

Original Article

Setting Competition within the Necessary Limits in Livestock Markets: Intervention in Turkana, Kenya, to Manage Competitive Rivalry among Traders

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Abstract: Socioeconomic characteristics, the interrelationships between competitive rivalry (phenomenon) and livestock production, marketing, demand, and supply market forces, and the effectiveness of livestock business models were utilized to investigate the causes and effects of rivalry in the context of livestock marketing in Turkana. The study aimed to identify the critical factors that should govern competitive practices in Turkana markets. Primary and secondary markets in Turkana West, Turkana South, and Loima Sub-Counties were examined for the research. From three sampling frames, i.e., primary market traders, secondary market traders, and service providers in government and civil society organizations, 364 participants were sampled. Exploratory and descriptive research designs were used to organize the research study, and a mixed methods approach was used to gather data. The research data was analyzed and presented using qualitative, descriptive, and inferential statistical methods. As the primary causes of competitive rivalry in markets, the study identified a vast disparity in the resource capacities of traders, ineffective livestock production and marketing systems, an imbalance between demand and supply in markets, stringent non-market forces, and the absence of formal livestock models. The research suggests strategies to tackle challenges such as inadequate business capital resources, high levels of trader illiteracy, and lack of market information and technology adoption. These issues are identified as obstacles to gaining market access and implementing well-designed livestock business models, which are crucial for revolutionizing livestock production and marketing in dryland regions like Turkana. As a result, the study's findings suggest that bolstering the capabilities of local and regional traders and markets will result in a paradigm shift in marketing strategies, improve the competitiveness of local traders in terminal markets, and establish livestock as a substantial economic driver in the pastoral area.

Keywords: Competition, Rivalry, Business Models, Market Economy, Demand, Supply, And Marketing Systems.

I. INTRODUCTION

The research investigation was carried out in Turkana County, Kenya, the most expansive region in the country, encompassing an area of 77,000 km² and supporting approximately 1 million inhabitants, of which around 80% are engaged in pastoral agriculture. The Turkana region's socioeconomic development relies heavily on livestock, and pastoralism serves as the prevailing mode of production and way of life for its inhabitants. For numerous years, Turkana has remained the most impoverished and underdeveloped region in Kenya. 88% of the population lives below the poverty line, whereas malnutrition and illiteracy are prevalent on average at 35% and 84%, respectively (KNBS, 2023). Turkana is profoundly impacted by the consequences of climate change, which result in the ongoing displacement of sustainable occupations and endanger the environment, animals, and human lives. Even though numerous livestock resources are cultivated for traditional and subsistence purposes, the growth of conventional markets is being driven by the potential of livestock marketing, which is aggravated by the rising demand for livestock products. Nonetheless, the necessity for a resilient livestock marketing system that can revolutionize and maintain livestock production and marketing strategies for the enduring socioeconomic progress of Turkana represents a critical outcome challenge.

In Turkana, livestock markets continue to be severely impeded by intense competition, which hinders both the efficient production of livestock and the sustainable distribution of diverse livestock-based products. The presence of this challenge is predominantly attributed to variations in the resource capacities of traders. Unreliable and antagonistic livestock markets, disorganized and non-operational marketing systems, exploitation of livestock producers and low-level traders, and equity issues are the most notable consequences of this phenomenon. The research was based on four primary objectives: (i) to ascertain the socioeconomic attributes of traders in Turkana; (ii) to examine the connections between competitive rivalry and



livestock production and marketing; (iii) to investigate the interrelationships between competitive rivalry and forces in the demand and supply markets; and (iv) to evaluate the effectiveness of livestock business models. Insights that could aid in the organization, structure, coordination, governance, and management of marketing activities, as well as the incorporation of healthy competition, constituted the study's ultimate objective.

II. LITERATURE REVIEW

A) Role of Agriculture in the Socioeconomic Development of States and Populations

In various regions of the globe, agriculture sustains smallholder farmers, rural households, and communities and is an economic pillar for many nations. Agriculture-dependent populations obtain food, income, good nutrition, livelihoods, and revenue directly from it. In Sub-Saharan Africa, livestock and agriculture are essential for integrated dryland development. They serve as a vital determinant of socioeconomic well-being, a supply of funding for ventures and investments, and an asset for bolstering the resilience and independence of populations. The agriculture sector and subsector performance are hampered by illiteracy, a significant problem in Africa and other developing regions, substandard livestock and crop varieties, pervasive and unmanageable diseases, the effects of climate change (e.g., protracted droughts), resource-based conflicts, inadequate financing, pervasive risks and uncertainties, and inefficient markets. The primary approaches for livestock farming encompass enhancing stakeholder awareness via training initiatives, optimizing farming systems, establishing streamlined market systems, and ensuring adequate resources are accessible to bolster agricultural investments.

B) Livestock Marketing Interventions and Livelihoods

In the livestock industry, the significance of markets cannot be exaggerated. Markets serve as intermediaries between producers and consumers by enabling the acquisition of livestock for diverse objectives, such as fattening, breeding, gifting (including marriage, other social celebrations, and fines), slaughtering, and consumption (Ayele, 2019). In contrast to the definition of a marketing system, which includes market players, product channels, and commercial endeavors that promote the flow of goods and services from suppliers to consumers, the research conducted by Sabana and Matanda (2019) restricts the term "livestock marketing system" to include intermediaries, activities, and channels that make it easier for producers to transmit goods and services to customers.

Roba et al. (2019) contend that livestock traders participate in an array of endeavors, encompassing the dissemination, additional processing, and marketing of livestock and livestock products across diverse market sectors. Within the field of agricultural economics, marketing is linked to a multitude of functions that contribute value to farm output for consumers, including time, form, and place utility. Market access is a determinant of producers' and entrepreneurs' participation in livestock markets and the sustainability of livestock business ventures, according to Isako et al. (2019). Trekking is the prevailing mode of transportation for animals to the market in numerous rural regions. In contrast, vehicles are predominantly utilized by the able trader category to transport animals to different markets. Along stock routes, substantial weight loss and fatalities are prevalent, besides inadequate provisions of feed, water, and resting areas, as well as incidents of theft and robbery. Since many traders are unaware of current market prices and how to measure them, livestock and livestock product prices are typically determined through a bartering system (Yiram, Ahmed, and Mohamed, 2017).

C) Livestock Markets and Functionality Factors

Asfaw (2018) identifies socioeconomic factors, including but not limited to destitution, business capital, and cultural and religious practices, that hinder the performance of livestock traders in diverse market segments. The scope and scale of agriculture and marketing potential are impacted by various factors, including population growth, urbanization, and income growth in developing nations; international influences such as manufacturing, interactions, and transport industries have witnessed technological breakthroughs, globalization, and more free international trade. (FAO et al., 2020). Aggrey, Kuganza, and Muwanika (2018) assert that the commercialization of livestock is substantially aided by an effective livestock marketing system. The same study revealed that the quantity of livestock supplied to the market and how the proceeds are utilized are both determined by the cultural practices of livestock producers and traders.

The study by Amesio et al. (2018) on the function of non-livestock sectors in the development of pastoral areas demonstrates that pastoral systems do not invest adequately in non-livestock sectors. Furthermore, it demonstrates that organizing marketing and livestock production interventions with strong market ties will assist local enterprises in entering new markets and increasing their competitiveness. According to the findings of Mwangi, Ngigi, and Mulinge (2015), the adoption of a livestock trade culture will revolutionize pastoral production objectives, which are firmly grounded in the traditional economy, into an appreciation for the ability to enter new markets. The commitment of livestock stakeholders to produce, trade, and facilitate access to domestic and export markets is strengthened through government investments in policy and strategic regulatory frameworks (Cheteni and Mokhele, 2019).

D) Characterizing Livestock Markets and Marketing Contexts

Multiple infectious diseases and the hazards associated with their transmission may be most prevalent in markets that sell live animals and products (Knight-Jones et al., 2016). Furthermore, animal markets serve as optimal venues for information collection, communication, risk mitigation about health and production, assessment of their effects, and overall evaluation of supply and demand capabilities (Motta et al., 2019). Although animal markets function for socioeconomic reasons, the implementation of effective management and organizational structures can help reduce potential hazards to animals and public health across the entire livestock supply chain. According to Napp et al. (2018), cross-border commerce can foster the development of a livestock economy in arid regions by augmenting market economic returns. In a similar vein, Molia et al. (2016) argue that the effectiveness of cross-border trade facilitated by the unrestricted flow of products and services is determined by the international market protocol.

According to Mugunieri et al. (2016) and Napp et al. (2018), Strong rivalry brought on by a lack of official advertising, systematic imbalances in demand and supply domestic market actions, inefficient administration of external non-market forces, and evolving dynamics of livestock manufacturing and distribution is made worse by the level of social, economic, and political instability in the marketplace region. The livestock trade's youth and women's participation, the pastoral production systems' integration of adult literacy programs, the establishment of aggressive directorates for livestock development, and the basis of livestock marketing's inefficient business models and tactics are all cited by Anno and Pjero (2021) as crucial means of ensuring that regional and local markets function well for local economies.

a. Livestock Development Training and Extension Services

Further, if small-scale farmers are to escape poverty through market access, Anno and Pjero (2021) argue that training farmers on the proper breeding stock and local breed improvement, increasing investment in livestock health management, disseminating price information, and improving beef quality are more urgently required. Additionally, Fornari et al. (2016) suggest that investments in marketing centers are necessary to decrease transaction costs between regions and countries. Aggrey, Kuganza, and Muwanika (2018), as well as Ameso et al. (2018), argue that collaborative efforts among governments, community producer groups, and other relevant stakeholders are necessary to establish the appropriate infrastructure in high-potential dryland regions to facilitate sustainable livestock trade and investments.

b. Brokerage in Livestock Markets

Brokers play a crucial role as market participants who facilitate the exchange of products across national, regional, and global boundaries by mediating formal and informal transactions within and between livestock markets (Manyeki, Balazs, and Kano, 2021). As an illustration, in the borderlands of Kenya and Somalia, brokers occupy prominent positions in the trade of livestock across international borders; therefore, an examination of brokerage yields significant knowledge regarding the informal economies in these regions of Africa (Parry-Hanson et al., 2019). Brokerage services facilitate the legalization of Somali livestock in the livestock markets of northern Kenya, particularly in the Garissa region, as the livestock travels from southern Somalia, where regulations are lax, to central and coastal Kenya, where regulations are more stringent.

In order to facilitate interethnic economic transactions, livestock brokers are essential (Zhou & Staats, 2016). Within the framework of international livestock trade networks, buyers and sellers may be located along different trade routes and are geographically separated. Brokers additionally negotiate prices with fellow traders and ensure the safety of producers in border markets governed by informal regulations. Information asymmetry, according to the research of Martijn and Leynseele (2018) and Tothmihaly (2018), significantly creates a "structural hole" or void that brokerage in trade networks must complete.

c. Market Participation in Rural Areas

The primary impediments to market participation in the rural markets of Tanzania and Kenya are inadequate access to credit and veterinary services, inadequate education levels, and low sales volume (Kibona and Yuejie, 2021). Age, gender, income, cooperative membership, access to market information, agricultural experience, and membership in cooperatives are predictors of market participation, according to Kgosikoma and Malope (2016). Additionally, the establishment of strategic cooperatives assists farmers in locating lucrative markets, thereby enhancing market performance and accessibility (Stephen et al., 2018). Additionally, Wen-Chi and Sicelo (2019) argue that market participation provides livestock caretakers with a more effective means of securing increased income and food security. It encourages markets to carry a sustainable supply of livestock and livestock products. According to the recommendations put forth by Kibona and Yuejie (2021), to facilitate the diversification of pastoralists' livelihoods and provide producers and traders with training on commercial farming, pricing, and the organization of livestock marketing activities, the government should establish regulatory frameworks and coordinate extension services to oversee livestock marketing activities.

E) Livestock Local and External Market Access Constraints

In most African nations, livestock production systems are subsistence-based, and productivity output is limited. Under the research conducted by Yiram, Ahmed, and Mohammed (2017), the absence of market-oriented production systems and the low productivity of animals are cited as the primary global obstacles to livestock export production. Domestic consumption, official exports, and the high demand for animals by export abattoirs are all impeded in numerous livestock markets in Africa due to the lack of an efficient grading system, market information, promotional activities, substantial supply-related constraints, prevalence of diseases, and traditional production systems, according to Bachewe et al. (2018) and Kibona and Yuejie (2021). Additionally, the marketing of livestock is significantly impacted by the illicit export trade, inadequate marketing infrastructure, intense competition, recurrent prohibitions, movement limitations, and insufficient port facilities, according to Evans et al. (2017).

To facilitate efficient livestock trading, it is necessary to have livestock transportation facilities, enhanced slaughterhouses, livestock resting areas, and storage and quarantine facilities at required locations (Togarepi, Thomas, and Bankono 2016). Thomsen et al. (2019) suggest that the regulation of illicit cross-border trade involving live animals and products by the government would restore stability to both domestic and international markets, considering the difficulties imported and exported goods encounter. Additionally, according to Yiram, Ahmed, and Mohammed (2017), livestock trade ethical systems can improve the viability, productivity, market orientation, competitiveness, and sustainability of livestock production and marketing in specialized intensive farming systems, urban and peri-urban farming, mixed farming, and pastoral production systems.

III. RESEARCH METHODOLOGY

A) Designs, Sampling, Data Collection and Analysis

The study was planned and executed using the following research designs: (i) an exploratory design to conduct a comprehensive investigation into aspects of the research study that have not been extensively examined in the context of Turkana and (ii) a descriptive design to ensure precise predictions and inferences from the data obtained. Mixed methods were utilized in the research to facilitate the accumulation of both quantitative and non-quantitative data. The data collection process employed a semi-structured questionnaire to gather data. The sample population comprised livestock traders engaged in livestock marketing within Turkana, as well as service providers employed by governmental and civil society organizations. In obtaining sampling frames for both primary and secondary markets, registration status and activity of livestock traders in their respective jurisdictional markets constituted the dominant study population characteristics for inclusion.

By employing a 95% confidence level and a 2% margin of error, 185 participants were statistically sampled to represent 93% of the sampling frame for the primary trader's category. A sample of 159 participants was taken from the secondary trader category, which accounted for 94% of the total sampling frame. Twenty individuals were purposefully selected from ten organizations that provide support for livestock production and marketing in Turkana as tertiary study participants. Cumulatively, a sample size of 364 individuals was selected to partake directly in the research. The analysis of quantitative data involved the application of descriptive statistics methods, including frequency, central tendency, dispersion, and position measures. Estimating parameter values, performing linear regression analysis, and examining correlations to represent positive, negative, and null correlation scenarios, employing inferential statistics techniques. The table below is the summary of the samples computed statistically.

Table 1: Study Sample Computations

Study Participants	Sampling Frame	Desired Confidence Level	Preferred Margin of Error	Response Rate	Sample Size	% Sample size (from the population)
Primary Participants	200	95%	2%	50%	185	93%
Secondary Participants	170	95%	2%	50%	159	94%
Tertiary Participants	20	Tertiary participants (Government & NGO workers) n=20, selected purposively (from 10 main organizations in livestock trade)				

IV. RESULTS AND DISCUSSION

The study outcomes and associated discussions are classified per the study's objectives.

A) Objective 1: Socioeconomic Characteristics of Study Participants

87% of the 364 participants in the study were male, while 13% were female. 35 years of age is the mean age of livestock traders. 78% of study participants are illiterate, with only 6% possessing an educational certificate; virtually all livestock

producers (pastoralists) are also illiterate. Livestock keepers comprise 93% of livestock traders, with a mean tenure of 12 years and a standard deviation of 5.17 years in the livestock marketing industry. All respondents to the tertiary study held formal education (diplomas, degrees, and postgraduate degrees), as well as a wide range of practical experience and field exposure in socioeconomic and development issues, as well as expertise in various domains of humanity.

Men dominate the livestock trade in Turkana. Obstacles such as gender segregation, inequitable opportunities for youth and women to participate actively in market competition, and intentional competition designed to exclude them from marketing endeavors impede the ability of women to compete with men. As a result of these practices, women and youths have been deprived of the opportunity to specialize in the livestock trade and develop the entrepreneurial skills that are essential for market entry. The issue of illiteracy continues to be a significant barrier. Traders in Turkana livestock markets are falling behind in the current digital age, in which finance and communications services are being driven by technology. The lack of literacy poses a barrier for local traders seeking to enter territorial markets. A significant number of livestock traders lack literacy skills, rendering them less competitive in tertiary markets where exceptionally literate traders leverage market intelligence and technological advancements to establish a competitive advantage over their low-level counterparts. Traders in these markets frequently rely on the assistance of market intermediaries, a practice that can be both costly and exploitative at times.



Figure 1: Male-Dominated Livestock Market in Kalobeyei Settlement in Turkana

B) Objective 2. Relations between Traders' Competitive Rivalry and Livestock Production and Marketing

The research examined factors that illustrate the connection between competitive rivalry and its impact on the production and marketing of livestock in Turkana. Product prices are not impacted by the nature of competition observed in Turkana livestock markets, according to the study. The exorbitant surge in prices of livestock and livestock products has surpassed the capacity of traders and consumers to control. Markets are being destabilized by competitive rivalry, which is not advantageous to market participants because no system exists to regulate trader conduct and price determination systems. Traders themselves instigate competitive rivalry, and malfeasance is prevalent in most markets surveyed. The positive rapport

between livestock producers and traders, notwithstanding the rivalry that exists, presents a significant opportunity to advance discourse regarding the eradication of unethical practices within the livestock industry. The relationships among the elements evaluated as part of objective 2 of the research study are depicted in the figure below.

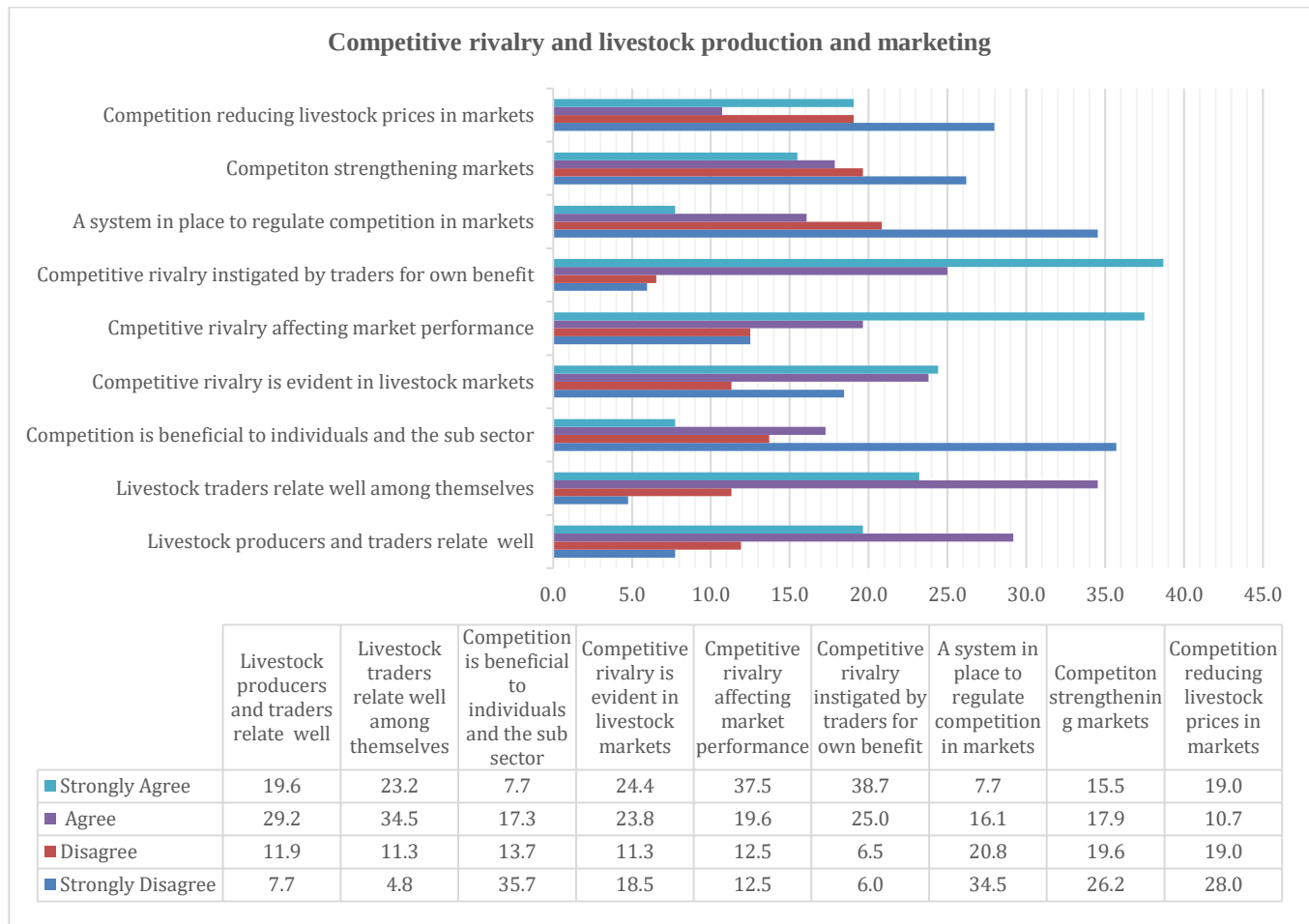


Figure 2: Relations of Competitive Rivalry and Livestock Production and Marketing

C) Objective 3. Relations between Competitive Rivalry and Demand and Supply Market Forces

The presence of rivalry practices in Turkana markets contributes to a lack of harmony in livestock trading, which subsequently results in seasonal fluctuations in livestock prices, according to research. The livelihoods of passionate livestock traders are becoming more diverse. Petty retail trade, transport services (car rental and motorcycle services predominate), and the provision of goods and services via contracts to government entities, civil society organizations, and corporations are the most common. Consequently, their revenue sources have expanded, and they have engaged their family members, particularly women and youth, in the management of these enterprises. Most livestock markets in Turkana are conducted daily throughout the seasons. Livestock traders have emerged because of livestock trading incentives; nearly all of them are herdsmen who understand the economic worth of their animals. They have emerged as advocates for market-driven livestock production, wherein the involvement of markets is pivotal in educating herdsmen about the economic and social significance of their livestock resources.

The implementation of market days by the Directorate of Livestock Production in Turkana serves to facilitate the trading and aggregation of livestock in preparation for substantial trade at secondary livestock markets and other territorial markets in the region. As of now, the initiative is in its infancy. Prolonged droughts, seasonal migration of livestock across international and domestic borders to Uganda, South Sudan, and Ethiopia, and competitive rivalry are additional factors that contribute to volatile prices, inadequate livelihood diversification among traders who do intend to pursue it, and the sluggish progress towards implementing the market days initiative. Nevertheless, enhancing market access in Turkana County is primarily concerned with the diversification of livelihoods and the administration of market prices, as stated by the government and civil society entities.

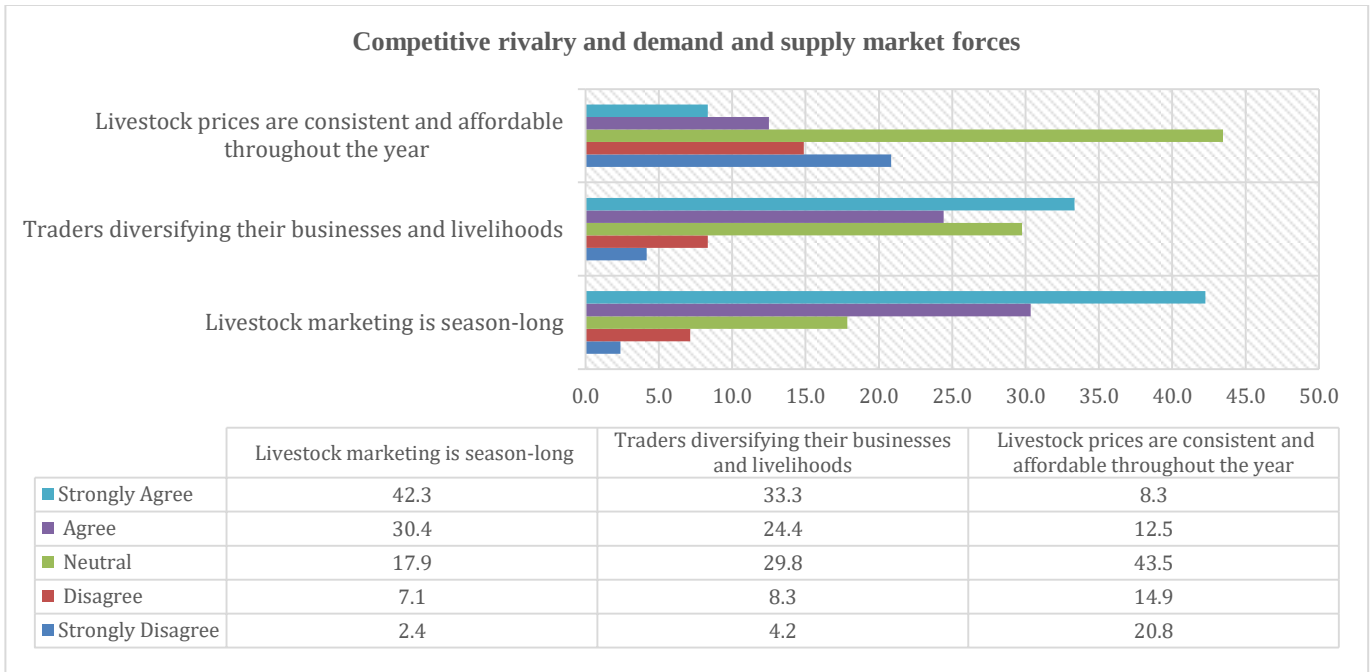


Figure 3: Relations of Competitive Rivalry and Demand and Supply Market Forces

D) Objective 4: Influence of Business Models on Competitive Rivalry in Livestock Markets

According to the findings of the research, no formal livestock marketing strategies are utilized in the marketing of livestock in Turkana. Traditional livestock production and trading systems' long-awaited transition to a market economy is impeded by the absence of a standardized approach to livestock marketing. Furthermore, in markets characterized by healthy competition, traders' innovation generates additional opportunities for expanded trade and diversification of livelihoods. The figure below depicts the results of the elements assessed on the application of corporate business models and strategies in livestock marketing in Turkana.

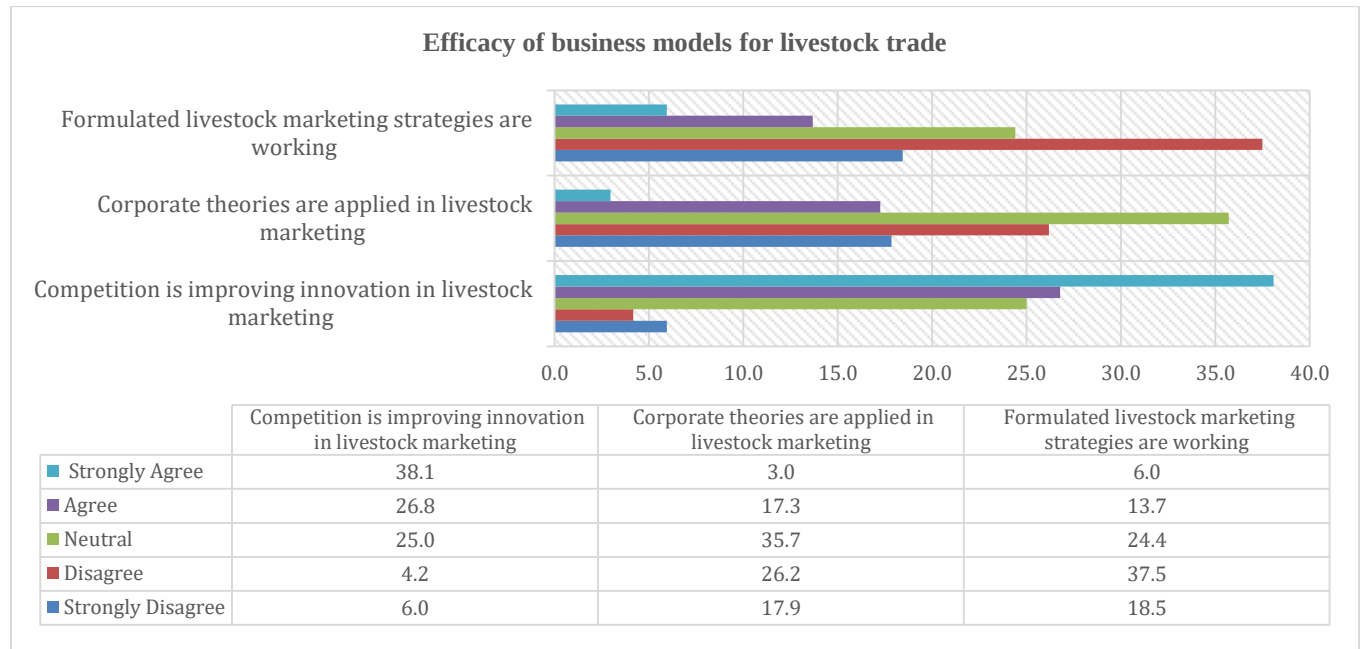


Figure 4: Competitive Rivalry and Formal Livestock Business Models

Considering the study's identification of the absence of formal business frameworks and models to govern the livestock industry in Turkana, the research study was extended to include stakeholder perspectives on potential business models that

could facilitate the trade of livestock and livestock products across market segments and the development of product value chains. As a result, four business models were formulated: (i) the Organized Livestock Marketing Model, (ii) the Livestock Marketing Association Model, (iii) the Assembly Model for Meat and Livestock, and (iv) the Management Model for Market Yards. In brief, the livestock marketing system in Turkana should adopt a bottom-up approach, wherein organized marketing is implemented across all market categories, market traders are granted the authority to coordinate trade activities within their respective jurisdictions, livestock and livestock products are efficiently and effectively tracked across markets, and market yards are subject to regulation and supported to operate optimally. The diagram below depicts the four formulated business models for Turkana and the bottom-up chain of implementation for each.

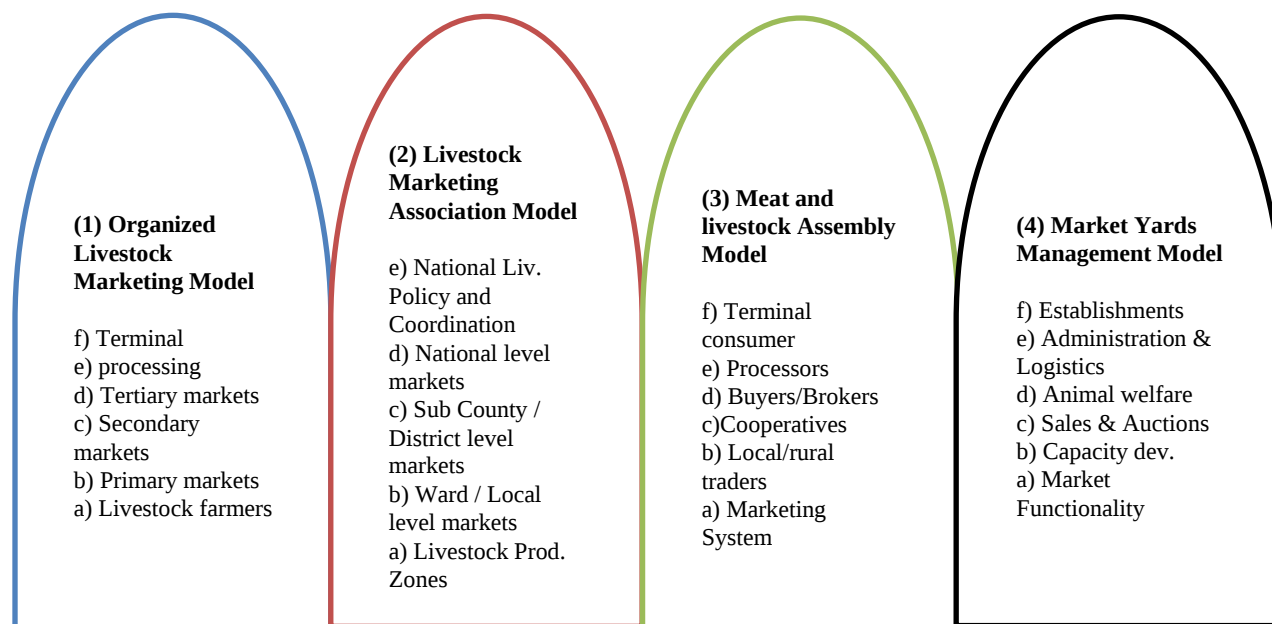


Figure 5: Formulated Livestock Business Models for Turkana

V. SIGNIFICANCE AND IMPLICATIONS

Immediate and long-term benefits will accrue to the livestock subsector and rural population development in Kenya and other comparable contexts in the Horn of Africa because of the study's findings. The study output will promote an expansion of knowledge and facilitate a shift in perspective among stakeholders in livestock development, traders, livestock product consumers, and livestock producers. The results of the study have the potential to enhance the caliber of livestock marketing operations and livestock market administration in dryland areas. In Turkana, the theory and practice of livestock husbandry remain in high demand. The research has the potential to significantly influence livestock development programming and initiatives in arid regions.

The developed livestock business models will stimulate the cherished vivacity of livestock market categories in Turkana, the coordination and organization of approaches for livestock business among stakeholders, the creation and exchange of value chains for livestock products, and the administration of livestock markets. If effectively communicated, the business models will serve as a foundation for fostering robust competition in the livestock markets of Turkana. By tackling the obstacles that impact the various elements of the livestock marketing chain, internal market forces can be regulated to establish market equilibrium. This equilibrium will not only govern trading activities but also guarantee the smooth operation of local markets and the satisfaction of stakeholders, particularly livestock producers and traders. Critical parameters that can serve as indicators of market performance in monitoring and evaluation endeavors have been identified by the study. It serves as a resource mobilization instrument for the Turkana County Government, livestock markets, civil society, and community-managed organizations.

VI. RECOMMENDATIONS

A) For Application

The research study has identified the capacity development of stakeholders in competition processes. Stakeholders must have a comprehensive understanding of the intricacies associated with competition as a market factor. It is imperative that the County Governments of Turkana, along with other relevant civil society entities, establish market structures and financial resources that are necessary to regulate competition in livestock markets in Turkana within the prescribed parameters. Further,

traders' organization and market linkages will facilitate trading activities that are crucial for the functionality of markets and the output of each market segment efficiently and effectively. Reinforcing ethical standards in business endeavors is crucial for mitigating deliberate malpractices that undermine market systems and foster unwarranted competition. It is the responsibility of each market jurisdiction's leadership to establish mechanisms for regulating the effects of non-market forces and managing excesses of supply and demand. The implementation of the formulated business models for Turkana is contingent on the degree to which the country's livestock marketing operations are regulated by policy and entrepreneurship.

B) For Future Research

The study proposes several areas for future research that warrant further investigation. These include examining the economics of cross-border livestock trade, devising corporate theories and models to enhance the competitiveness of livestock marketing at the tertiary market level, and conducting studies on the issue of illiteracy among pastoralists and potential solutions to this problem. Investigating the viability of livestock-based cooperatives in Turkana, the sustainability of the livestock market economy, the identification of financing opportunities for livestock businesses, and the improvement of livestock breeds will yield knowledge that will elevate the livestock subsector in Turkana, pave the way for robust livestock production and marketing practices, and increase the competitiveness of livestock producers and traders on local and international markets.

VII. CONCLUSION

The research findings indicate that there is indeed competitive rivalry in the livestock markets of Turkana, which is further intensified by substantial disparities in the capabilities of traders and the rate at which their market conduct is impacted. Due to their limited business capabilities, local traders are unable to effectively compete in terminal markets both domestically and internationally. It is necessary to implement and replicate developed livestock business models to facilitate the establishment of a resilient livestock marketing system. This system is vital for transforming livestock production practices and enhancing the governance, organization, structure, and coordination of livestock marketing operations in Turkana.

Disclaimer

The views stated in this article are those of the authors and do not necessarily represent those of any of the entities mentioned.

Interest Conflicts

All authors declare that they have no conflicts of interest whatsoever in this publication.

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