
Kalemng'orok Livestock Market	56	1.00	4.33	2.48	0.85
Lokichar Livestock Market	56	2.33	4.67	3.40	0.59

Calculated F(2,165) = 20.528; critical F(2,165) = 3.050; P-value = 0.000

The post hoc analysis results using the Tukey HSD results (Table 7) showed no significant difference between Kakuma and Lokichar Livestock Markets in the scoring since the mean difference of -.286 was not significant.

Table 7: Multiple Comparisons using tukey HSD

(I) Market_Two Market	(J) Market_Two Market	Mean Difference (I-J)	Std. Error	Sig.
1 Kakuma Market	2 Kalemng'orok Market	.63095*	.14640	.000
	3 Lokichar Market	-.28571	.14640	.128
2 Kalemng'orok Market	1 Kakuma Market	-.63095*	.14640	.000
	3 Lokichar Market	-.91667*	.14640	.000
3 Lokichar Market	1 Kakuma Market	.28571	.14640	.128
	2 Kalemng'orok Market	.91667*	.14640	.000

*. The mean difference is significant at the 0.05 level.

a. Qualitative results on theory and practices in livestock trade

The study established that new market entrants boost competition and rivalry in all the marketplaces surveyed. Low barriers to entry into Turkana's local marketplaces and the significant danger of new entrants have reduced local traders' sales and profits, threatening their competitive positions. Because of their large financial resources and economies of scale, new entrants, particularly Somali and Borana livestock traders, generally outcompete Turkana traders in tertiary and terminal marketplaces. Regarding the profitability of producing and selling livestock in Turkana, most survey participants believe that local marketplaces are vulnerable and easily taken over by competitors and rivals.

As overseas traders gain market niches and competitive advantages, many survey participants were also worried that if local traders were taken advantage of, they might end up becoming suppliers and submissive to them. High-business capital traders rely on low-business capital investors as primary market suppliers to access secondary, tertiary, or terminal markets. They can buy nearly all of the animals on the market, making it impossible for smaller traders with small stocks to compete in potentially profitable markets. They are also likely to exchange high-quality stocks for rewards like food and clothing.

According to the study, if local traders are unable to satisfy the increased demand brought about by new competitors entering their markets and communities, this trend is likely to continue, allowing outside traders to control and dominate local animal markets and product consumption outlets. This puts the ability of local business owners to support and grow their local economies and native markets at risk. Only traders with significantly higher operating capital may compete in primary livestock markets. External traders purchase animals from production sites rather than authorized market yards where primary market traders sell animals, demonstrating severe rivalry tendencies and breach of marketing plans and practices. This competition strategy is opposed to organized livestock trading systems, in which specified groups of traders are restricted

from operating and transacting at the appropriate market level. Trader misconduct, on the other hand, causes some traders to lose confidence in the trading system. Many main market traders are comparable and work at the same level, allowing them to reach a consensus on various marketing-related issues. The familiarity between traders in primary markets enhances market order.

The members of the Turkana community (tribe) of Kenya account for many livestock traders in Turkana. Although promoting harmony, communication, and understanding among traders, this homogeneousness limits the diversity that different tribes and groups can bring to livestock production, marketing, and value chain growth. Trekking is a typical means of transporting animals to secondary livestock markets in Southern Turkana, specifically Lokichar and Kalemng'orok, whereas tertiary traders use trucks to bring livestock to terminal markets. Kalemng'orok and Lokichar are the only livestock markets that regularly export livestock to tertiary and terminal markets. However, the cost of doing so is prohibitively expensive for local traders to sustain and profit from. In terms of recognizing the economic value of their livestock resources, the study found that livestock traders are the most fortunate herders. While livestock traders believe that livestock production and trade benefit Turkana's economy, none of them were aware of conventional market-based livestock marketing models established and executed in the market.

While the jurisdictional market, capital resources, and market access possibilities all influence traders' bargaining power, livestock traders attempt to build a foothold in lower-level marketplaces. Livestock traders with established relationships move animal resources up the market value chain. In Turkana, many traders still base the value of an animal on its size, physical condition, and duration of service in the herd. Regardless of market data on prices and supply and demand links, they base prices on the animal's physical condition. However, before reaching an agreement, potential pricing is primarily discussed. Due to Turkana's lack of formalized and integrated business models for livestock marketing activities, external traders exploit primary market producers and traders by manipulating the trading process, allowing affluent traders to dominate the local market and fuel rivalry.

V. RECOMMENDATIONS FOR APPLICATION

A) Recommendations for Supply and Demand Interactions in Markets

The Turkana County administration ought to make a commitment to improving the effectiveness of cattle marketing initiatives across all market segments. In order to support livestock-keeping communities, households, and entrepreneurs who depend on livestock for their livelihood and income, this action aims to improve the efficiency of livestock markets and the skills of livestock traders. This will allow them to continue having access to funds from livestock sales and diversifying their sources of income. The Kenya National Chamber of Commerce (KNCCI) Turkana Chapter, the Livestock Production, Veterinary Services, Trade, and Cooperatives departments of the county government, and the County Livestock Marketing Council (CLMC) are responsible for the dissemination of knowledge and the implementation of best practices in the fields of livestock husbandry and trade. This form of empowerment will result in a conscious transition from the traditional objectives of livestock husbandry, i.e. largely, livestock resources for social and cultural purposes, to a market-based approach, in which stakeholders are aware of the benefits of the livestock industry and the concerted roles they must fulfill.

For livestock business stakeholders to gain a more comprehensive understanding of the market system, it is necessary to possess a sufficient understanding of supply and demand, which are technical market forces. The dissemination of knowledge and market capabilities necessary for livestock trade and the performance of livestock market arenas will be facilitated by developing a training programme on the livestock market economy and the participation of the targeted livestock farmers and traders. Additionally, the government should assist local traders in accumulating business capital resources to facilitate the efficient operation of livestock trade at both local and external tertiary and terminal markets. An increase in capital resources results in the diversification of business into other industries and an increase in livestock exports. The livestock supply to markets must be organized in a manner that enables each market participant to operate within their market segments while simultaneously maintaining connections with other traders and markets as required. This is a necessary ethical measure.

B) Recommendations for Theory Application and Practice

To enhance the performance of livestock markets and traders in pastoral regions, governments and research institutions should promote the use of theories and models in livestock marketing, promote marketing innovation, encourage entrepreneurs and businesses to develop new ideas and products and implement high-yielding business strategies. In the context of Turkana, the meat and livestock assembly model, the Livestock Marketing Associations (LMAs) and co-management model, the management of sale yards model, and the organized livestock marketing model are the core business models that must be integrated into the livestock business framework of Turkana. The sustainable marketing and administration of livestock markets in the region necessitate the repeated application of these models in the practice of livestock marketing.

Continuous evaluation of the political, economic, social, technological, legal, and environmental factors of the Turkana livestock business context is imperative for stakeholders to guarantee the regular administration of livestock production and marketing activities to meet market demands. The individuals responsible for livestock production and marketing portfolios must motivate stakeholders in the livestock industry to utilize knowledge management systems to facilitate the implementation of best practices and effective learning. Incorporating market economy elements into conventional livestock production and marketing strategies will fortify the commercial business intent in pastoral areas, thereby enabling local traders to engage in profitable livestock business ventures and become more industrious and competitive.

The study's findings indicate that the competition, marketing, supply and demand relationships, and livestock production in pastoral areas significantly influence the rivalry between traders. Through effective livestock production and marketing initiatives, the livestock production and marketing sectors of the livestock industry in Turkana will be able to contribute to the socioeconomic transformation of pastoral areas by moderating competition and eliminating rivalry in markets. The integration and expansion of livestock farming, trade, and alternative livelihoods will be facilitated by studying the significance of livestock farming in displacement settings, including the development and marketing of livestock product value chains with refugees as business entities. This will improve people's food, income, and nutrition security parameters. Considering theory and practice in livestock interventions will improve the planning, implementation, and management of pathways destined for achieving the strategic goals for producing and marketing livestock resources in Turkana.

VI. CONCLUSION

This lack of theory-practice cooperation in livestock production and marketing hinders the growth of markets and the capitalization of potential livestock enterprises, both necessary for developing rural economics and the societal change of livestock-keeping communities. The study concludes that integrating theory and practice in modeling livestock development interventions is essential for organized livestock production and marketing initiatives. It also provides systems that can help the sector change and transform the roles of livestock farmers and traders in using the livestock industry to diversify community livelihoods and build local economies, making them competitive, profitable, and sustainable.

VII. SCOPE FOR FUTURE RESEARCH

Continuous study of livestock manufacturing and distribution, traders' concurrence and competition, demand and supply connections in markets, and the combination of theory and practice will enhance resource economics, management of the environment, and livestock husbandry practices. It will also optimize livestock business opportunities and manage marketing performance, especially given the amount of investments in the livestock industry in pastoral areas. Through marketing, research with added value raises the caliber of livestock and livestock products to support sustainable livestock production and product consumption. In addition to ensuring that the developed and approved corporate theories and models can have a positive impact on the raising and selling of livestock in all market segments—including displacement (refugee) settings—measuring market and non-market forces in local and external markets will help direct market operations throughout the season.

Research operations will determine the degrees of supply and demand interactions in different market categories. To determine how cooperatives would replace the LMA model and what benefits they will provide to Turkana's livestock industry, strategic studies are needed to convert LMA into Livestock Marketing Cooperatives (LMC). It is necessary to look into the socioeconomic and political elements that contributed to the failure and closure of Turkana County's Lomidat Slaughterhouse Cooperative. The role of women and youth in cattle growth, the impacts of urbanization in Turkana County on the area used for livestock production and sale, and the advantages and disadvantages of common livestock illnesses and pests must all be clarified in future studies. Future research studies should also integrate the role of livestock production and marketing in the economy of Turkana's displacement setting and how refugee entrepreneurs can diversify livestock production into aquaculture, beekeeping, a variety of small stock, micro livestock, hides and skins, and marketing activities, e.g., buying and selling of live animals in addition to running meat butcheries and eateries.

Disclaimer

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Interest Conflicts

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