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Social Economic Factors Influencing Adoption of Improved Livestock Farming Practices among Members of Livestock Cooperatives in Kajiado County, Kenya

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Abstract— **Background to the Study- Livestock contributes about 12% of Kenya's Gross Domestic Product (GDP), about 42% of the agricultural GDP and 50% of the agricultural sector employment (GOK, 2018). Over 60% of the livestock is found in the arid and semi-arid Land (ASAL) of Kenya. The sector employs 90% of the local population and the ASALs form about 80% of the country's land area (Barrett al., 2003). Kajiado County lies in the Kenya's ASAL, and pastoralism is the main means of livelihood. Pastoralism as source of livelihood has faced increasing challenges due to population and land pressure, animal diseases, policy issues and climate variability. Further Barrette et al. (2003) noted that it is not known how much herd structures have changed in the ASAL in the preceding ten years as a result of increased commercialization and other factors. Availability of beef animals may be far less than development planners acknowledge. However GoK (2011) acknowledges that Kenya was already not self-sufficient in beef and mutton. It is likely that the country might also behaving deficits in other livestock products.**

Transforming livestock from subsistence to commercialized undertaking by applying modern technologies acquired through continuous research and innovations (GoK, 2019). Use of traditional ways of Livestock farming amongst pastoralists in Kajiado has not given way to adoption of modern farming methods that would greatly improve livelihoods in line with the Kenya Vision 2030 and the big four food security agenda. According to the (GoK, 2019), the rural-based nature of livestock activities makes livestock keeping a suitable enterprise to improve household food and nutrition security, incomes, job creation and contribute to sustainable livelihoods for many people in the rural areas

It is appreciated that over 80% of Kenya's land mass is arid and semi-arid and livestock is the main source of livelihood in these areas. It is further noted that even in the non-ASAL areas, the livestock sub-sector constitutes an important source of family income and food security. In addition, livestock directly contributes to the foreign exchange earnings for our nation through export of livestock products, live animals and germplasm. As such, livestock development agenda in the country will be pursued towards commercialization (GoK, 2019). Value addition of livestock can provide opportunities for increased production and in-situ conservation of indigenous species. In addition, exploiting the potential in value addition especially in terms of enhancing the productivity of the livestock will in the long run be cost effective due to controlled feeding and monitored health condition of the animals (Aklilu and Wekesa, 2002). Pastoralist livestock trade, especially with cross-border involvement, also has positive effect on indigenous animal genetics utilization and conservation, importation of exotic genetics and, but may also lead to transmission of trans-boundary diseases. It has been reported that growing financial pressures, food insecurity and frequent droughts are increasingly pushing pastoralists to sell more animals than before, regardless of productivity, age or sex (Pavanello, 2009). Value addition in agricultural commodities can be defined as improving the natural and conventional form, quality and appeal of a product, thus increasing the consumer valuation beginning from farm level to marketing of finished products. The potential for value addition within the agricultural sector is enormous for most of the commodities, and so would be the gains from value addition (Mlote et al., 2012). The present study examined the value addition of livestock at farm level among the pastoralists.

Index Terms—**About four key words or phrases in alphabetical order, separated by commas.**

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I. Statement of the Problem

In Kenya, exploitation of the readily available byproducts including the hides, skins among others has been very low resulting to the loss of income. The most striking feature of the pastoralists' communities is to rear livestock up to marketable size then sell. Consequently in cases where group abattoirs are formed, the by-products are not given the much needed consideration that this study is focused on. The end result is the loss of income and increased poverty. In major slaughterhouses for instance, the by-products are either disposed of or sold at a low price. Most pastoralists are not enlightened on the improved livestock farming practices aspects of livestock products like hides and skins. More sensitization programs are very necessary for the uptake of the results of the study. More predominantly, pastoralists normally sell huge herds of their livestock during the dry periods. On the contrary, past government and donor interventions have focused on increasing off-takes without due consideration of pastoralist livelihoods. The overall aim of this study was therefore to evaluate the possibility of exploiting more from livestock in the context of improved livestock farming practices. This consideration is important to all stakeholders to enable formulation and implementation of policies, plans and interventions for value chain up-grading. Loses encountered during dry seasons as a result

of death of livestock and selling animals at very low price could be mitigated if improved livestock farming practices are embraced within Kajiado County. Currently, data on the constraints and opportunities in the livestock products improved livestock farming practices in pastoral areas are largely non-existent in Kajiado County.

Research Objectives

The general objective of this study was to evaluate the factors affecting adoption of improved livestock farming practices among pastoral communities in Kajiado County, Kenya

Specific objectives

The study specific objectives were;

1. To identify the improved livestock farming practices in Kajiado County.
2. To determine the level of adoption of livestock improvement practices in Kajiado County
3. To determine the socio-economic factors that influence adoption of improved livestock farming practices in Kajiado County.

II. Literature Review

The livestock sub-sector of the agricultural sector is an important global player with significant and wide-ranging social, economic and environmental impacts. Worldwide, livestock production employs 1.3 billion people, providing livelihoods for a billion of the world's poor. It also accounts for 40 per cent of the global agricultural GDP (Steinford, 2007). According to the Government of Kenya (2018) revised the contribution of livestock is about 12% of the entire GDP, about 42% of the agricultural GDP and 50% of the country's agricultural sector employment. Over 60% of these livestock are found in the ASALs which form about 80% of the country's land area, and where livestock production employs 90% of the local population.

Lambert (2000) conducted a study with an aim of assessing factors affecting the uptake of Value-added Production on Cow-Calf Farms. Farm size, access to market information, perception of risk/returns and enterprise diversification were among the independent variables studied. The study found out that farm owner perceptions towards risk, profitability and facilities were significant factors. Access to market information, farm size and scale of cattle production had insignificant impact on uptake of Value-added Production on Cow-Calf Farms. A study conducted by Haugh (2003) on the role of marketing Information on adoption of Improved livestock production practices among livestock farmers in India indicated that availability and access to information impacted on the level of adoption of improved livestock production practices. Access on information regarding market and marketing channels as well as breeds that are highly competitive in the market was found to significantly impact adoption of the practices.

Mitcheels and Gow (2008) used a structural equation model for beef producers to explore the importance of a producer's market orientation on their subjective performance within agricultural commodity markets. They found that market oriented firms are highly innovative and achieve superior performance. Additionally, their study observed that globally the most rapid growth in agriculture has occurred on the part of post-production activities. This has been driven by growth of middle income consumers in low income countries, and their demand for better quality value added products. Besides, absence of agro-industry and agribusiness resulting in low levels of Value addition of agricultural commodities has been one of the main causes of stagnation in rural incomes (Bawa *et al*., 2007). A substantial agribusiness sector generating a high outflow of value added commodities is always correlated with high agricultural GDP and high rural incomes (Bawa *et al*., 2007).

In a research conducted to investigate the potential for improved livestock farming practices of Nguni cattle products in the communal areas of South Africa, it was reported that development and research programs aimed at re-introducing the Nguni breed in the rural areas could take a holistic and participatory approach in agro-processing and value-addition of Nguni cattle products (Ref). Increased Value addition can be achieved by provision of appropriate incentives for the establishment of agro-processing industries in the rural areas and promotion of partnerships between communal farmers and agribusiness (Musemwa *et al.*, 2008).

Similarly, superior knowledge of customers' perceptions of value is recognized as a crucial success factor in today's competitive market place. Despite this, the voice of the consumer is often poorly integrated in the value chain. It was noted that few studies have assessed value created for consumers (McEachern and Schroeder, 2004). According to Schroeder et al. (1998), it has been shown that location of the retail outlet significantly influences product prices. It further been shown that the name of a beef product significantly influenced its retail price with special and other particular brands usually priced higher than unbranded or generic beef (Schroeder *et al*., 1998).

III. Materials and Methods

The study was conducted in Keekonyokie, Iloodokilani, Magadi, Ewuaso Oonkidong'i wards in Kajiado West Sub-county of Kajiado County. Kajiado was traditionally occupied by the Maasai ethnic group but people from other parts of Kenya as well as foreigners have since moved in. The average annual temperature in the county is 18.9°C. Most of Kajiado County receives a total annual rainfall of about 500mm, most of it falling in the months of April to June. In Kajiado, livestock production and marketing is the main economic activity, with about 70 per cent of the people depending on livestock and livestock products. Although livestock and their products are considered high value commodities and hence expected to fetch good prices in the markets, this is not the case for pastoralists, as observed by (Taylor *et al*., 2014). Due to challenges posed by the external environment, such as political, economic, social cultural ecological and legal factors, the pastoralists are all work but little pay. The result is heartbroken producer pastoralists producing less for the market putting at risk those that depend on these commodities. The study employed a descriptive design research. This research design allows the researcher to describe the phenomenon under study. A descriptive study comprises a cross-sectional design in relation to which data

are collected mainly by questionnaire or by structured interview on more than one case in the research study (Bryman, 2008). The design is preferred as it allows the collection of a large amount of data from a sizeable population in a highly economical way. It is advantageous since a body of quantitative and quantifiable data is collected in relation to two or more variables. This research design was selected because it ensures proper description of the situation under study, making sure that there is reduction of errors in interpreting the data without biasness in collection of data.

Target population of interest consisted of livestock farmers who are members of Livestock cooperative societies within Kajiado West in Kajiado County. The target population for this study was 118 farmers who are members of seven livestock cooperative societies in Kajiado West. Three wards out of five, which include Keekonyokie with a population of 21 farmers from 2 societies, Iloodokilani ward with 51 farmers from 3 societies and Ewuasooo Nkidon'gi with 38 farmers from 2 societies. Cooperatives form the most autonomous, membership-based organizations. They are based on principles of equality and provide a range of services to their members, including market opportunities, and empower all their members - women, men and youth. They represent a unique model of a socially focused enterprise. Agricultural and food cooperatives are important drivers for eradicating poverty and employment generation, and therefore contribute to socio-economic development and, ultimately, food security. Cooperatives provide a variety of services to their members, especially access to productive inputs, output markets, information and communication. They also enable members to obtain access to natural resources and to have a voice in decision-making processes that influence policies affecting them, (FAO, 2012).

According to the Kenya National Bureau of Statistics year 2019 Kajiado County has a population 1,117,840 people and Kajiado West Sub County has a population of about 104,300 people. Keekonyokie has a population of approximately 33,562, Iloodokilani ward has a population of 11,832 and Ewuasooo nkidon'gi has a population of 27,182 people. The collected data was thoroughly examined and checked to ensure completeness. The data was then summarized, coded to enhance analysis using statistical package for social science (SPSS) version 21.0. Descriptive statistics and inferential statistics were generated. Descriptive analysis mainly frequency and percentages was conducted. Univariate analysis was performed using Chi-square test to determine whether there was significant association between the demographic factors and adoption of improved livestock farming practices. Multivariate analysis was then carried using binary logistic regression to determine the relationship between the dependent variable (adoption of improved livestock farming practices) and the independent improved (access to credit, training and access to market information). $P< 0.05$ was used to indicate significant relationship between the variables.

IV. RESULTS

Education Level for the household heads

Majority (58.9%) of the participants had attained primary level of education only while 22.2% of the respondents had not attained any formal education, 13.3% had secondary school education and 5.6% had university/college education. Table 4.5 shows that the level of education for the house hold heads has no significant association with adoption of improved livestock farming practices. This implies that families that are headed by an educated household head has same likelihood to engage in livestock products improved livestock farming practices with families where the heads are not educated. These findings are consistent with those reported by Milcah and Adijah (2000) that education level does not show a statistically significant association with adoption of improved farming practices among dairy farmers in Lindwe district, Zambia.

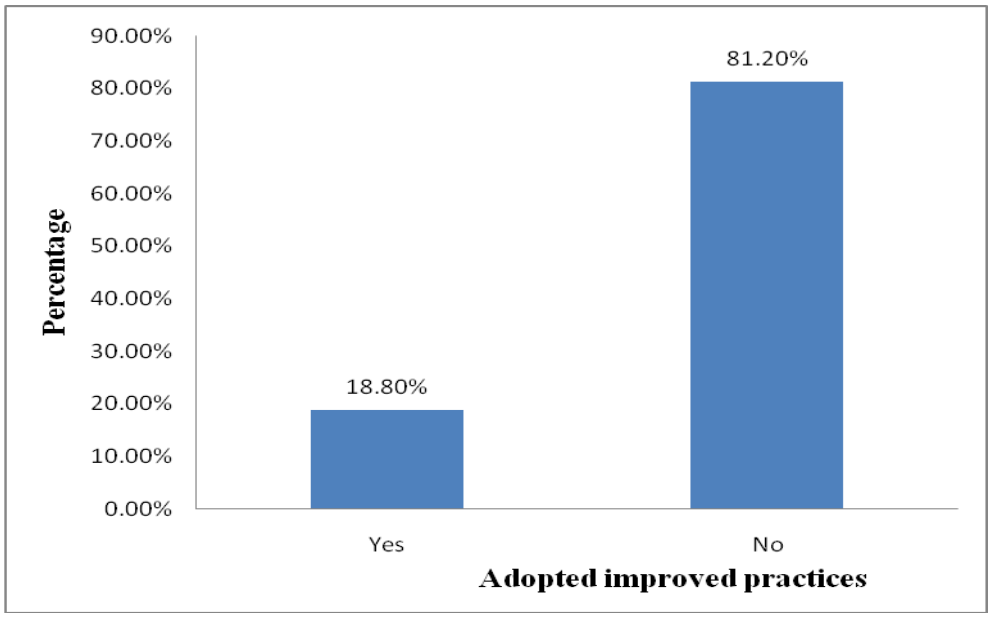
Table 1: Association between education of household heads and adoption of improved livestock farming practices

Demographic factor	Responses	Adopted Improved Livestock farming practices		X^2	P
		Yes(17)	No(73)		
Level of education of Household head	None	2	18	3.784	.286
	Primary level	8	43		
	Secondary level	3	9		
	University/college	4	1		

Source; Author 2019

Adoption of livestock improvement practices

The study sought to determine whether participants were carrying out livestock improvement or livestock product value addition practices.



Source; Author 2019

Figure 1:.Engagement in improved livestock farming practices

Figure 4.1 shows that majority of the respondents 73 at (81.2%)were not engaged in any form of livestock improvement or value addition activities compared to 13 (18.8%) of the respondents who practiced livestock improvement or value addition practices.

On the livestock improvement practices, the participants indicated that artificial insemination (AI), use of supplementary feeding, acquisition of better breed, vaccination and fattening of animals were among the livestock improvement that pastoral communities in Kajiado were engaged in improved livestock farming as illustrated in Table 4.2.This findings are inconsistent with a study by Hausa and Mengo (2003) that reported that 64% of pastoralists in Tanzania. Their study indicated that artificial insemination and vaccination were among the most practiced. The low percentage of adoption in the study area could be attributed to the attitude of the pastoralists towards modern livestock farming.

Reasons for not practicing improved livestock farming practices

The study sought to determine the reasons that hindered the respondents from adopting improved livestock farming practices.

Table 2: Reasons for not practicing improved livestock farming practices

Reasons	Frequency	Percentage
Lack of finances	40	54.8
Lack of skills	12	16.4
Low production	21	28.8
Total	73	100

Source; Author 2019

Table 2 indicates that, among those that indicated that they did not practice improved livestock farming practices, forty (54.8%) stated lack of finances, twenty one (28.8%) sited low production and twelve (16.4%) indicated lack of skills as the reasons for not adopting improved livestock farming practices. The study is in agreement with findings of Lambert (2000) that indicated that limited finances and inadequate skill hindered the practice of improved livestock farming practices.

Improved livestock Farming practices practiced by the pastoral communities in Kajiado

Table 3: Farming practices

Farming practices	Frequency	Percentage %
Artificial insemination (AI)	4	23.5
Supplementary feeding	3	17.6
Acquisition of better breed	1	5.9
Vaccination	3	17.6
Fattening of animals	6	35.3

Source; Author 2019

Artificial insemination (AI), supplementary feeding, acquisition of better breed, vaccination and fattening of animals are among the improved livestock farming practices in Kajiado County as depicted in Table 3.

Seventy three (73.3%) of the study respondents strongly agreed that value added livestock products fetch higher prices compared to raw products as shown in Table 4.8. Majority (87.7%) of the respondents also strongly agreed with the statement that being member of relevant cooperative helps in adoption of improved livestock farming practices. Further, most (52.2%) of the study participants strongly agreed that value-added products can help open up new markets.

Table 4: Improved livestock farming practices

Statement	Strongly agree	Agree	Not sure
Value added livestock products fetch higher prices compared to raw products	66 (73.3%)	20(22.2 %)	4(4.5%)
Being member of relevant cooperative helps in adoption of improved livestock farming practices	79 (87.7%)	11 (%)	0(%)
Value-added products can help open up new markets	47(52.2 %)	30(33.3 %)	13(14.5 %)

Source; Author 2019

Challenges in adoption of improved livestock farming practices

Lack of capital, poor infrastructure, lack of awareness or lack of technical expertise are among the challenges that farmers identified as hindering adoption of improved livestock farming practices. This indicates that there is need for the relevant government agencies to these gaps with regard to adoption of improved livestock farming practices in the study area as shown in Table 4.9. The study by Milcah and Adijah (2000) indicated that inadequate capital and relevant knowledge were among constraints experienced by dairy farmers in adoption of improved farming practices. This is consistent with findings of this study. Also, the study by Lambert (2000) indicated lack of finances as a major hindrance to adoption of improved farming practices.

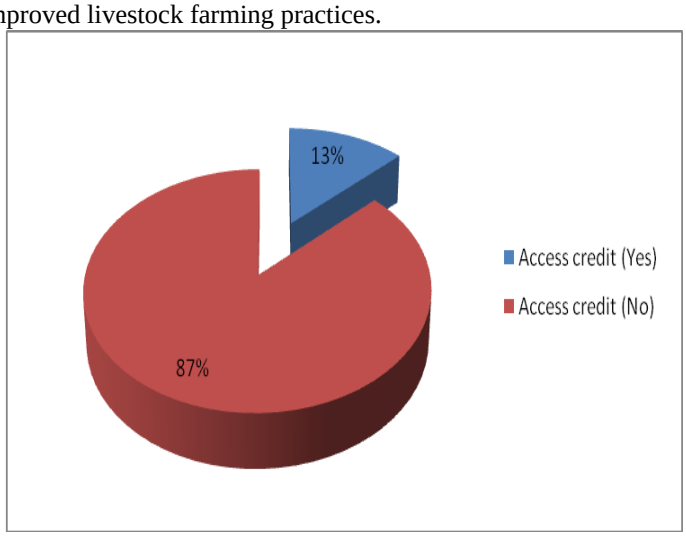
Table 5: Challenges in adoption of improved livestock farming practices

Reasons	Frequency	Percentage
Lack of capital	72	80.0%
Lack of necessary knowledge	53	58.8%
Poor infrastructure	11	12.2
Lack of awareness	42	46.7
Lack of technical expertise	66	73.3

Source: Author 2019

Access to Financial services

The study sought to determine whether the study participants had access to credit to enhance adoption of improved livestock farming practices. Majority (87%) had no access to credit while only 13% of the respondents could access credit Figure 4.2. This implies that failure to access credit could contribute to difficulties faced in carrying out improved livestock farming practices.



Source; Author 2019

Figure 2: Access to credit

Table 6 indicates that 63.3% of the respondents strongly agreed with the statement that access to credit is essential for adoption of improved livestock farming practices 14.4% were not sure of the statement. Additionally the table shows that 31.1% of the respondents strongly agreed with the statement that making credit accessible to pastoralists will enable them to acquire appropriate improved livestock farming practices technology, 52.2% agreed, 14.4% were not sure while 2.2% disagreed with the statement. Most 55.0% of the respondents indicated that they strongly agree with the statement that being member of relevant cooperative helps in improved livestock farming practices, 43.0% agreed while 2.0% were not sure of the statement.

Table 6: Financial services and adoption of improved livestock farming practices

Statement	Strongly agree	Agree	Not sure	Disagree
Access to credit is essential for adoption of improved livestock farming practices	63.3%	22.2 %	14.4%	0.0%
Making credit accessible to pastoralists will enable them to adopt improved livestock farming practices	31.1%	52.2 %	14.4%	2.2%
Being member of relevant cooperative helps in adoption of improved livestock farming practices	55.0%	43.0 %	2.0%	0.0%

Source; Author 2019

Table 6 provides the regression coefficient (B), the Wald statistics that test statistical significance and Odds Ratio for each

variable (independent variable.

Table 7: Variables in the equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Access _credit	-.041	.834	.002	1	.960	.959	.187	4.921
	Training	.526	.871	.364	1	.546	1.691	.307	9.327
	Access to Market information	2.312	1.267	3.331	1	.068	10.096	.843	120.923
	Constant	-3.973	3.571	1.238	1	.266	.019		

a. Variable(s) entered on step 1: Access credit, Training, Access to market information.

Source; Author 2019

The confidence interval associated with the Odds Ratio for having access to credit (0.959) is greater than 1.0 (.187,4.921). This implies that there is a non-significant association between access to credit and adoption of improved livestock farming practices among pastoral communities in Kajiado. The *p*-value associated with this variable is greater than .05.

The odds ratio for having access to credit is 0.959 which is <1. These findings are inconsistent with the study by Milcah and Adijah (2000) that indicated a significant association between access to credit, household income and adoption of improved farming practices.

Training on improved livestock farming practices

The study further sought to determine whether the respondents had any formal training on livestock farming practices.

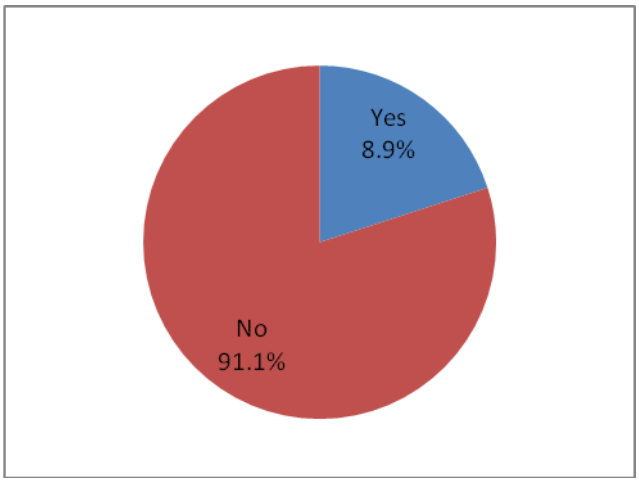


Figure 3: Had formal training on improved livestock farming practices

Source; Author 2019

Figure 3 indicate that a small percentage (8.9%) of farmers indicated that they have had some training on livestock keeping, while 91.1% of the study participants had no formal training on livestock improved livestock farming practices. This implies that although the respondents were aware that value added products fetched high prices compared to the raw products, lack of formal training could be a hindrance to practicing various improved livestock farming practices activities. Binary logistic regression analysis showed a non-significant association between training and adoption of improved livestock farming practices among pastoral communities in Kajiado (P> 0.05). The findings are inconsistent with those reported by Shikal et al. (2002) that indicated that majority of the livestock farmers had some level of training on improved livestock farming practices. Their study reported a significant relationship between training and level of adoption of improved livestock farming practices.

Education level of household head

Table 8 shows that 78.9% of the respondents were of the opinion that education level of household head significantly influences adoption of improved livestock farming practices. Also 65.6% of the study participants indicated that pastoralists who are trained on improved livestock farming practices are more likely to add value on livestock products compared to the untrained. This finding agrees with the study by Han and Olive (2010) that indicated that household head that were educated were more likely to engage in improved livestock farming practices than uneducated household heads.

Table 8: Education level of household head

Statement	Yes	No
Education level of household head significantly influence adoption of improved livestock farming practices	78.9 %	21.1%
Pastoralists who are trained on improved livestock farming practices are more likely to add value on livestock products compared to the untrained	65.6 %	34.4%

Source; Author 2019

Market Information

The study sought to determine whether market information

was cheaply accessible to the respondents. With this regard, the results of this study showed that 97% of the study respondents had no access to market information and only 3% had access to market information. This indicates that most of them could not adopt improved livestock farming practices since they did not know what value to add for what good as depicted in Table 4.13.The table further indicates that 67.4% of the study participant disagreed that market price of value added products is available to them, 19.1% strongly disagreed, 12.4% agreed and 1.1% strongly agreed with the statement. Majority (66.7%) only agreed with the statement that knowing the market price of value added products influence their decision to participate in improved livestock farming practices, 23.3% strongly agreed while 10.0% disagreed with the statement. Also 68.9% of the respondents strongly agreed with the statement that lack of market information expose farmers to exploitation by brokers, 30.0% agreed while 1.1% was not sure.

Table 9: Market information and improved livestock farming practices

Statement	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
Market price of value added products is available to you	1.1%	12.4%	0.0 %	67.4%	19.1%
Knowing the market price of value added products influence your decision to participate in improved livestock farming practices	2.33%	66.7%	0.0 %	10.0%	0.0%
Lack of market information expose farmers to exploitation by brokers	68.9%	30.0%	1.1 %	0.0%	0.0%

Source; Author 2019

Among those who engaged in livestock improvement practices, the majority of the respondents at 70.0% engaged in improved livestock farming practices due to the high profits attracted while 30.0% of the respondents practice improved livestock farming practices because of the high prices they expected to fetch.

The study sought to determine how much variation in adoption of improved livestock farming practices could be explained by access market information. The Odds Ratio for having access to market information is 10.096 (>1) with a P value of 0.068. This implies that there is no significant association between access to market information and adoption of improved livestock farming practices among pastoral communities in Kajiado. These findings are in agreement with findings of Lambert (2000) that showed access to market information to have insignificant impact on uptake of Value-added Production on Cow-Calf Farms. In contrast, Haugh (2003) indicated that availability and access to market information had significant impact on the adoption of improved livestock production practices.

Table 10: Goodness-of-fit test

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.046	1	.829

Source; Author 2019

Table 10 indicates the goodness-of-fit test applied to evaluate whether the measured data fit well with the models. The test was applied based on the "Hosmer–Lemeshow goodness-of-fit" statistic. The table indicates that the model is a good fit to the data as $p=0.829$ ($>.05$) means that the set of independent variables under study will accurately predict the probability of dependent variables being studied.

V. Conclusion

Regarding the adoption of improved livestock farming practices, the study found that only 18% of the respondents were engaged in the practices. Therefore, the study concludes that practicing of improved livestock farming practices in Kajiado County is currently limited.

It was found that that only a small percentage (18.8 %) of the respondents were engaged in modern livestock improvement practices, namely artificial insemination, supplementary feeding, breeds improvement, vaccination and fattening animals for slaughter. The results of the study showed that 7% of the variation in adoption of improved livestock farming practices for livestock could be attributed to the factors postulated in the study, i.e. access to credit, training and access to marketing information. The study also found that adoption of improved livestock farming practices in Kajiado was not significantly affected by access to credit, training as well as access to market information.

Artificial insemination (AI), supplementary feeding, acquisition of better breed, vaccination and fattening of animals are among the improved livestock farming practices in Kajiado County.

97% of the study respondents had no access to market information and only 3% had access to market information. This indicates that most of them could not adopt improved livestock farming practices since they did not know what value to add for what good.

65.6% of the study participants indicated that pastoralists who are trained on improved livestock farming practices are more likely to add value on livestock products compared to the untrained.

63.3% of the respondents strongly agreed with the statement that access to credit is essential for adoption of improved livestock farming practices 14.4% were not sure of the statement.

Regarding the factors that affect improved livestock farming practices, the study found that, adoption of the practices in Kajiado is not significantly affected by access to credit, training as well as access to market information. In this regard, the study concludes that there are important factors that drive the adoption of improved livestock farming

practices among the pastoralists. The study also concludes that constraints in credit, lack of capital, lack of awareness lack of technical expertise lack of necessary knowledge and poor infrastructure lower the ability of the pastoralists to successfully engage in improved livestock farming practices for their livestock products.

In conclusion, greater adoption of improved livestock farming practices would require a shift from traditional pastoralism as the main livestock management method to modern and improved practices.

VI. Recommendation

The study made the following recommendations;

1. The study recommends that pastoralists shift from traditional livestock farming practices and shift to modern practices that will ensure food and feed security as well as improved livelihoods.
2. The study therefore recommends that the County government of Kajiado, increases training of pastoralist to join Cooperative societies which are good platforms for training and increase for ability to access credit with Commercial banks.
3. The Kenyan government should improve livestock policy to protect the livestock market from infiltration by imports of livestock products which can be produced from within the country.
4. The Kenyan government should also improve the infrastructure of livestock processing factories, like the Kenya Meat Commission, Dairy industry, Hides and skins industries.
5. Both the National and County governments should also work towards improvement of Water electricity and roads infrastructure in the livestock farming areas to help this farmers easily adopt modern practices.
6. The study recommends that more detailed research should be done to identify the factors that influence the adoption of improved livestock farming practices among the pastoral communities. This will enable the pastoralist to make informed choices regarding improved livestock farming practices.

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