Cattle Rustling and its Effects on South Sudanese Communities

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Abstract (Academic)

This exploratory mixed method study on "Cattle Rustling and its Effect on South Sudanese Communities" was carried out in the five South Sudanese states of Unity, Lake, Warrap, Jonglei, and Central Equatoria.

The study commenced with the qualitative phase with the specific objectives of: determining the cause of cattle rustling; defining the perception of cattle keepers, farmers, chiefs, youth, and women about cattle rustling; evaluating the effect of cattle rustling; and drawing possible mitigating strategies.

After targeting 30 interviewees and corroborating their testimonies with observations, the study revealed that cattle rustling has existed for years among the tribes; however, the phenomena has shifted now to the community level with the usage of sophisticated automatic weaponry. The thematic analysis found expensive marriage/remarriage, revenge, pride, accumulation of wealth (resources), poverty, joblessness, and trade in livestock to be the major causes of rustling. It also underscores that during the process; properties are damaged and many innocent lives are lost.

The survey questionnaire from the initial phase developed the following quantitative phase of the research with the purpose of corroborating, expanding, and triangulating the preliminary phase keeping in mind the following specific objectives: description of the respondents; determination of the cattle rusting attitudes, norms, control, intention; and explanation of cattle rustling intention with demographic and the other constructs.

The primary data obtained from the stratified clustered 544 respondents revealed that attitude, norms, and control significantly explained cattle rustling intention; 22.6% [$F(532) = 154.050$, $p<.05$], 31.8% [$F(531)= 72.571$, $p<.05$], and (34.9.0%) [$F(530)= 25.983$, $p<.05$],

respectively, and the three constructs significantly contributed to the perception and cause of rustling. As a result, there was strong and significant ($p<.05$) correlation between intention with attitudes, norms, and control ($r=.476^{**}$, $.489^{**}$ and $.505^{**}$), respectively. However, literacy and gender correlates with intention ($r=-.100^{*}$, $p<.05$ and $=-.001$, $p>.05$), respectively. On the other hand, norms correlates with attitude ($r=.469^{**}$, $p<.05$), and control correlates significantly with attitude and norms ($r=.553^{**}$ and $.572^{**}$, $p<.05$) respectively.

In conclusion, the analysis revealed that cattle rustling is caused by the salient beliefs that accounted for ($R^2=35.7\%$, $F(530)=25.983$, $p<.05$) of the variables in cattle rustling intention, and as remedies, the study suggested the establishment of agricultural extension, educational services especially for women and youth, empowerment of chiefs, comprehensive disarmament, among others before cattle rustling activities escalate.

Abstract (Public)

This exploratory mixed method study on "Cattle Rustling and its Effect on South Sudanese Communities" was carried out in the five South Sudanese states of Unity, Lake, Warrap, Jonglei, and Central Equatoria.

The study started with the qualitative phase with the specific objectives of: determining the cause of cattle rustling; defining the perception of cattle keepers, farmers, chiefs, youth, and women about cattle rustling; evaluating the effect of cattle rustling; and devising potential mitigating strategies.

After targeting 30 interviewees and comparing their testimonies with observations, the study found that, cattle rustling has existed for years among the tribes; however, the phenomena has shifted now to the community level with the usage of sophisticated automatic weaponry. The study further found that, expensive marriage/remarriage, revenge, pride, accumulation of wealth, poverty, joblessness, and trade in livestock to be the major causes of rustling. It also underscores that during the process; properties are damaged and many innocent lives are lost.

The survey questionnaire from the qualitative phase developed the following quantitative phase with the purpose of confirming, expanding, and comparing the initial phase keeping in mind the following specific objectives: description of the respondents; determination of the cattle rusting attitudes, norms, control, intention; and explanation of cattle rustling intention with demographic and the attitude, norms and cattle rustling control.

The primary data obtained from the geographical classified 544 respondents revealed that age, gender, literacy, attitude, norms, and cattle rustling control significantly explained cattle rustling intention by 35.7%.

The result found there was strong and significant correlation between intention with attitudes, norms, control and literacy. Meanwhile, norms correlates with attitude, and control correlates significantly with attitude and norms.

In conclusion, the analysis revealed that cattle rustling is caused by the age, gender, literacy, attitude norm and cattle rustling control that dictates on cattle rustling intention, and as remedies, the study suggested the formation of agricultural extension, educational services especially for women and youth, empowerment of chiefs, and comprehensive disarmament.

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Chapter 1

Introduction

South Sudan came into existence as an independent and sovereign country on the heels of two long and taxing liberation struggles that caused the deaths of nearly 2.5 million people. The struggle that culminated in her independence is officially recognized as a journey of nearly two hundred years. South Sudan state "medals" now carry a historical timeline running from 1821, when Muhammad Ali, the Ottoman Sultan's Viceroy in Egypt sent an expedition to invade Sudan in search of slaves, ivory, and resources to July 9th 2011, the year South Sudan gained independence from the northern state of Sudan (Johnson, 2010 and Embassy of South Sudan, 2011).

The Republic of South Sudan is located at the centre of Sub-Saharan Africa, bordering Ethiopia in the East, Kenya, and Uganda in the south and the Democratic Republic of Congo in the South West and Central African Republic in the West and the Republic of Sudan in the North. South Sudan has the population of eight million according to the disputed census of 2008 and an area of 619, 745 km^2 (SPFGOSS, 2010).

According to the World Bank (2016), South Sudan has a vast and largely untapped natural resources, despite a few oil enclaves, it remains relatively undeveloped, characterized by a subsistence economy. The country is the most oil-dependent country in the world, with oil accounting for almost the entire of exports, and around 60% of its gross domestic product (GDP). Thus, the country's growth domestic product (GDP) per capita in 2014 was $1,111. Apart from the oil sector, incomes are concentrated in low productive, unpaid agriculture and pastoralists work which amounted to nearly 15% of GDP, since about 85% of the working

population is engaged in non-wage work, chiefly in subsistence agriculture activities and livestock rearing.

South Sudan has impressive livestock resources estimated at about 11.7 million heads of cattle, 12.4 million heads of goats and 12.1 million heads of sheep ranking South Sudan as the sixth in Africa. More than 85% of all households in South Sudan are livestock keepers. Livestock snapshot estimated that, 950,000 livestock keepers are engaging in pastoralism and agro-pastoralism (FAO, 2012). Despite this huge number of livestock in the country, livestock rearing and farming communities are faced by persistent cattle rustling (Jackson, 2011).

Cattle rustling practices by the pastoral tribes in South Sudan, like many other tribes in Africa have historically competed over resources and engaged in cattle rustling activities that often triggered cycles of inter-tribal violence. For centuries, cattle raiding has been a problem among pastoralist communities in South Sudan. Decades of conflict have made rustling even more dangerous, with young raiders using automatic guns and machetes. Local organizations say more than 5,000 civilians have been killed in cattle raids since South Sudan gained its independence in 2011 (Aldehaib, 2017).

Even before independence South Sudan has long faced outbreaks of violence related to the historical practice of cattle rustling. These conflicts have become more violent due both to the widespread availability of small arms and the relative weakness of the national army (Mampilly, 2012).

The pastoral communities– Dinka, Nuer, and Mundari – have historically engaged in periodic violence and raids against one another, mainly for the purpose of cattle theft and the establishment of raiders' dominance, wealth accumulation, social status, and retribution for previous attacks. However, the nature, frequency and intensity of such violence have shifted in

recent decades, and are continuing to evolve as new influences and conflict drivers are emerging from the civil wars (Gordon, 2014).

An Overall Problem Statement

Cattle rustling is an old norms of the 19th century in some part of the world, but in South Sudan it is a grave problem where automatic weaponry are utilized with high death counts as Kircher (2013) cited; South Sudanese officials have pointed to cattle rustling as the key cause of insecurity and called for help from state governments and a change in the South Sudanese mindset to help to fight the problem.

Motivations for rustling generally is very high due to the desire to steal cattle for expanding herds and amassing wealth. Cattle are used for prestige, bride price payments and business. Since the culprits (rustlers) are not brought to book, rustling also may be triggered by retaliation to replenish stock losses leading to loss of life and destruction of economic assets.

Colluding of some government officials and army officers in cattle farming made the situation even gloomy since they supplies and arms their cattle camps at will from the national reserves. Thus, making it difficult for the traditional customary laws to contain cattle rustling.

Secondly, the civil war and political mobilization along tribal line deepened the divisions between tribes and caused more harm and violence (Aldehaib, 2017). Thus, South Sudanese will face pockets of insecurity and frequent phenomenon of pervasive cattle raids (Marcellino *et al*., 2016).

Finally, the phenomena of rustling has greatly changed; from using spears, clubs and local arsenal to sophisticated weaponry involving machine guns such as AK-47 assaults rifles and others leading to high loss of innocent lives and destruction of properties. According to

Musinga *et al.,* 2010 and Jackson (2011) about thousands of cattle are stolen a year, costing farmers millions South Sudanese pounds in lost revenue.

Fueling raiding is the high demands for cattle for marriages and other social activities, for instant a cow can fetch between 400 and 500 pounds ($150-190) (Jackson, 2011).

Purposes and Objectives

Thus, this exploratory mixed method commenced with primary data collection for qualitative phase with the following specific research questions:

1) What are the causes of cattle rustling in South Sudan?
2) What are the perceptions of government officials, cattle keepers, farmers, chiefs, youth, and women about cattle rustling?
3) What are the effects of cattle rustling in rural South Sudanese communities? and
4) Given the cause of cattle rustling, perceptions of the communities and effect of cattle rustling what are the possible strategies for mitigating cattle rustling?

The study concluded with quantitative phase with the purposes of assessing the causes of cattle rustling, the perception of the people in communities effected by cattle rustling, the effect of rustling on people and communities and based on those findings to propose possible paths forward to mitigate cattle rustling in South Sudan. The specific objectives are to:

1- describe the participants of the study,
2- determine the participants attitude toward cattle rusting,
3- determine the cultural norms of cattle rustling,
4- determine the levels of control participants have related to cattle rustling,
5- determine the levels of behavioral intention toward cattle raiding, and
6- explain the dependent variable of cattle rustling intention with independent

variables of demographics, attitude, norms and control.

At the end there is a comprehensive summary compilation corroborating, nesting and mixing of the two findings together to deepened and enrich the understanding about cattle rustling practices in South Sudan.

Limitations

The study used primary data from interviews for extracting information from the stratified and clustered 30 participants from the five states may represent view of the interviewees. The translation of the interview protocol may have some errors.

It is worth to mention that, the study has not covered the research sites extensively due to insecurity as a result of the ongoing war this has been the case for the two phases. However, for the quantitative phase, constant electricity and efficient internet were issues that hindered the research since part of the study was conducted on line making it difficult for recruiting individuals who lack the services.

The instrument used for the quantitative study needs improvement so that it can yield a better Cronbach alpha for the reliability of the constructs.

Basic Assumption

The exploratory mixed method study is expected to shed light and expose stories, and live experience of the pastoral and farming communities about cattle rusting activities in their respective states.

Additionally, the research is expected to expand, enrich and strengthen the work of both phases and collect recommendations and advices for drawing mitigation tools of cattle rustling activities.

Significance

This exploratory mixed method study is very vital due to the facts that, cattle rustling is a thorny and sensitive issue in some parts of South Sudan due to their multiple usage and the livelihood of some communities primarily depend on it.

Therefore, since rustling is posing life threatening uncertainty to the livestock keeping as well as to other communities. It is paramount to hear the stories qualitatively as well as the quantitatively so that substantial and comprehensive conclusions can be reached for drawing mitigation strategies.

The rational for using exploratory sequential mixed method are that, both qualitative and quantitative methods have inherent biases and limitations. Therefore, using multiple methods is one way to offset that (Greene *et al.,* 1989) and according to Dumbili (2014) mixed methods research is practical in the sense that the researcher is free to use all methods possible to address a research problem. It is also practical because individuals tend to solve problems using numbers and words, combine inductive and deductive thinking, and employ skills in observing people as well as recording behavior.

Furthermore, validity was enhanced allowing greater insight (complexity; richness) to the research question and comprehensiveness (e.g. elaboration and clarification). Mixed-method designs offset the weaknesses of a single method, assisted with sample selection, instrument development, generated and tested a theory or hypothesis in the same study. Additionally the design answered questions about both process and outcomes and pursued contradictions and divergence (Greene, 2006).

In conclusion the design strengthened, supported and enriched the findings during the meta-inference analysis and interpretation of the data as stated by Phelan (1987) that, Mixed

Methods (MM) demonstrates in practical sense the use of both qualitative and quantitative methods to generate better understanding of a study.

Manuscript # 1

Cattle Rustling and its Effect on South Sudanese Communities:

A Literature Review

Abstract

The study about Cattle Rustling and its Effect on South Sudanese Communities was conducted in five South Sudanese state; Unity, Lake, Warrap, Jonglei and Central Equatoria State with the specific objectives explaining; the cause, effect and perception about cattle rustling in addition to finding amicable cattle rustling mitigation strategies.

The literature of the study review resources tracing the origin of rustling in the early 19th century during the colonial regime followed by the Ottoman Sultan's Viceroy in Egypt and the invasion of South Sudan (part of by then Sudan) by the Arabs. The review covered cattle farming, cattle rustling as a problem, significance of rustling to extension services and strategies for its mitigation.

In the potential mitigation strategies, the review highlighted the importance of the role of education and extension education or community-based education in sustainable usage of resources in ameliorating conflicts.

Finally, Theory of Planned Behavior (Fischbein & Ajzen, 2010) was used as the theoretical framework for assessing and explaining the constructs that builds cattle rustling intention/behavior.

Background to Cattle Rustling:

South Sudan came into existence as an independent and sovereign country on the heels of two long and taxing liberation struggles that caused the deaths of nearly 2.5 million people. The struggle that culminated in her independence is officially recognized as a journey of nearly two hundred years. South Sudan state "medals" now carry a historical timeline running from 1821, when Muhammad Ali, the Ottoman Sultan's Viceroy in Egypt sent an expedition to invade Sudan in search of slaves, ivory, and resources to July 9th 2011, the year South Sudan gained independence from the northern state of Sudan (Johnson, 2010 and Embassy of South Sudan, 2011).

South Sudan has an area of 619,745 km^2 (239,285 m^2) (Table 2.1). The country has 10 states with a population of 8.2 million people according to a 2008 disputed population census Table 1) (Vuni, 2009; Marvis, 2009 and SPFGOSS, 2010). It is located at the centre of Sub-Saharan Africa, bordering Ethiopia in the East, Kenya, and Uganda in the south and the Democratic Republic of Congo in the South West and Central African Republic in the West and the Republic of Sudan in the North (SPFGOSS, 2010) (Figure 2.1)

Before South Sudan seceded from the Republic of Sudan, geographically, South Sudan was not part of the Sudan region at all (the Sahel) forming as it does part of Sub-Saharan Africa. In modern terminology, it does, however, include parts of the East Sudanian Savanna. Its inclusion in Sudan is due to the southward expansion of the Ottoman Khedivate of Egypt in the 19th century, and its consequent inclusion in Mahdist Sudan, Anglo-Egyptian Sudan and the Republic of Sudan during 1885 to 2011 (Khapoya, 2012).

South Sudan is mostly inhabited by Nilo-Saharan speaking peoples, with Niger-Congo speaking minorities. Historically, what is now South Sudan was dominated by Central Sudanic speaking peoples, but the presence of Nilotic peoples can be assumed from prehistoric times as well since about the 14th century, following the collapse of the Christian Nubian kingdoms of Makuria and Alodia (Alwa) the Nilotic peoples (Dinka, Nuer and Shilluk) gradually came to dominate the region (Robertshaw, 1987).

Figure 2.1: South Sudan and the neighboring Countries

Source: (SPFGOSS, 2010).

Table 2.1: The 10 States of South Sudan, with the Capital, Population Size, Area Size and Density:

Source: Marvis (2009).

State(s)	Capital	Population	Area (km²)	Density (km²)
Northern Bahr el Ghazal	Aweil	820,834	30,543.30	26.87
Western Bahr el Ghazal	Wau	358,692	91,075.95	3.94
Lakes	Rumbek	782,504	43,595.08	17.95
Warrap	Kuajok	1,044,217	45,567.24	22.92
Western Equatoria	Yambio	658,863	79,342.66	8.30
Central Equatoria	Juba	1,193,130	43,033.00	27.73
Eastern Equatoria	Torit	962,719	73,472.01	13.10
Jonglei	Bor	1,443,500	122,580.83	11.78
Unity	Bentiu	645,465	37,836.39	17.06
Upper Nile	Malakal	1,013,629	77,283.42	13.12

Khapoya (2012) stated that, during the period of the scramble for Africa and resources almost every country in the larger region to varying degrees became part of a European colonial empire. Between the 19th and 20th century, East Africa region where South Sudan falls became a theatre of competition between the major imperialistic European nations of the time for resources. Thus, it was around the nineteenth century cattle raiding started during the colonial and armed congest era between the colonists and the Arabs on one hand and the Dinka, Shilliuk, Nuer, Shilliuk, Nuer, Toposa, Didinga, Boya and other tribes on the other hand (Holt & Daly, 1988). The colonialist authorities created tribes, war between ethnic groups, etc. so as to get resources at either a cheap labor or for free (Cabral, 2009).

Despite (Burton 1978) claimed that, throughout their period of British tenure in the Sudan, an orderly system of administration evaded the British. An evident is at late 1943, thirty-nine people died in the course of a cattle raid led by the Ceic Dinka against the Apak section of the Atuot Dinka.

According to Musinga *et al.* (2010) before and after the independent of South Sudan from the Sudan the threat of cattle-raiding feuds between rival ethnic groups, sometimes leading to hundreds of casualties and many displacements has become so frequent events. As Jackson, (2011) documented that thousands of cattle are stolen a year, costing farmers 200 million South Sudanese pounds in lost revenue, according to a 2010 study carried out by SNV, a non-profit organization for the Ministry of Animal Resources and Fisheries. In 2009, about 2,500 people were killed in cattle raids, the study estimated.

According to Baxton "a person stripped of stock is stripped of the most active social relationship and thereby of selfhood and self-respect; so it is no wonder that almost every one strives to keep some livestock and those fortunate few who have incomes from trade and regular employment continue to invest in stock" (Markakis, 1993). Thus (Ocan 1994c) cited that, the adoption of transhumance entailed the development of hostilities among the various groups over grazing grounds. Moreover, the loss of animals during droughts provided a justification for raiding to restock the herds. In that connection, the immediate response to stock shortages was to turn against another community and deplete its resources in order to replenish any losses.

The phenomena of raiding has also greatly changed; from using spears, clubs and local arsenal to sophisticated weaponry involving machine guns like AK-47 assaults rifles and others leading into the loss of innocent lives and destruction of properties.

Agricultural Production and Pastoral Conflict:

Arid and semi-arid Africa represent up to 60% of Africa's total land mass, contain about 60% of all ruminant livestock (Scoones, 1995 and Helland, 1990). Indeed one-half of the world's pastoral communities lives in Africa; African harbor thirteen million pastoralists and nine million agro-pastoral communities keeping livestock and practicing agriculture (Galaty & Johnson 1990) thus, there are prime ground for finding both new pastures and for expanding crop cultivation (Bernus, 1974). Indeed, many semi-arid regions of Africa have experienced a consistent and persistent expansion of cultivated land over the past twenty years (Bennett, 1991).

When there are multiple users who can exert a claim on a natural resource, management of the resource will almost inevitably require addressing conflicts arising from these multiple claims. Community management of natural resources does offer promise, but must explicitly consider the linkages between community management, environmental management, and conflict management (Haro *et al.,* 2005).

However, most of the recent studies suggests that, the 'increasing conflict' between pastoralists and farmers in semi-arid Africa is due to two factors: Changing patterns of natural resource use, increasing competition for the resources and the breakdown of traditional administration governing sustainable natural resource management and conflict resolution. These arguments have been used to support assertions that development strategies need to be changed to address and ameliorate violent conflict directly, and recommended policies and laws have included the establishment of grazing reserves/pastoral areas, a pivotal role for active pastoral associations and wide-ranging land tenure reforms (Scoones, 1995; and Vedeld, 1994).

Toulmin (1983b) presented an image of competitive demand for pastoral resources in contemporary semi-arid Africa as originating from three classes of users: farmers, other pastoral

groups and new livestock owners. She stated that, there has been an increase in competition between pastoral groups and farmers owing to factors such as the encroachment of agriculture or pastoralists' and lack of influence on the decision making administration of the post-colonial state. However, the level of competition depends on seasonal and regional factors. For instant, there is more competition in the cultivation season and less during the dry season, when it is to the advantage of both parties that livestock graze on post-harvest stubble so that fields are manured. Competition among herders for access to the stubble may of course be intense and there is also competition among herders and farmers and between herding groups for permanent water resources and grazing pasture.

On the other hand, Gallais (1975) noted, farmers and pastoralists have always moved between co-operation, competition, and conflict in his studies of relations between farming and herding communities in Mali, as the essence of the traditional Sahelian condition. He revealed that herders and farmers retain their distinctive identities and compete for limited natural resources, but mutually rely on each other for the provision of essential services and products. This co-existence results in close socio-political relations between the two communities.

Nevertheless, conflict over natural resources is noted to be a chronic problem in many countries by Adams & Bradbury (1995) who found that, close social and economic relations between herders and farmers have also been historically present: Distrust and dislike are as much part of their relationship as mutual appreciation and cooperation.

However, the notion that conflict between herders and farmers is increasing is by no means new, and the literature contains many claims of increasing herder-herder and farmer-herder conflict, especially in relation to increasing populations, competition for natural resources, and changing development policies (Hussein *et al.,* 1999).

Furthermore, Akyeampong (2006) documented that, the evolution of political violence among herders and farmers in the Western Sahel from 1600 to 1850, and exposed that, there was a trend of increasing violence over this period. 'White' warriors (pastoralists from the northern Sahel) are shown to have continually raided 'black' agricultural communities to the south. He suggests that the fundamental cause of such violence was competition over scarce natural resources in a gradually shrinking environment which he argues has continued to the present day.

In related development Harshbarger (1995) used a "state-society" approach to analyses conflict between Meta and Aghem farmers and Fulani pastoralists in the North-West Province of Cameroon. She cited increased incidents of individual farmer-pastoralist trespassing disputes to support her conclusion that conflict has increased. While litigation against pastoralist seems to have increased, she also describes three major violent clashes between these groups in 1973, 1981 and 1991, and suggests that the ultimate cause was the failure of the state to mediate impartially between pastoralists and farmers due to its collusion and conflicts of interests with pastoralist groups to occupy farm land close to villages. This resulted in a loss of state legitimacy, and led to farmers taking more violent action themselves against pastoralists.

On contrary Hussein *et al*. (1999) in north Cameroon shows that pastoralists feel increasingly threatened by farmers' intent on expanding cultivation and encroaching on traditional transhumance routes. They perceive farmers to be in close allegiance with the state, giving them a sense of powerlessness. They further revealed that, one nomadic Bororo pastoralist protested that farmers rejected to understand that land could be reserved for the use of animals, thinking that farming can be carried out anywhere and to make matter worse when problem has happened the government will only listen to the view of farmers as such conflict has further

increased in the West African Sahel because of government policies to expand agriculture production, which lead to farmers encroaching on grazing lands.

Meanwhile, in the horn of Africa, Ayele (1986) claimed that, violence between Issa and Afar herders in northern Ethiopia has increased over time because of population pressures and competition over increasingly scarce and depleting resources, but provides no time series data to support her claim. Also in Southwestern highlands of Uganda more than 74% of households were affected by conflicts arising from animals grazing on field crops. This type of conflict is more pronounced shortly after the planting season when livestock graze on young plants and trees. Most communal grazing lands have been turned into individual properties and farmland, leaving pastoralists with limited resources for grazing their animals (Sanginga *et al.,* 2007).

In related development GoK (2008) exposed that, in Laikpipia County (Kenya) in the more recent past there has been a prevalence of conflict between farmers, pastoralists, large scale and ranchers which has reached violent levels.

In conclusion, Sanginga *et al.* (2007) suggested that social capital, defined as shared norms, trust, and the horizontal and vertical social networks that facilitate coordination and cooperation for mutually beneficial collective action is seen as an important tool upon which people rely to manage natural resources and resolve conflicts.

Cattle Farming in South Sudan:

Republic of South Sudan has impressive livestock resources estimated at about 11.7 million heads of cattle, 12.4 million heads of goats and 12.1 million heads of sheep ranking South Sudan as the sixth in Africa. More than 85% of all households in South Sudan are livestock producers/keepers. Livestock snapshot estimated that, 950,000 livestock keepers are engaging in pastoralism and agro-pastoralism (FAO, 2012). As shown in Table 2.2 the estimated

livestock population by state; there are almost 12 million cattle, 14 million goats and 13 million sheep in the country. This population is equivalent to about 2.6 animals per hectare of grassland in South Sudan as a whole and 1 animal per hectare of grassland and savannah. These population densities per hectare are relatively high (Anon, 2012 and FAO, 2013).

Table 2.2: State Distribution of Livestock in South Sudan (In thousands)

State	Cattle	Goats	Sheep	Total	
Upper Nile	990	651	447 2	2,088	5.4
Unity	1,189	1,511	1,784	4,484	11.7
Jonglei	1,475	1,423	1,227	4,126	10.7
Northern Bahr El Ghazal	1,590	1,306	1,658	4,554	11.9
Western Bahr El Ghazal	1,256	1,184	1,139	3,579	9.3
Lakes	1,320	1,252	1,489	4,061	10.6
Warrap	1,539	3,131	1,392	6,061	15.8
Central Equatoria	883	1,286	1,173	3,342	8.7
Eastern Equatoria	895	1,042	1,152	3,088	8.0
Western Equatoria	680	1,189	1,152	3,020	7.9
Total	**11,816**	**13,974**	**12,612**	**38,402**	**100.0**

Source: (FAO Statistic Year Book, 2013)

Livestock production represents a significant proportion of agricultural activity in South Sudan. The main products are meat, dairy products, hides and skin and eggs. Livestock production especially cattle is undertaken in the more arid and semi-arid zones such as East Equatoria. Livestock systems are either nomadic pastoralist (practicing extensive system) or mixed crop livestock systems (transhumant system) and are a major source of livelihoods, especially in the floodplains and the semi-arid pastoral areas (FAO, 2013).

Despite this enormous livestock wealth, vast rangelands and water resources South Sudan continues to import most of its milk and meat from neighboring countries, losing hundreds of millions of dollars every year without exports in return and the cattle of South Sudan are categorized to be beef breeds (Anon, 2012). Anon further stated that, there are communities where pastoralists won't even contemplate slaughtering one of their cows for meat. So the country further imports cattle mainly from neighboring Uganda which is then slaughtered for meat he further revealed. According to him, in many South Sudanese communities cows are mostly used to pay a bride wealth or dowry, livestock are sign of identity or status and are used as compensation in cases of murder or adultery and cattle herders are proud of the quantity rather than the quality of the cattle they keep.

Cattle Rustling as a Problem in South Sudan

Conflict refers to an incompatibility involving issues, parties, processes and outcomes which is not necessarily a negative condition as peaceful conflict can drive processes of change (Daniels & Walker, 2012 and Barnett, 2001). *Despite the existence of institutions designed to promote peace, unity and harmony,* interactions between individuals and groups sometimes lead to conflict. When such conflict becomes violent, it can have dramatic consequences on human well-being. *Thus, understanding the causes of conflict is a major project in the social sciences and researchers in anthropology,* archaeology, criminology, *economics, geography, history, political science, psychology, and sociology have long debated the extent to which unsustainably natural resources management exacerbated by climatic changes are responsible for the conflicts (*Hsiang *et al.,* 2013).

Currently, tribal conflicts and cattle raids are very common in South Sudan, often leading to violence, unnecessary death of herdsmen and cattle rustlers (Musinga *et al.,* 2010). About

350,000 cattle are stolen a year, costing farmers 200 million South Sudanese pounds in lost revenue and 2,500 people were killed in cattle raids, the study estimated (Musinga *et al.,* 2010 and Jackson, 2011). These dynamics according to Schilling *et al.* (2012) are seriously undermining social stability, including areas of the country less affected by the wider political conflict that began in December 2013. The insecurity does not only interrupt education; it also poses an obstacle for development.

Due to less attention been paid to the country's instability and frequent intertribal clashes especially in Jonglei State, frequent clashes between the two ethnic groups; the Dinka, Lou Nuer and the Murle have been observed. The conflicts occurred when one ethnic group entered territories of others to compete over scarce resources such as water and pasture (Tom, 2011).

Tom further emphasized that, cattle raiding has become endemic in Lake, Jonglei, Warrap, and Central Equatoria State resulting into the loss of innocent people including government soldiers when the security forces clashes with cattle rustlers who are armed with automatic guns echoing the more less similar study by Kratli & Swift (1999) that, the increase in demand for automatic weapons in fact is matched by an increase in supply of livestock as payment for the weapons and has become an increasingly important income generating activity for some pastoral groups.

This situation is increasingly frequent and more severe due to droughts in arid and semi-arid lands that provokes migrations, which places additional stress on already stressed social and political systems (IPCC, 2001).

Additionally, the depletion and degradation of natural resources increases the probability of violence between competing pastoral groups (Homer-Dixon, 1994), resulting in raiding according to Hendrickson *et al.* (1996) to rebuild herds after livestock have been killed by

drought or seized in raids and its incident is thus often link to worsening climatic conditions and the prevailing state of the tribal peace. For example, in Kenya, the Turkana, Masia and Pokot pastoralist communities have used raiding and violence to restock herds, expand grazing lands, gain access to water and pasture resources for more than 9,000 years (Moru, 2010).

Furthermore, in East Africa, Schilling *et al.* (2012) documented that, the strongest motives for raiding were drought and poverty on the Turkana side. Meanwhile expansion of territory is the strongest motives for the Pokot pastoralists.

Tribal conflicts and cattle raids are not uncommon in South Sudan, the increased movement of livestock along unusual migratory routes in order to flee or avoid violence, particularly agricultural areas has created tensions with farming communities, often leading to violence and unnecessary death of herdsmen and cattle rustlers (Sudan Tribune, 2015).

Fueling raiding is the high demands for cattle, for instant a cow can fetch between 400 and 500 pounds ($150-190) (Jackson, 2011). He further cited that an educated wife in cattle-herding Mundari tribe in South Sudan costs 50 cows, 60 goats and 30,000 Sudanese pounds ($12,000) in cash. At that price, some men who otherwise can't afford a bride turn to stealing livestock in order to pay the bride price, gain social status and identity. A surge in bride price has further escalates cattle raids in which more than 2,000 people are killed each year. Bride prices have surged 44 percent since 2005, when a U.S.-brokered peace accord came into force, and currently half of the male population in rural areas can't afford a bride.

Contrary, the impact of global climate change on people's lifestyle has been recognized as an accelerator of environmental conflict refutes the study (Brown *et al.,* 2007). The ethnic groups often gain weapons from the SPLA and the Sudan Armed Force (SAF) who sell their arms to local communities for profit (Yoshida, 2013 and ICG, 2009).

In conclusion, as pastoralism revolves around livestock, the conflicts are predominantly about livestock and its related productive assets - water, land and pasture. These resources closely tie conflicts to the violent theft of livestock, referred to as raiding/rustling, which is both a contributing factor and an articulation of conflict and distrust between communities (Mwangi, 2006) and most studies agreed that, competition and scarcity of resources in the form of water, pasture, land resources and livestock assets play a vital role in the conflicts between pastoral groups, pastoral communities and others communities (Schilling *et al.,* 2012).

The Significance of Cattle Rustling to Extension Services

Cattle rustling is very crucial to extension education due to the facts that educational extensional and agricultural services can't strive effectively in the midst of conflicts, attacks, and counter revenge attacks. Therefore, a thriving agriculture sector is crucial to long-term peace and development in South Sudan since up to 95 percent of the country's population depends on farming, fishing and herding to meet their food and income needs (FAO, 2012 and FAO, 2013).

As South Sudan is struggling with war, drought, and disease. The rural community faces the threat of cattle-raiding feuds between rival ethnic groups, sometimes leading to hundreds of casualties and many displacements (Musinga *et al.,* 2010). Therefore, the development of the rural area and livestock sector can't flourish and become better without extension services (Jackson, 2011).

Strategy for Mitigating Cattle Rustling

When a government is unable to ensure fair distribution of returns from resources and provide basic public goods such as security, education and health financed through resource revenue, resource abundance stimulates violence, grievances, theft, looting and it may trigger rebellions, or even civil war (Mehlum *et al.,* 2006).

The East African region has suffered large scale intra-state wars that have supplied pastoral groups with modern weapons, resulting to protracted conflicts with their neighbors. The Toposa, Didink and Boya of South Sudan are in conflict with one another or a number of neighboring groups including Turkana, Dassenach, Masai, Pokot and Karamojong (Agbu & Okeke, 2008).

The livelihoods of pastoral people depend on three things: first, access to assets such as land, livestock, pasture, water, animal health services, community networks, markets, credit and education (Majekodunmi *et al.,* 2014).

Therefore, expansion and improvement of education, particularly among the pastoralist groups is necessary as a long term measure of reducing dependence on intensive primary production activities such as pastoralism for livelihood support (Omondi, 2013). He concluded; the next most important suggestion concerned the imperative to raiding is to improve extension services.

Finally, Holloway *et al.* (2008) identified that education and visits by an extension agent had significant and positive effect on quantity of milk marketed in Ethiopian highlands. On the other hands, despite no much research has been conducted in this field; however, from relevant resources many personnel in South Sudan are old and lacks proper training and education (Tom, 2011).

The Role of Extension or Community-based Education in Mitigating Conflicts

According to Anstey (1999) conflict may be defined as existing in a relationship when parties believe that their aspirations cannot be achieved simultaneously, or perceive a divergence in their values, needs or interests and purposefully employ their power in an effort to eliminate, defeat, neutralize or change each other to protect or further their interests in the interaction.

Meanwhile, Means *et al.* (2002) defined conflict as situations involving people or social groups with different interests, mutually antagonist tendencies and opposing influences competing for the use of limited resources to ensure or enhance their livelihoods and their manifestations, dimensions, and level of intensity vary greatly.

Conflict is a normal part of life, particularly during periods of change, and both the process and its outcomes can be positive. However, unresolved conflict destabilizes projects and relationships, and can also result in declining morale, high staff turnovers, reduced local participation, increased operational costs, negative publicity, donor withdrawal and heightened sociopolitical tensions (Warner, 2000). Conflict usually involves an emotional reaction such as fear, anger, sadness, bitterness and/or hopelessness, but it is not always necessary for both parties to experience the reaction or even to be aware of the problem (Mayer, 2000) and according to Warmer (2000) conflict impacts on project activities can be reduced through effective institution capacity building, which can also help mitigate against the often unequal structural relations among the different stakeholders involved in projects through power relation that affects many factors, including structures and institutions in society that have evolved through time and the roles that people assume within their institutions and societies (Coleman, 2000).

Accordingly there may be eight main sources of conflict, many of which could be linked: (1) contestation over scarce or limited resources or (2) ownership; (3) disputes over accountability; (4) struggles over social boundaries or (5) individual or collective identities; (6) deteriorating interpersonal relationships; (7) power struggles among community participants; and (8) structural imbalances between community participants and implementing organizations (Botha *et al.,* 2008).

Nations that are confident that their natural resources are their most imperative asset may inadvertently and perhaps even deliberately, neglect the development of their human resources, by devoting adequate attention and expenditure to education. Furthermore, their natural wealth may blind them to the need for educating their children and communities (Gylfason *et al.,* 1999).

Education is a precondition for rapid economic development around the world. Education encourages economic growth and enhances people's lives through many networks: By increasing the efficiency of the labor force, fostering and strengthening democracy and thus creates better conditions for good governance, by improving health, and enhancing equality among communities (Barro, 1997 and Aghion *et al.,* 1999). Furthermore, agricultural extension education has great potential in promoting peace-building, as extension agents have large networks and can link farmers to experts in various areas such as business or conflict management especially in post-conflict era and they are more reliable stakeholder than the police, military and judiciary institution (Robertson & Olson, 2012).

Additionally, extension agents are also stakeholders within the conflict context and may draw on crisis narratives and counter-narratives to perpetuate their involvement and legitimacy in the management of resources (Roe, 1995). As such the policy environment for natural resource management is changing dramatically from centralized top-down conservation approaches to community-based livelihood approaches, which are increasingly seen as offering pro-poor alternative to resources management and this is spear headed by extension agents (Knox *et al.,* 2002 and Russel & Harshbarger, 2003).

Based on the above mentioned facts about the general role of extension education in mitigating conflicts, the following are specific role of the agent in resolving disputes and conflicts:

Role of Extension Education in Mitigating Environmental Variability and Pastoral Conflict

Pastoral conflict may be manifest precisely in the complex process of interactions within and between sectors, spatial and temporal scales, and human-environment systems (Eakin & Luers, 2006). As such CEWARN (IGAD's Conflict Early Warning and Response Mechanism) monitors (extension agents for that matter) are responsible for providing the main office with timely and consistent information on indicators of pastoral conflict behavior as observed from the field. The monitors completes standardized situation reports on a weekly basis. In addition to these regular situation reports (SitReps), episodic reports of selected incidents, specifically, human deaths, livestock losses and the incidence of organized raids. SitReps monitors documented the incidences and link with preceding SitReps to identify those situational changes that may have led to the incident. These changes can then be monitored to help prevent or mitigate future incidents (Meier *et al.,* 2007).

Extension agents' advocates for processes of conflict management that build on and strengthen the various forms of both indigenous and scientific knowledge, trust and network learning to contribute to more sustainable social change (Hellin, 2012 and Höckert & Ljung, 2013).

Role of Extension Education in Mitigating Scarcity of Water, Land, Pasture and Pastoral Conflict

Turner (2004) suggests that resources such as pasture need to be of sufficient density and persistence to elicit competitive behavior-behavior that has costs and risks. Thus, with indirect measures such as rainfall and forage the longer lags and complex influences may obscure the relationship between environment and pastoral conflicts. In such situation, provision of bore holes and rain water harvesting points for provision of water are paramount and coordinated

plans for grazing routes by the various pastoral groups in coordination with extension agents or monitors mitigates and averts conflicts.

Increasing the level of development as suggested by Kaimba *et al*. (2011) is theoretically a useful instrument to decrease raiding as it provides the youth with opportunities to engage in alternative livelihoods, for example, paid labor, investments in formal education and others. Furthermore Schilling *et al.* (2012) suggested that, any investments in development need to be embedded into a framework of conflict mitigation which offers incentives for both conflict parties to simultaneously leave the violent conflict path and to invest resources into cooperation and collaboration in form of trade and this can be encouraged best by extension agents.

Deutsch (2000b) advocates for the cultivation of win–win attitudes from the outset of conflict and this may involve external mediators (extension agents) who interact with groups. However, Warner (2000) urges that, these programs could be promoted by extension agents through conflict management training early in the process to: (1) raise peoples' awareness of alternate conflict management strategies; (2) increase their abilities to use tools such as interest-based negotiation to resolve disputes by consensus; and (3) develop strategic alliances between opposing parties based on mutual benefit.

Role of Extension Education in Mitigating Agricultural Production and Pastoral Conflict

Khagram & Ali (2006) proposed that, preventative factors such as social learning, monitoring systems, anticorruption initiatives, or dense social networks need to be considered. Clearly, a broad inclusion of political, economic, social, cultural and institutional variables is needed, especially as they are related to possible response mechanisms. Additionally, field monitoring of the dynamics and implications of disarmament, demobilization and reintegration

(DDR) programs may be especially useful as they can have a pervasive impact (Meier *et al.,* 2007).

Extension agents urges that, there is a need for effective conflict mitigation that breaks the cycle of violence, retaliation and impoverishment to move from the conflicting to a cooperative path, and according to them one could start by addressing the capability of the actors. They also advices government to disarmed groups to ameliorate conflicts between communities (Mkutu, 2008)

Non-violent outcomes also result from avoidance strategies. These would include pastoralist groups migrating or retreating from areas of high competition with either farmers or other herders; the diversification of livelihoods to cope with increasing pressure for instant sedentarization of pastoralists and adoption of mixed farming; adaptation of customary institutions to manage local natural resource use; or alliances between local pastoralists and farmers to counter resource use and extraction by actors external to the local area. Indeed, stakeholders with conflicting interests over natural resources can work their way through multiple levels of compromise and negotiation before violent conflict develops (Hussein *et al.,* 1999).

Two behavioral indicators according to Meier *et al.* (2007) aggravating actions and mitigation efforts, are also positively associated with raids, while reciprocal exchanges and peace initiatives are associated negatively. In other words, organized raids are more likely when aggravating behavior and vegetation are high and reciprocal exchanges and peace initiatives are low. Based on assessment of the behavioral data it is to be noted that refinements in the situation report questions, integration of structural attribute indicators, improvements in quality control,

and more regular training are likely to increase the explanatory power of CEWARN's early warning efforts.

Role of Extension Education in Mitigating Environmental Degradation due to Climatic Change and Armed Conflicts

Climate change is usually regarded as a potential future threat, meanwhile other researchers asserts that global climate change has already been a contributing factor in current conflicts around the world such as the one in Darfur (Byers & Dragojlovic, 2004). Therefore the following three major processes that predicts climate change according to the environmental security literature is likely to have security implications: Degradation of cropland, increasing freshwater scarcity and population displacement (Raleigh & Urdal, 2007).

Furthermore, Schwartz & Randall (2003) emphasized that as abrupt climate change lowers the world's carrying capacity, aggressive wars are likely to be fought over food, water, energy, etc. and they cautioned that, a collapse in carrying capacity could make humanity revert to its ancient norm of constant battles for diminishing resources. Their sentiments were echoed by Barnett (2001) and Pervis & Busby (2004) warning against overstating the relationship between climate change and armed conflict, and both authors agreed that the depletion and altered distribution of natural resources likely to result from climate change could under certain conditions increase the risk of some forms of violent conflict around the globe.

Degradation of soil and water resources is likely to be intensified by adverse changes in temperature and precipitation, although adaptation behavior has a potential to mitigate these impacts as land use and management have been shown to have a greater impact on soil conditions than the indirect effect of climate change (IPCC, 2001).

Eventually, significantly increasing sea levels as well as more extreme weather conditions will force millions of people to migrate, potentially leading to higher pressures on resources in areas of destination and subsequently leading to resource competition (Barnett, 2001; and Renner, 1996). On the other hand Reuveny (2007) reprimanded that, past effects of environmental problems on migration suggest that climate change lead to environmentally induced migration that can increase the risk of conflict, particularly in less developed countries with limited mitigation capabilities.

Hauge & Ellingsen (1998) concluded that, the factors such as soil degradation, desertification, deforestation and freshwater as well as high population density and environmental pressures were indeed positively associated with civil war and state failure.

According to Meier *et al.* (2007) there should be a closer institutional collaboration between CEWARN and IGAD's Climate Prediction and Assessment Center (ICPAC) as well as the Livestock Early Warning System (LEWS) and extension agents in reducing incidences of conflicts. They also stated that, this collaboration should not be limited to early warning only, but also include early response because integrating conflict and disaster warning systems for early response are more complex with the impact of climate change.

Theoretical Framework for Mitigating Cattle Rustling

Background to Theory of Planned Behavior and Reasoned Action Approach (RAA)

Behavior may be defined as outcomes that often involve complex undertakings of a series of "micro level" antecedent stages of either decisions or actions (Abbasi *et al.,* 2015, p. 35). Thus, the Theory of Planned Behavior (TPB) suggests that behavioral enactment is preceded by intention which in turn is influenced by attitudes, Perceived norms (subjective norms), outcome beliefs, and perceived behavioral control (Fishbein, & Ajzen, 2011).

Accordingly for any intention to implement an action it has to be facilitated by: a) the attitude towards the action under consideration; b) the perceived norms with respect to the action; c) the perceived behavioral control [Internal Factor (capacity self-efficacy and External Factor (perceived control/autonomy)] over the action. Therefore, the perceived norms consist of both an injunctive norm, which is the perception of what others think they should do (referent and rewarding power) and a descriptive norm (expert power) which is the perception of what others actually do. These three factors jointly dictates whether someone has the intention or not to participate in a particular action. In addition to the intention, the importance of skills, abilities and environmental factors is termed as actual control (Fishbein & Ajzen 2010).

For predicting and changing behavior: accordingly, Intention (I) may be defined as purpose or attitude toward the effect of one's actions or conduct, attitude could be position or posture of the body appropriate to or expressive of an action, emotion, etc. Subjective Norms may be the norms which are followed by considering the other people in mind to make oneself acceptable for the people within the community. Perceived behavioral control is how much control over a situation individuals believe they have, also called our perceived control (Glanz *et al*., 2008; Fishbein & Ajzen, 2010 and 2011a, McEachan *et al*., 2011 and McEachan *et al*., 2016).

Additionally Ajzen (2011a) and McEachan *et al*. (2016) stated that, the TPB model identifies particular beliefs such as behavioral, normative and control beliefs to as indirect predictors of behavior. Base on the TPB, these beliefs formed by background and demographic factors such as individual perspective, social and informational factors, indirectly influence the TPB determinants and vary across behaviors and different populations.

Meanwhile, Montano & Kasprzyk (2015) indicated that, attitudes, norms, and self-efficacy (perceived behavioral control) as major determinants of behavior and intention has a causal impact on behavior. Thus Intention is therefore, deliberated alongside behavior as an outcome variable.

Variation in cultural values, customs, norms, social and environmental influences may reflect belief structures of any given population and behavior. A behavior that is based on attitude in one population or ethnicity may be normatively driven in another. (Glanz *et al*., 2008).

Armitage and Conner (2001); Hagger *et al*. (2002); McEachan *et al*. (2011) and McEachan *et al*. (2016) cited that, changing behavior requires changing underlying salient beliefs and to understand why a person(s) holds a given intention and/or engages with behavior, they concluded that, it is essential to determine the scope to which intentions (or behavior) are under either attitudinal, normative or perceived control.

Accordingly to Fishbein & Ajzen (2010), behavior theories-Albert bandura, Marshall Becker, Martin Fishbein, Frederick Kanfer and harry Triandis stated that, for a person to perform a given behavior, one or more of the following must take place and shown on figure 2.2 below:

- The person has formed a strong positive intention to perform the behavior,
- There are no environmental constraints that make it impossible for the behavior to happen.
- The person has the skills necessary to perform the behavior.
- The person believe the advantages to perform the behavior outweigh the disadvantages
- The person perceives more social pressure to perform the behavior than not to perform it.
- The person perceives that performance of the behavior is more consistent with his/her image and doesn't violet any norm.
- The emotional reaction of the performer is positive than negative and
- She/he has the capability to perform the behavior under different conditions.

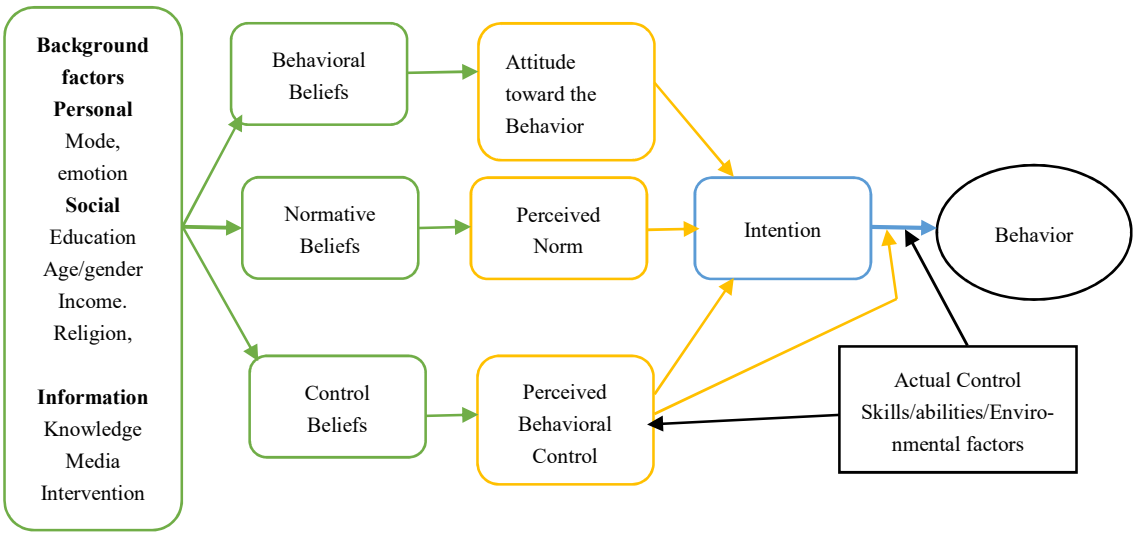

Figure 2.2: Schematic Presentation of the Reasoned Action Model

Source: Fishbein and Ajzen (2010), p 22.

Cause of Cattle Rustling:

Background Factors

Reasoned action model includes subcomponents of attitude (experiential/instrumental), perceived norm and perceived behavioral control to predict intention and behavior, according to Ajzen (2010) the relationship between background factors and behavior can be reduced to non-significant by controlling the behavioral intention and perceived behavioral control. To him most background factors are influenced by the availability of information, gender, level of education, and demographic characteristics such as ethnicity, age and social environment.

Hrubes *et al*., (2001) found the correlation of 0.28 ($p>0.001$) between hunting behavior and gender. Furthermore, hunting was mainly determine by intentions to go hunting ($R^2=0.57$) and correlation 0.46 was produced when perceived behavioral control was correlated with behavior.

In conclusion, Jorgensen & Martin (2015) while working on: Understanding farmer intentions to connect to a modernized delivery system in an Australian irrigation district using a reasoned action approach (RAA) found that, the background factors contributes about R^2=0.057 of the variance in intention.

The Perception of Cattle Keepers, Farmers, Chiefs, Youth, and Women about Cattle Rustling

Behavioral Beliefs

Ajzen (2011a) cited that, the positive or negative assessment of a particular behavior or attitudes toward personal performing behavior is dictated upon by behavioral belief and according to him beliefs it might have originated from personal experience, formal education, interaction with family members and friends, social media, etc. Meanwhile, reliability (R^2)= 0.84 associating behavioral belief was found when Broaddus *et al*. (2016) examined both individual- and partnership-level associations with condom-less vaginal intercourse with men in a large sample of African American women.

Effect of Cattle Rustling:

Normative Beliefs

A normative belief or an injunctive normative belief is a belief that, a particular referent individuals and group thinks a particular behavior should either be performed or not perform (Ajzen, 2011a). Thus, Fishbein & Ajzen (2010) reported study in descriptive normative belief with particular emphasis on drug use, the researches revealed that, normative belief reliability were 0.47 for use of LSD, 0.53 for use of ecstasy, 0.54 for the use of amphetamine and 0.65 for the use of marijuana with a reliability of (R^2=0.42) similar to study done by Povey *et al.* (2000) on healthy eating habit.

Mitigation of Cattle Rustling

Control Beliefs

Control belief prescripts the perceived behavior control, and it may be defined as the perception that an individual either has or does not have the ability to perform a particular behavior (Fishbein & Ajzen, 2010). Therefore, Ajzen & Driver (1991) while correlating between control belief and perceived behavior control on mountain climbing and other leisure activities found the reliability of 0.67.

Attitude toward the Behavior

Attitudes (A) are among the crucial factors utilized for assessing intention and behavior and is defined as a positive or negative latent mood to respond with some degree of likeness or unlikeness to psychological objects, Attitudes are also a function of beliefs about the perceived consequences of the behavior or individuals conclude that the behavior does or does not benefit them (Conner & Norman, 2005; Fishbein & Ajzen, 2010), and McEachan *et al.,* 2011) furthermore emphasized that, attitudes are comprised of beliefs about the likelihood of salient outcomes of the behavior weighted by the evaluation of each outcome.

According to Ajzen and Driver (1991) attitudes towards mountains climbing and boating has high correlation of 0.70 and 0.47 respectively, meanwhile when Andrew *et al*. (2016) conducted studies on condom use behavior among men who have sex with men (MSM), they found that attitudes was significantly associated with condom use ($R^2 = 0.43$, $p<0.001$. Meanwhile, a study on identity appropriateness and the structure of the theory of planned behavior found that, the model variables accounted for 69.6% of the variance in attitudes (Case *et al*., 2015).

A research by Boer & Mashamba (2007) on condom use cross-sectional among adolescents in Venda (South Africa), exposed that TPB construct, attitude accounted for 38% for males and 22% for female of the variance in intentions. In related development Abamecha *et al*. (2013) while working on voluntary HIV counseling and testing (VCT) found that, the constructs of TPB explained the variability in attitudes to use VCT by 26.8% (R^2= 0.268). While Lawton *et al.* (2009) stated that, that affective attitude was a significant independent predictor intention for some health behaviors and the standardized regression coefficients were highest for smoking (0.73) and binge drinking (0.55) and lowest for brushing teeth (0.14) and performing self-examination (0.13).

Reliability was (R^2) =0.8 when Broaddus *et al*. (2016) examined both individual- and partnership-level associations with condom-less vaginal intercourse with men in a large sample of African American women and McEachan *et al.* (2011) while studying Prospective prediction of health-related behaviors with the Theory of Planned Behavior found that, Reliability (R^2) = 0.35.

While working on meta-analysis of the Reasoned Action Approach (RAA) to understanding health behaviors McEachan *et al*. (2016) found that, instrumental attitude, experiential attitude showed significantly stronger associations with both intention experiential: r+ = 0.546; instrumental: r+ = 0.384) and behavior (experiential: r+ = 0.299; instrumental: r+ =0.195). Meanwhile, Kaveh *et al.* (2015) while working on a survey of the effective factors in students' adherence to university dress code policy, using the theory of reasoned action reported statistical significant correlation between attitude and subjective norms ($r=0.638$, $p<0.01$)and Attitude and behavior ($r=0.327$, $p<0.01$)

On the other hand Tagler *et al.* (2017) in predicting sleep hygiene using a reasoned action approach reported; Study 1A α= .92; Study 1B α= .90). Meanwhile four-item measure of attitude revealed Cronbach's α = .82 and statistical significant coefficient of (β = .36, b = .694, SE = .092, t = 7.53) (Jozkowski & Geshnizjani, 2016).

However, Case *et al*. (2015) in identifying appropriateness and the structure of the theory of planned behavior reported that, Cronbach's Alpha was .90 for attitude while measuring the mean of seven items in binge drinking and Espada *et al.* (2016) while predicting condom use in adolescents: a test of three socio-cognitive models using a structural equation modeling approach reported a favorable attitude toward condom use ($\beta = 0.47$, $p < 0.001$)

Hinsz & Nickell (2015) while working on the prediction of workers' food safety intentions and behavior with job attitudes and the reasoned action approach found regression equation of .63, $t(173) = 11.80$, $p < .001$ for intention, and it contributed significantly to the prediction of self-reported behavior, $F(3, 173) = 118.11$, $p < .001$, $R^2 = .67$. Meanwhile, regression analyses equation $F(4, 172) = 113.31$, $p < .001$, $R^2 = .72$ was significant for Attitude toward the behavior $\beta = .23$, $t(172) = 3.50$, $p = .001$.

Perceived Norm

Fishbein & Ajzen (2010) defines perceived norms as social pressure to either perform or not to perform a particular behavior. Thus perceived norms with attitudes towards a particular behavior and perceived behavior control dictates the intention for performing the behavior under scrutiny.

The correlation between injunctive and descriptive norms ranges from 0.46 to 0.54 and 0.25 to 0.46 for screening behavior and lifestyle behavior respectively were reported by Riebl *et*

al. (2015) while working on understand and predict nutrition-related behaviors in youth. *Eating behaviors* using TPB.

Meanwhile, McEachan *et al*. (2016) while working on meta-analysis of the Reasoned Action Approach (RAA) to understanding health behaviors found significant but more modest differences in correlations between injunctive or descriptive norms with intention (injunctive norm: r+ =0.389 and descriptive norm: r+=0.351) or behavior (injunctive norm: r+ =0.220 and descriptive norm: r+=0.265) and Kaveh *et al.* (2015) while working on a survey of the effective factors in students' adherence to university dress code policy, using the theory of reasoned action reported statistical significant correlation between subjective norms and behavior ($r=0.399$, $p<0.01$).

Meanwhile reliability of (R^2)= 0.55 was found when Broaddus *et al.* (2016) examined both individual- and partnership-level associations with condom-less vaginal intercourse with men in a large sample of African American women. In related development.

McEachan *et al.* (2011) while studying prospective prediction of health-related behaviors with the TPB found that, Reliability (R^2) = 0.15. Meanwhile, in another health related field Abamecha *et al*. (2013) while working in voluntary HIV counseling and testing (VCT) found that, the constructs of TPB explained the variability in perceived norms and attitudes to use VCT by 36% (R^2=0.36).

However, when Andrew *et al*. (2016) conducted studies on condom use behavior among men who have sex with men (MSM), they found that perceived norm was significantly associated with condom use ($R^2 = 0.34$, $p<0.001$).

When descriptive norms using a six items (*Drank alcohol sometime in the past month*, *Had five or more drinks once or twice a weekend in the past month*, *Smoked one or more*

cigarettes a day or nearly every day in the past month, *Used marijuana sometime in the past month*, *Used prescription drugs not prescribed to them in the past month*, and *Used an illegal drug in the past month*;) was assessed for the perceptions of participants to alcohol and other drug (AOD) Cronbach's Alpha was 0.88 for AOD. Meanwhile Injunctive norms for the same items revealed the Cronbach's Alpha of 0.89 for AOD (Stoddard & Pierce, 2016), meanwhile, Tagler *et al.* (2017) in predicting sleep hygiene using a reasoned action approach found perceived normative pressure at (Study 1A α=.81; Study 1B α=.79).

Furthermore, Case *et al*. (2015) in identifying appropriateness and the structure of the theory of planned behavior reported that, Cronbach's Alpha was .78 for subjective norm and Jozkowski & Geshnizjani (2016) reported a Cronbach's α = .74 in two item measure of perceived norms and largest statistically significant coefficient (β = .396, *b* = .544,*SE* = .068, *t* = 8.031). The same study revealed Cronbach's alphas of 0.72 and 0.82 for descriptive norms and experiential attitudes respectively.

Finally, Hinsz & Nickell (2015) while working on the prediction of workers' food safety intentions and behavior with job attitudes and the reasoned action approach found subjective norm; β= .70, t(172) = 11.01, p < .001.

Perceived Behavioral Control

Fishbein & Ajzen (2010) defined perceived behavioral control as the extent to which individuals believe that personal and environmental factors can facilitate or hinder their performance of a particular behavior and they have absolute control over its performance due to availability of information, skills, opportunities and resources that overwhelms the barrier to perform the behavior. Perceived behavioral control since is related indirectly to important outcomes it can best predict safety and security behavior (Hinsz & Nickell, 2015).

Meanwhile, Conner & Norman (2005) and McEachan *et al.* (2011) stated that, perceived behavioral control are influenced by beliefs concerning whether one has access to the necessary resources and opportunities to perform the behavior successfully or captures the extent to which people have control over engaging in behavior under study or in another words perceived behavioral control is the individual's perception of the extent to which performance of the behavior is easy or challenging.

Using 10-points scale Sheeran & Orbell (1999b) while researching on taking a multivitamin pills every day for the next three weeks found the reliability of 0.90. Conner *et al.* (2000) found the reliability of 0.61 and 0.74 when studying attending a health screening-measured on two occasions. A similar reliability range of 0.79, 0.63 and 0.83 was found by Godin *et al.* (1996) when they conducted study on usage of condom by individuals in sexual intercourse with new partners. In another development McEachan *et al.* (2011) while studying prospective prediction of health-related behaviors with the Theory of Planned Behavior found that, PBC contributes R^2= 0.34 variance in behavior

A high reliability (R^2=0.81) was also revealed when Courneya *et al*. (1999) conducted studies on regular physical exercise and while Andrew *et al*. (2016) conducted studies on condom use behavior among men who have sex with men (MSM) found that perceived Behavior Control (PBC) was significantly associated with condom use (R^2 = 0.52, p< 0.001). On the other hand R^2=0.91 was found when Broaddus *et al*. (2016) examined both individual- and partnership-level associations with condom-less vaginal intercourse with men in a large sample of African American women.

However, Abamecha *et al*. (2013) while working on voluntary HIV counseling and testing (VCT) found that, the constructs of TPB explained the variability in perceived behavior

control, perceived norms and attitudes to use VCT by 36.9% (R^2=.369). But, perceived behavior control on the prediction of workers' food safety intentions and behavior with job attitudes revealed that, R^2 = .67 (Hinsz & Nickell, 2015).

In conclusion, a meta-analysis of a range of behaviors showed that the TPB components were able to account for an average of 39% of the variance in intentions and 27% of the variance in behavioral performance (Armitage & Conner, 2001).

Tagler *et al.* (2017) in predicting sleep hygiene using a reasoned action approach found PBC at (Study 1A α=.89; Study 1B α =.90). on the other hands, four items (*I believe I have the ability to avoid alcohol [drugs]*; and *If it were entirely up to me, I am confident that I would be able to avoid alcohol [drugs]* to assessed participants' perceived control over AOD use found Cronbach's Alpha of 0.89 (Stoddard & Pierce, 2016).

Cronbach's Alpha =.60 for perceived behavioral control when measuring three items in connection to binge drinking meanwhile it was .93 for five items (Case *et al*., 2015). Meanwhile, Jozkowski & Geshnizjani (2016) reported a three-item measure of perceived behavioral control at Cronbach's α = .69 and coefficient of (β = .133, b = .166, SE = .057, t = 2.939)

Meanwhile, McEachan *et al*. (2016) while working on meta-analysis of the Reasoned Action Approach (RAA) to understanding health behaviors reported that, intention correlates with capacity: r+ = 0.598; and autonomy: r+ = 0.268. Hinsz & Nickell (2015) while working on the prediction of workers' food safety intentions and behavior with job attitudes and the reasoned action approach found regression equation of .24, $t(173) = 4.50$, $p < .001$ for perceived behavior control and it contributed significantly to the prediction of self-reported behavior, $F(3, 173) = 118.11$, $p < .001$, $R^2 = .67$ and perceived behavioral control failed to reach significance, $\beta = -.09$, $t(172) = -1.61$, $p < .11$.

Intention

Intention is determined by three sets of factors: attitudes, which are the overall assessments of the behavior by the individual; subjective norms (perceived norms), which consist of a person's beliefs about whether significant others consider he/she should engage in the behavior and perceived behavior control which consists of the perception of people to performed a given behavior or beliefs about the presence of factors that may facilitate or impede performance of the behavior. Thus TPB claims that intention is the main predictor of behavior (Ajzen, 1991, Conner & Norman, 2005 and McEachan *et al.*, 2011).

McEachan *et al*. (2016) while working on Meta-analysis of the reasoned action approach (RAA) to understanding health behaviors found that, the RAA explained 58.7% variance in intention and 32.3% of the variance in behavior. Meanwhile McEachan *et al.* (2011) while studying prospective prediction of health-related behaviors with the Theory of Planned Behavior earlier found the than the RAA explain for 44.3% of the variance in intention and 19.3% of the variance in behavior. They further stated that, Regression analyses also found that, intention was the strongest predictors of behavior, RAA explained about 58.7% of the variance in intention; however, the perceived behavioral control (capacity/self-efficacy), attitude, and perceived norm (descriptive norm) were also significant, explaining 32.3 % of the variance.

Overall, the Theory of Planned Behavior has been indicated to be an adequate predictor of intention explaining 40-49% of the variance in intention and 26-36% of the variance in behavior (McEachan *et al.*, 2011 and Trafimow *et al.*, 2002) and Kwan & Bryan (2010) exposed that intention explains about 23.0% and 12.8% of the variance in exercise behavior and in another development Abamecha *et al*. (2013) while working in voluntary HIV counseling and testing (VCT) discovered that the constructs of TPB explained the variability in intention to use

VCT by 27% (R^2= 0.27) and the final model that included the components of TPB and sociodemographic variables explained intention to use VCT services by 34.2% (R^2 = 0.342).

Meanwhile, Bassili (1995) while studying the prediction of election results three weeks that presided the election in Ontario in 1990 found that, there was high reliability between intention and behavior (R^2=0.87) in high accessible group and R^2=0.74 for low accessible group this as in agreement with the confirmation in a meta-analysis of Cooke & Sheeran (2004).

Similarly, a study conducted by Armitage *et al*. (2002) on college students' intention to drive after drinking alcohol found that, the alpha coefficient indicated a high degree of internal consistency, thus multiple correlation for predicting intention from attitude, injunctive norms and perceived behavior control was 0.82 accounting for 67% of the variance in intention. However; Hagger *et al*. (2002) in meta-analyses of the intention–behavior relationship found that, intentions to exercise on average explain only around 20% of the variance in behavior

In a related development, Latimer and Martin-Ginis (2005) found that intention correlates significantly with attitudes (R^2=0.71), perceived norm (R^2=0.71 and perceived behavioral control was (R^2=0.64), therefore, the highest regression weight was associated with subjective norm (beta=0.23), followed by attitudes (beta=0.34) and perceived control was the last at (beta=0.23), however, all were statistical significantly independent contributor to intention and when Andrew *et al*. (2016) conducted studies on condom use behavior among men who have sex with men (MSM), they found that intention was significantly associated with condom use (R^2 = 0.38, p<0.001) and Lawton *et al*. (2009) while working on Running head: affective and cognitive attitudes desire or reason: Predicting health behaviors from affective and cognitive attitudes found that, the values for intention were stronger (R^2= .64 and .67).

In conclusion, a study on identity appropriateness and the structure of the theory of planned behavior found that, the model variables accounted for 59.6% of the variance in intentions (Case *et al*., 2015). McEachan *et al.* (2011) in their most comprehensive meta-analysis of prospective health behavior TPB studies to date found that intention and PBC explained 19.3 % variance in behavior, while attitude, subjective norm, and PBC explained 44.3 % variance in intention. Finally it is also to be noted that, an experimental manipulation that produces a statistically significant increase in intention strength should also produce a significant increase in subsequent behavior if there is a causal relation between intention and behavior (Webb & Sheeran, 2006). Thus, according to Kruglanski *et al.* (2002) people's intentions can refer both to abstract endpoints as well as to behavioral means of reaching those endpoints.

Tagler *et al.* (2017) in predicting sleep hygiene using a reasoned action approach found (Study 1A α=.89; Study 1B α =.89) for intentions. However, Case *et al*. (2015) in identifying appropriateness and the structure of the theory of planned behavior found that, α=.96 for binge drinking intention. On the other hand, Jozkowski & Geshnizjani (2016) while working on using a Reasoned Action Approach to examine US college women's intention to get the HPV vaccine found Cronbach's Alpha of .72.

Kaveh *et al.* (2015) while working on a survey of the effective factors in students' adherence to university dress code policy, using the theory of reasoned action reported statistical significant correlation between behavioral intention and behavior ($r=0.359$, $p<0.01$), attitude and behavioral intention ($r=0.571$, $p<0.01$) and subjective norms and intention ($r=0.486$, $p<0.01$).

Espada *et al.* (2016) while predicting condom use in adolescents, a test of three socio-cognitive models using a structural equation modeling approach found that, condom use

intention was a significant predictor of frequency of condom use in adolescents (β= 0.61, p < 0.001).

Attitudes, Perceived Norms and Perceived Behavioral Control

Meanwhile, they found also that Attitude (instrumental attitude β=.46, p<.001) and to a lesser extent of perceived norm (injunctive norm β=.17, p<.05) and of (perceived behavioral control (perceived capacity β=.19, p<.001).

Meanwhile, Case *et al*. (2015) in identifying appropriateness and the structure of the theory of planned behavior found that, α= .96 for binge drinking. They furthermore, reported significant paths of regression coefficients between behavioral outcomes/evaluations and attitudes (b = .17, p < .001), attitudes and intentions (b = .45, p < .001), PBC and intentions (b = -.10, p = .022), PBC and past behavior (b =-.15, p = .009), and intentions and past behavior (b = .55, p < .001); the path between subjective norms and intentions was not significant (b = .03, p = .620).

However, TPB variables, there were significant paths between identity appropriateness and attitudes (b = .56, p < .001) and identity appropriateness and intentions (b = .33, p < .001). The indirectly mediated effects of behavioral outcomes/evaluations accounted for (b = .08, p = .002) and identity appropriateness (b = .25, p = .007) on intentions via attitudes were both significant.

Furthermore, the same study in assessment of regression coefficients revealed significant paths between behavioral outcomes/evaluations and attitudes (b = .13, p < .001), norms and attitudes (b = .23, p < .001), attitudes and intentions (b = .25, p < .001), norms and intentions (b = .33, p < .001), PBC and intentions (b = -.15, p < .001), past behavior and intentions (b = .17, p < .001), intentions and behavior (b = .24, p < .001), and past behavior and behavior (b = .60, p <

.001); meanwhile, the paths between subjective norms and intentions was (b = -.03, p = .597), and PBC and behavior (b = -.04, p = .499), were not significant. It is to be acknowledge that, there were significant paths between identity appropriateness and attitudes (b = .52, p < .001) and identity appropriateness and intentions (b = .21, p = .003). The indirect (mediated) effects of behavioral outcomes/ evaluations (b = .03, p = .005), norms (b = .06, p = .004), and identity appropriateness (b = .13, p = .009) on intentions via attitudes were all significant (Case, *et al*., 2015).

In conclusion, recognizing the determinants of behaviors plays a crucial role in identification and application of effective strategies for encouraging individuals to follow the intended pattern of behavior and ameliorating bad behaviors (Kaveh *et al*., 2015).

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Manuscript # 2

Cattle Rustling and its Effect on South Sudanese Communities

Abstract

Cattle rustling is a very serious threat to South Sudan's economy, rural communities and the livestock sector's development. The anomaly is a source of conflict in cattle keeping and farming communities resulting in loss of life and the destruction of the social fabric among tribes. This qualitative study utilized primary data from interviews with participants from the South Sudan States of Unity, Warrap, Lake, Jonglei, and Central Equatoria State to address the following research questions:

What is the cause and effect of cattle rustling?

What is the perception of the communities regarding cattle rustling?

What potential strategies exist for mitigating cattle rustling?

The study revealed that cattle rustling has occurred between tribes for generations, but now it has become a lucrative way of life in many rural communities. Cattle rustling is increasing due to several factors, such as polygamy, increasing dowries expected for marriage, wide-spread illiteracy, increases in gun ownership, weak governmental institutions, collusion of government officials in cattle rustling, encouragement from elders and others in the communities to raid cattle, revenge and reward motivation of rustlers and weak employment.

As a remedy, multiple factors, such as the introduction of agricultural extension programs leading to alternative resources for sustaining their livelihood, educational programs focusing on literacy and childhood education, legislation for punishing offenders, empowerment of chiefs to strengthen the rule of law, and comprehensive disarmament of cattle keepers, are essential to mitigate cattle rustling.

In conclusion, the study acknowledges that, despite the fact that most government officials, cattle keepers, chiefs, women, farmers and youth noted that rustling is not part of the culture and is a bad practice, the voices of cattle rustlers and their supporters are driving this behavior to new heights in rural South Sudan.

Keywords: South Sudan, Cattle Rustling, Nilotic (Dinka, Nuer and Shilluk), Nomadic, Pastoralist, Transhumance.

Introduction

Cattle rustling first appeared during the 19th century when almost every country in Africa became part of a European colonial empire. The East Africa region where South Sudan is located became a theatre of competition for resources between the major imperialistic European nations of the time (Khapoya, 2012 and Holt & Daly, 1988).

Holt and Daly (1988) stated that, around the 19th century, cattle rustling started during the colonial and armed conquerors era between the colonists and the Arabs on one hand and the Dinka, Shilliuk, Nuer, Shilliuk, Nuer, Toposa, Didinga, Boya tribes on the other cattle rustling created a scenario of the survival of the fittest among the British and their allies. The Arabs rustled the tribes, and the tribes, in turn, rustled others who were weaker than them. This acquired culture of cattle rustling from British colonial authority became a weapon that has hampered the development of the livestock industry and advancement of pastoralists and pastoralism in East African communities today (Thomas, 2001).

Also in the 19th century, to enslave the Dinka tribe, the people of Abu Ruf (Arabs) raided their livestock. On many occasions, the Dinka also rustled the Arabs as far as al-Rusayris and sometimes up to the territory of Sennar, killing and destroying everything in their path, committing atrocities, and stealing the cows and other animals they found (Holt & Daly, 1988).

At this juncture the Dinka, Shilliuk, Nuer, Toposa, Didinga, and Boya tribes discovered the strength and strategies of cattle rustling from others after acquiring the motivation from the British authority and their ally, the Arab slave traders (Abu Ruf and other Arab tribes). Currently, the scenario and circumstances surrounding cattle rustling has intensified due to cheap firearm proliferation as a result of persistent conflict and civil unrest in the region.

Before and after the independence of South Sudan from the Sudan, the threat of cattle-rustling feuds between rival ethnic groups often led to hundreds of casualties and displacements of pastoralists (Musinga *et al.,* 2010). Ocan (1994), asserted that colonialism further made political relations in the region worse by reducing access to land, restricting resources, and increasing competition for water. Restricting pasture resources between settlements became the only solution. Restricting movement of cattle meant that when animals of one group died or was lost to thieves, the easiest way to replenish stock was cattle rustling.

Problem Statement

Each year, about 350,000 cattle are stolen in South Sudan, costing farmers 200 million South Sudanese pounds in lost revenue, according to a 2010 study conducted by SNV (Netherlands Development Organization), a non-profit organization for the Ministry of Animal Resources and Fisheries. In 2009, about 2,500 people were killed in cattle raids (Musinga *et al.,* 2010 and Jackson, 2011).

Cattle raiding is a grave problem for rural South Sudanese communities and national and state governments to mitigate. It is proliferating at an alarming rate in States such as Unity, Warrap, Lake, Jonglei, and Central Equatoria State with persistent loss of lives of cattle rustlers and cattle keepers. It continues to spread and is claiming the lives of innocent farmers throughout the country.

At one time tribes raided other tribes, recently communities are raiding within the tribe. A week doesn't pass without cattle rustling accompanied by revenge and counter attacks. This development has significantly affected the development of the livestock industry, economic progress of livestock keeping, farming communities, and their livelihood, thus breaking down

social cohesion and trade that once flourished among the tribes and between communities across the regions.

Purposes and Objectives

Cattle rustling has become endemic and affects South Sudanese communities' daily livelihood. Mitigation of cattle rustling is paramount if South Sudan is to realize development in the livestock sectors, which could be a sustainable means for improving the country's economy. Thus, this study attempts to draw some strategies for reducing cattle rustling in the young nation.

The specific research questions of this study were:

1- What are the causes of cattle rustling in South Sudan?
2- What are the perceptions of government officials, cattle keepers, farmers, chiefs, youth, and women about cattle rustling?
3- What are the effects of cattle rustling in rural South Sudanese communities? and
4- Given the cause of cattle rustling, perceptions of the communities and effect of cattle rustling what are the possible strategies for mitigating cattle rustling?

Theoretical Framework

The theory of planned behavior may be defined as a theoretical framework and psychosocial approach for scrutinizing, understanding and conceptualizing safety and security behaviors or human behaviors in general. Reason Action Approach (RAA) is amalgamation of the Theory of Reasoned Action (Fishbein & Ajzen, 1975), Social-Cognitive Theory (SCT) (Bandura, 1986), the Health Belief Model (HBM) (Janz & Becker, 1984), the Theory of Planned Behavior (TPB) (Ajzen, 1991 and 2011), and the Integrative Model of Behavior Change (IMBC) (Fishbein & Ajzen, 2010).

According to theorists, Theory of Planned Behavior (TPB) is one of the most widely used behavior models. Thus, TPB defines intentions as the most crucial and core determinant of people's behavior. Accordingly Intentions (I) are predicted by attitudes (A), subjective norms (SN) and perceived behavioral control (PBC). Furthermore, Attitudes denotes a person's overall positive or negative mood of performing the behavior. Subjective norms represent the perceived approval or disapproval from significant referents (reward power, expert power and referent power) for behavioral performance. Perceived behavioral control (PBC) elucidates the perceived behavioral control as extent to which a behavior is under the person's control and influences both intentions and behaviors (Ajzen, 1991 and 2011a; Fishbein, Ajzen, 2011, Montano & Kasprzyk (2015) and McEachan *et al*., 2016).

The study utilized the Theory of Planned Behavior with an application on cattle rustling activities in South Sudan to understand the cause, perception of communities on cattle rustling and determine the way forward in mitigation of cattle rustling.

According to Fishbein & Ajzen (2010) there is a growing awareness that human behavior can both cause and alleviate social problems in a variety of domains such as safe environment, health, productivity, etc. thus, it requires integrative conceptual framework and behavior constructs for assessing behavior.

The study focused on interviews of cattle keepers, chiefs, farmers, youth, women and government officials in order to assess the cause, perception, effect of cattle rustling and drawing mitigation processes. The themes from the interviews were filtered through the theory of planned behavior constructs for understanding cattle rustling intentions and potential mitigation strategies.

Limitations and Assumptions

Study in the area of cattle rustling is not an easy one due to the hostilities between communities and cattle raiders on one hand and their referent power on the other, thus the study only sought input from cattle owners, chiefs, youth, women, farmers and governmental officials from the research sites; Unity, Warrap, Lake, Jonglei and Central Equatoria States.

Factors that might have affected the study could be the translation of the English version of the interview protocol to Arabic. The current civil war and constant movement of the pastoralists have impeded the accessibility of some of the research areas.

Finally, the study is expected to expose fundamental problems associated with cattle rustling. Some participants may not express their true perceptions toward the phenomenon for fear of retribution.

Methodology

Population and Samples

The stratified clustered qualitative study was conducted in five states: Central Equatoria (Juba and Terekeka); Unity (Bentiu), Warrap (Kwajok), Lake (Rumbek), Jonglei (Bor). These states are experiencing increased levels of cattle raiding.

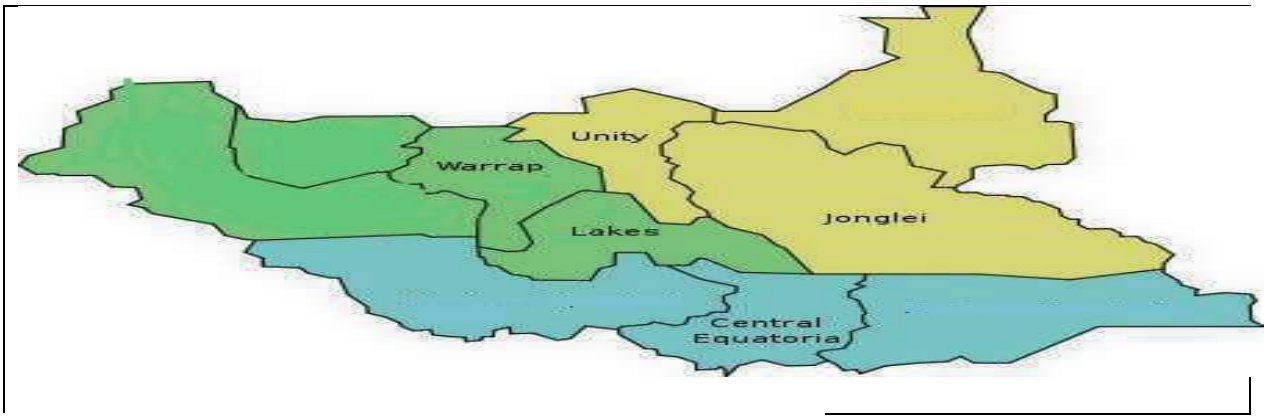

Figure 3.1: Map of South Sudan Showing the Research Sites

The primary data collection targeted 30 participants (community chiefs, cattle keepers, farmers, youth and women and government officials) with in-depth standardized open-ended and informal conversational interviews. All interviews were digitally recorded.

Instrumentation:

The interview schedule was developed by the researcher utilizing a team of experts at Virginia Tech. The interview schedule was pilot tested in Juba with 10 participants and improved with feedback from the pilot group. The questionnaire was developed in two stages; pre-interview and background and experience questions. The in-depth open-ended interview questions lasted about one hour and were structured into six parts (appendix G). The exercise was conducted from late June 2016 to early August 2016.

Data Collection and Analysis

After the approval of consent from Virginia Tech Institutional Review Board (IRB) (appendix A & B) was obtained. Two weeks earlier pre-notice emails and messages (appendix D & E) were sent to the participants before the research commenced.

The participants gave verbal and written consent for interviews in a language of fluency (English or Juba Arabic) (appendix F) in line with Virginia Tech Institutional Review Board (IRB) principles.

To ensure anonymity of the 30 participants, their identity was protected when engaged in audio-taped interviews that lasted for about 60 minutes each. Then they were assigned a pseudonym for data reporting.

The data were transcribed electronically using Microsoft Word ©. Codes and themes were extracted using Atlas.ti@program. Then the themes were merged into Reasoned Action Approach (Fishbein & Ajzein, 2010) constructs.

Hard copies of the data were kept in a secured cardboard box and a computerized backup copy accessible via password at Virginia Tech, College of Agriculture and Life Science, Department of Agricultural, Leadership, and Community Education during the analysis, interpretation, and manuscript writing.

Findings

After transcription and coding, the themes based on Theory of Planned Behavior were extracted. The findings show there were two versions of the story related to cattle rustling. There were those who were pro-cattle rustling and those, the majority of people interviewed who were against.

The following four themes emerged from the study:

1- Cattle are a source of social status and financial stability,
2- There is disagreement as to whether cattle rustling is good or bad.
3- Cattle rustling causes social, economic and political problems and
4- Cattle rustling mitigation is possible through education, law enforcement, infrastructure improvements, and disarmament.

Theme: Cattle are a Source of Social Status and Financial Stability.

Cattle are sources of pride and identity as well as a capital resource. They are used for paying bride dowry, fines, compensation and trade. Therefore livestock is the means of livelihood for the communities and a way to establish social status within a community.

The primary causes of cattle rustling may be attributed to multiple marriages by polygamists, pride, revenge/hatred, poverty, rustling as business. Additionally, seasonal complications arise during winter when there is insufficient pasture and water availability.

As testified by a state official, Deng who comes from Warrap State, Tonj North County, Marial Lau Payam where the National Livestock Center is located:

"We keep livestock for food (milk and blood), pride and as a sign of wealth." Gadet from Wit County, the eastern part of Unity State bordering Tuch and Pariang County close to Upper Nile State lamented, "We Nuer keeps cattle as a sign of wealth, prestige and for marriage ceremonies as bride price." Dongrin proclaimed that:

> Cattle rustling has been created by the former colonial power and rampant ownership of guns, couple with weak institutions and the state authority are reluctant whenever there is rustling even at closest proximity to their base, they would only appear when the criminals are gone. As such people take law into their hands to revenge and avenge their lost. (Government official)

The background factors to the schematic presentation of reasoned action model on cattle rustling as a behavior in South Sudan indicates that individuals view livestock as a sign of social status, prestige, and wealth (power). This was supported by Mary from Tali a county of Central Equatoria State: "Our community rears animals for prestige, wealth, social status in the community and marriage ceremonies." Meanwhile Nyandeng a lady who comes from Bor County stated: "our communities' keeps animals for marriages used as bride price and livestock are sign of wealth and social status." (Women)

The women's groups perspective on the cause of cattle rustling was also shared by the community chiefs who acts as intermediary between their community and the government, as Sultan Martin, a chief of Yirol County stressed: "my people keeps animals for prestige, as a sign of wealth and our animals are used for ceremonies," and Sultan Khamis. A chief from Unity State, Bentiu said:

> Our animals are our identity, they are our pride, sign of wealth and social status. Nonetheless, conflicts and insecurity is fueling the activities of cattle raiders. Youth have abandon cultivation and entrench themselves into the malpractices, furthermore they have abandon our culture and norms.

Most cattle keepers are illiterate and jobless as confirmed by Sultan Deng. “The root causes of cattle raiding are illiteracy, poverty, conflict over grazing land and water resources due to competition as a result of huge number of livestock.” (Chiefs)

Most youth being the backbone of the rural society and future leaders are not happy with the circle of violence perpetuated on them in the name of cattle rustling, some claimed they rustle to avenge their losses meanwhile others said they raids because they are jobless and rustling has become a lucrative business, as Mayardit conceded:

> Cattle rustling exercise was good and I admired it, because there was/is encouragement from the elders and other cattle rustlers. However, with studies and time, now I have realized that it is a bad practice. But villagers will disagree with you in the strongest term possible if you tell them that cattle rustling is bad. To them cattle/livestock facilitates expensive marriages, a good cattle rustler has no problem with multiple-dowries.

When assessing community links to livestock, those who don’t have enough resources are tempted to raid, as another young man, Dau said:

> Livestock rustling is not good, despite some people think it demonstrates manhood and strength. Some men claimed that they are not noticed if they don’t rustle. It is the culture of other tribes where cattle rustlers are recognized as heroes. Poverty and revenge attacks make it worse. (Youth)

Wani a farmer from Central Equatoria State cited that: there are several motives for cattle raiding; the youth raids for marriages (a bride price may range between 250-300 cows) and unfortunately they don't get married once and for all, they keep on remarrying as a result they have to keeps on re-rustling each time they wants to marry as such the circles of violence continuous unabated. This is made worse when there is competition for the bride. (Farmer)

Competition over scare water and pasture in winter is another factor in addition to respect being accorded to rustlers especially by unmarried young ladies. Simon, a resident of Yirol East County, Lakekudu Payam, Nhial Boma at the border with Unity State and Jonglei shared: "my people keeps animals for prestige, as a sign of wealth and social status." (Cattle Keeper)

In conclusion, the South Sudanese communities of Dinka, Nuer, Mundri and other tribes have heavily invested in cattle or livestock keeping. Cattle are a source of financial security and social status. Cattle rustling occurs in many cases to support the cost of multiple marriages. Men with cattle are held in high esteem and cattle rustling is encouraged by some influential community members.

Theme: There is Disagreement as to Whether Cattle Rustling is Good or Bad

Although cattle rustling has been portrayed as a bad practice most cattle keepers and rustlers believe that rustling is a good and cheap means of cattle's acquisition to sustain their livelihood and establish their social status. To them, rustling demonstrates courage and is a confirmation of manhood as stated by a member of the youth; Mayardit:

> When I was young the cattle rustling exercise was so good and I admired it, because there was/is encouragement from the elderly people some always says 'go and bring your own cattle. Not only that but, some government officials are also involved in this lucrative business. (Youth)

Meanwhile Ruai and Malong both government official noted that "rustling is a very bad habit and dangerous activity restricting development." (Government officials)

The local administrators also have negative perception about cattle rustling, they accused the youth and their referent power for making the situation worse. They did criticized the government for disempowering and not supporting local officials who try to enforce the laws:

> Being a chief (Sultan Khamis), I usually advises our youth to refrain from such illegal activities but you know young men of these days don't listen to elders, they termed our advices as obsolete. Not only that, we are not respected either by the government or the youth since we lacks power.

Sultan Khamis sentiment was echoed by his colleague Chief Martin who stated that:

> I and my colleagues have had several dialogues with the youth so as to desist from this unethical ill behavior but all our effort were in vain. To make things worse our hands are tied we don't have mandate to deal with the youth who are armed to their teeth with modern automatic weaponry and you never know where they acquired them from. To make matter worse when the government comes across cattle keepers armed with these guns they never questions them or disarm them. Because some government officials also have cattle camps properly supplied with arms and ammunition. Even some soldiers from the regular army are assigned by their subordinate to these camps. (Chiefs)

Most women and the youth were frustrated with the status-quo created by cattle rustlers and their expert power. They don't see any help coming from anywhere to ameliorate the situation, as Keji and Nyandeng who are both housewives categorically stated that: "Raiding is a bad and illegal behavior and norm that must be stopped." (Women)

On the other hands, David, Wani and Gadet concurred: “It is really very awful norm that should not have a place in our society.”Majak also appealed that “rustling is very bad and need to be stopped because it is not part of our culture.” (Farmer and Cattle Keeper)

Theme: Cattle Rustling Causes Social, Economic and Political Problems

Raiding negatively affects cattle rearing and farming communities; economically, socially, politically, etc. Ultimately it is the youth, children, women, elderly, and the livestock themselves who bear the brunt of the heinous activities as stated by Lutero, a youth from the area: “Cattle raiding has many effects; it separates and isolate communities, breaks down relationships among communities and between tribes.” (Youth) This was confirmed by cattle keeper, Gadet:

> We are rustled by our neighbors from Lake State, and Warrap state. Thus, the neighboring counties have copied the mechanism and we are doing the same in return. It ends most of the time with killing and revenge attacks. I have to ask you; if your cattle are rustled, do you sit and wait for hunger and poverty? No, no go raid and bring more also after all no one is punish for the act. (Cattle Keeper)

Rural women in the cattle camps may suffer the most from rustling through the loss of sons and husbands to the violence have another version of the story. Mary shared: “Cattle raiding causes fighting, insecurity and it is costly in term of lives. We as women are much affected because we lose our husbands and our sons in this illegal and uncalled for activity.” This was supported by Nyandeng who acknowledged:

> Being a lady from the community I have witnessed raids, it is heart breaking exercise and difficult to explain. Cattle rustling is affecting us very much, if there is rustling the first

casualties are women, children and the youth who are supposed to be future leaders. (Women)

Government official are not spared from cattle rustling as they shared their lived experiences about rustling, Tut recalled:

> We have lost and are losing a lot of lives, the number of those who died in cattle rustling has exceeded the number we have lost during the 21 years of the liberation's war. Since our county is bordering two states; Lake State's Rumbek North and Cuebek County and three counties of Unity State namely Maydendit, Kuch and Mayom County, our area is a center or target of frequent cattle raids, if one communities from the states cited failed to come another will. For instant in 2004 Mayendit County community raided 1200 heads of cow from our county and killed 96 community members in the event, the victims includes children and women. In 2008 our family account of 302 heads of cattle was completely cleaned by rustlers. (Government officials)

Finally according to the administrators cattle rustlers have over-stepped their borders and they have to be stopped immediately to avert catastrophe or collateral damage both to cattle keepers, rustlers and farmers, as Chief Thon protested:

> Cattle raiding has been and is a burning issue, it affects the livelihood of the rural community especially when cattle are raided many young men died leaving behind helpless orphans and widows who are exposed to insecurity, poverty and famine. Additionally, cattle raiding undermines security and causes mass immigration of cattle keepers to towns where there is security and this process in turn negatively affect the host communities who may be farming communities. (Chiefs and Farmer)

Theme: Cattle Rustling Mitigation is Possible through Education, Law Enforcement, Infrastructure Improvements, and Disarmament

As remedy to the current mess and circle of violence; disarmament, educational program to my community and job opportunities may deter the youth from cattle rustling. If chiefs are empowered, laws are enacted and rustlers are brought to books, this may curb this bad disease, as chiefs Gak advised:

> The government should empower chiefs and Benakaw (retired chiefs). On the other hands the national, state government, and Non-governmental Organizations (NGOs) should intervene to stop cattle rustling, they should render education services, as well as agricultural extension services and rural development programs to the communities. The government must enact laws and punish cattle rustlers.
>
> Agricultural extension services - especially about integrated agriculture and animal production, development, sensitization, and disarmament among others - are strategies that could curb raiding and perhaps change the circle of violence in the states most traumatized by cattle rustling, as proposed by Sultan Khamis a chief from Juba payam. (Chiefs)

The same emotion was demonstrated by the youth who are afraid that there are "hidden hands" among government officials who own cattle camps fueling rustling since they supply their camps with arms and ammunitions, as Tut protested:

> The so called cattle raiding to me has a hidden agenda because the government disarms one community while arming another, thus making the disarmed communities vulnerable and at the risk of raid by the other communities. As a result in our state the activities is taking political dimension. To curb down this illegal activity, there should be

> comprehensive disarmament, educational services and development in addition to religious services and others. (Youth)

A similar statement was echoed by a government official and cattle keeper, Mayardit:

> Solutions to reduce cattle rustling may include; development of physical infrastructures such as roads, provision of mobile schools for the transhumance, development of communication technology for tracking down raiders and sensitization of the cattle keeping communities and stakeholders about the danger posse by cattle rustling, comprehensive disarmament of the communities, and reduction of cattle numbers so as not to cause destruction to the environment. Extension education services and establishment of demonstration farms may change our societies. Otherwise, young men who failed to get education might resort to raiding. (Government officials and cattle keeper)

Women who are caught up in cattle rustling dilemma shared their story. Regina claimed: "The expensive bride price (50 and more heads of cows) should be reduced and there must be establishment of education and agricultural activities for the communities." Adau commended that:

> Communities should be made aware of cattle industry, instead of keeping them for prestige, as a sign of wealth and pride, modern animal husbandry and breeding system should be introduced to the communities so as to improve the productivity of the livestock since our cows are poor in term of milk yield. (Women)

Discussion

The objectives of study was to explain the cause, perceptions and effect of cattle rustling in addition of devising mitigations' strategies. The research used TPB Fishbein & Ajzen (2010) for constructing the themes around the constructs in predicting cattle rusting behavior.

Question 1: What are the Causes of Cattle Rustling in South Sudan?

The participants agreed that, the rate of cattle rustling is on the rise due to several reasons such as poverty, expensive marriages, remarrying processes, lucrative business, lack of employment, competition over scare resources and revenge attacks. This is supported by the findings of Mean *et al.* (2002), Jackson (2011), Schilling *et al.* (2012) and Majekodunmi *et al.* (2014) who found that cattle rustling is fueled by high demand for livestock for social activities like marriages.

As a result, the pastoralists' behavior of stealing livestock is shaped by societal background factors such as personal, social motivation, and knowledge as shown in the reasoned action theory of Fishbein & Ajzen (2010) and Fishbein & Ajzen (2011) and supported by the study of Mehlum *et al.* (2006).

Question 2: What are the Perception of Cattle Keepers, Government Officials, Farmers, Chiefs, Youth, and Women about Cattle Rustling?

According to Ajzen (2005 and 2010) three factors - attitude toward the behavior, perceived norm, and perceived behavioral control– predict or explain intention. This is, at times, supported by revenge and the desire to illegally steal livestock, restock cattle herd, and amass wealth as a sign of pride that may be utilized later for marriages.

The research also noted the existence of a few strong voices and perceptions of rustlers across the five states who are encouraged by the reward power and supported some government officials and elders.

According to their behavioral and normative beliefs, rustling is a good practice and business. However, their control beliefs could be exhilarated due to their expert power (experience or skills) acquired in rustling. Joblessness and rampant ownership of guns, coupled with lawlessness, and the encouragement of the illegal practice add to the situational norms. This is confirmed by Fishbein & Ajzen (2010) and Fishbein & Ajzen (2011) who posit that normative factors influence beliefs.

Illiteracy and educational gap also fuels cattle rustling this is in line with the findings of FAO (2012 and 2013), Omondi (2013), Jackson (2011), Tom (2011) and Holloway *et al.* (2008) who suggested the establishment of education and extension agricultural services for promoting long term peace and as an alternative life-saving resources for the communities.

Attitude toward cattle rustling behavior according to the youth may be attributed to knowledge related to motivational factors such as favorability (reward power) of rustling for restocking herds, accumulation of wealth, and pride. Rustling may be prompted by revenge and anger, as supported by the findings of Markakis (1993) and Botha *et al*. (2008)

Ocan (1994), Ocan (1994) Ocan & Ocan (1994) reiterated that the loss of animals during either raiding or droughts provides justification for rustling to restock the herds since it is a primary means of livelihood since "a person stripped of stock is stripped of the most active social relationship and thereby of selfhood and self-respect."

The perceived norm is significantly influenced by Reward Power. That is to say, cattle rustling is encouraged, celebrated, and rewarded by the cattle keeping communities. Rustlers also

have expert power through have the knowledge, expertise, skills, and abilities to rustle, and referent power from the encouragement of people they admire and young women who want to get married (Fishbein & Ajzen 2010).

Question 3: What are the Effects of Cattle Rustling in Rural South Sudanese Communities?

Perceived behavioral control is acted upon by: *Internal Factor* (self-efficacy/capacity of individual rustler) where rustlers have skills, abilities, and opportunities, and the *External Factor* (perceived control/autonomous) is facilitated by ownership of guns, conducive environment, lawlessness as a result of weak state institutions, lack of power, and information in the hands of law-enforcing agents. The cattle rustling perceived behavioral control also has a direct influence on cattle rustling behavior and supported by the theory of (Ajzen, 2005, Fishbein & Ajzen, 2010, Fishbein & Ajzen 2011 and 1975 and Ajzen, 1991).

A week barely passes without cattle rustling and an event related to rustling exercises as claimed by the women, youth and other community members. This illegal trade is becoming a concern and a grave problem to all stakeholders including the national government of the Republic of South Sudan as reported by (Means *et al.* (2002) and Sudantribune, 2015).

Initially rustling was between tribes, now the phenomena has shifted to the community level as reported by Musinga *et al.* (2010) and Schilling *et al* (2012). To make matters worse, rustling used to be on a small scale and rustlers used sticks, spears, and other local weapons but currently it is on a wider scale with the use of automatic weapons as exposed by the findings of Kratli & Swift (1999) and Tom (2011).

This is supported by the findings of Jackson, (2011) and Musinga *et al.* (2010) who estimated that, in 2009 alone approximately 2,500 people were killed in cattle raids and

approximately 350,000 cattle are stolen each year costing farmers 200 million South Sudanese pounds in lost revenue.

Finally cattle keepers lack information about media and knowledge of livestock management. As a result, they engage in cattle rustling as Jackson (2011) documented, thousands of cattle are stolen each year, costing farmers 200 million South Sudanese pounds in lost revenue.

Question 4: Given the Cause of Cattle Rustling, Perceptions of the Communities and Effect of Cattle Rustling What are the Possible Strategies for Mitigating Cattle Rustling?

Given the causes of cattle rustling, perceptions of the communities and effect of cattle rustling on the communities, intention has a direct impact on cattle rustling behavior (Fishbein & Ajzen, 2010 and Ajzen & Driver, 1991). However, cattle rustling behavior may also be controlled by actual control Fishbein & Ajzen (2011) which might have resulted from abundant cheap guns, weak institutions, lack of infrastructure, and agricultural extension services as suggested by Barron (1997), Aghion *et al.* (1999), Knox *et al*. (2002), Russel & Harshbarger (2003) and Mkutu (2008).

Mitigation could be further strengthen absence of sensitization programs through conferences, workshops, seminars, and religious ceremonies for preaching and awakening the awareness of the communities as suggested by the findings of Roe (1995), Barro (1997), Aghion *et al.* (1999), Robertson & Olson (2012) and Omondi (2013).

The actual control dictates perceived behavioral control. This is similar to reasoned action theory of Fishbein & Ajzen (2010), Fishbein & Ajzen (2011) and behavior theories of Albert Bandura, Marshall Becker, Martin Fishbein, Frederick Kanfer, and Harry Triandis.

Fishbein & Ajzen (2010 and 2011), (Ajzen 1991) and Ajzen & Driver (1991) suggested when predicting particular behavior, the effect of attitudes are assumed to be mediated by behavioral, normative, and control beliefs. The behavior in question is predicted by attitudes toward the behavior, perceived norms, perceived behavioral control, and the intention to perform the behavior. Therefore, to ameliorate cattle rustling the manipulation of the above beliefs are crucial.

Implications

This study is very vital because cattle in particular and livestock in general in some parts of South Sudan are used for marriages and many other ceremonies. As a result, the livelihood of some communities primarily depend on it.

Research in the area of cattle rustling is not easy due to the suspicion and hostilities between communities and rustlers and their referent powers, there is also a lack of sincerity and trust among cattle rustlers and with outsiders. As a result, they don't provide sufficient information about their activities. Furthermore, some areas are not accessible by the researcher due to the rainy season and the constant movement nature of nomads in search of pasture and water for their livestock. This has been complicated by a lack of resources and previous studies in this particular area in the young nation.

The study managed to interview cattle owners, chiefs, farmers, youth, women, and governmental officials from the research sites. The study exposed some anomalies and root causes associated with cattle rustling and added an ingredient to strategies to be put forward for mitigating this illegal practices. Furthermore, the research will act as a resource among resources that will reduce the illegal trade.

South Sudan should adopt and implement strategies from broad approaches that will involve multi-stakeholders, civil population, government, traditional leaders, and faith-based leaders to remedy this ill activity before it escalates to unprecedented levels as cited by FAO (2013) and Jackson (2011).

Recommendation

The researchers suggest the following as a remedy to cattle rusting in South Sudan:

1- After exposing the cause of cattle rustling, the study recommended the establishment of Agricultural extension program as alternative resource for sustaining their livelihood.

2- In order to change the mind-set and transform the perceptions of the communities' members and their referent power, educational programs focusing on literacy and childhood education is paramount.

3- To reduce the effect of rustling in the communities, laws should be enacted for punishing offenders and the traditional authorities should be empowered to track down rustlers and bring them to book and

4- As mitigation strategies; there should be comprehensive disarmament, cattle camps should be rid of arms and there should be development of physical infrastructure such as roads for tracking down rustlers and their cohorts.

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Manuscript # 3

Explaining the Behavior of Cattle Rustling and its Effect on South Sudanese Communities

Abstract

Cattle rustling in South Sudan is a serious problem leading to economic hardship and even loss of life in this young country. The impact of cattle raiding is further magnified as the country is in a civil war and has become unstable. This study sought to explain cattle rustling behavior from the perspectives of community leaders, farmers, women, and youth in areas affected by cattle rustling. The specific objectives were to: describe the participants of the study, determine the participants attitude toward cattle rusting, determine the cultural norms of cattle rustling, determine the levels of control participants have related to cattle rustling, determine the levels of behavioral intention toward cattle raiding, and explain cattle rustling intention.

The primary data was obtained from a stratified clustered sample with 544 respondents. The study generated a multiple regression model that explained nearly 36% of the variance in cattle rustling intention through the independent variables of age, gender, literacy, attitude, norms, and control. Strong and significant ($p<.05$) correlations were identified between intention with attitudes, norms, and control.

As remedy the study recommended the establishment of agricultural extension services as an alternative means for sustaining the livelihood of the rural communities, educational services for bridging the literacy gap, empowerment of traditional authorities for strengthening the rule of laws and development of physical infrastructure such as roads for tracking down rustlers.

Keywords: Attitude, Norms, Control, Cattle rustling, South Sudan, Africa, Behavioral Intention, Pastoralist, Nilotic

Introduction

The fact that conflict between cattle herders and farmers in South Sudan is increasing is not a new development. The literatures contains many examples of increasing herder-herder and farmer-herder conflict, especially as it relates to increasing populations, competition for natural resources, and changing development policies (Hussein *et al.,* 1999).

Cattle rustling was a problem in South Sudan long before gaining independence from Sudan (Burton, 1978). Cattle rustling existed throughout the period of British tenure in Sudan and South Sudan and was an insurmountable problem for the British. An early report of cattle raiding in 1943 highlights that thirty-nine people died in the course of a cattle raid led by the Ceic Dinka against the Apak section of the Atuot Dinka of Lake State.

Livestock are a sign of identity and status in this region of the world. South Sudanese pastoral communities are proud of the quantity of the cattle they own, Cattle are used for many expenses such as paying the dowry when taking a bride. Livestock are a highly valued commodity and are often used as compensation in legal cases of where defendants are guilty of murder or adultery for example (Anon, 2012).

Tom (2011) emphasized that, cattle rustling has become endemic in Lake, Jonglei, Warrap, and Central Equatoria State resulting in the loss of innocent lives including government soldiers when security forces clash with cattle rustlers who are well armed with automatic guns (Kratli & Swift 1999). The increase in demand for automatic weapons and increasing dowry expenses for marriage acerbated cattle rustling.

The ongoing civil was in South Sudan further complicates the situation leading to cattle rustling. People engage in rustling to have an asset to trade for goods and services while access to an ever decreasing South Sudanese currency is severely limited. The war is contributing to an

increase in the frequency and intensity of cattle raids. Those with expert and referent power are participating and encouraging cattle rustling to gain access to limited country resources and continue to gain power and influence.

Problem Statement

The behavior of cattle rustling is on the rise in South Sudan. Until recently, a tribe would only rustle cattle from a different tribe today there are few boundaries in targeting others for stealing cattle. Cattle rustling has become a source of social status and more importantly a source of revenue in a war-torn country. The levels of communal violence continues to rise and the loss of life continues to increase. Rustling has increased insecurity and broken down the social cohesion and trade that once flourished across the region.

Therefore, a week rarely passes without a cattle rustling incident (Jackson, 2011). Thousands of cattle are stolen each year complicated by revenge and counter attacks resulting in more turmoil and ultimately loss of life.

Purposes and Objectives

The purposes of this quantitative study was to assess the causes of cattle rustling, the perception of the people in communities effected by cattle rustling, the effect of rustling on people and communities and based on those findings to propose possible paths forward to mitigate cattle rustling in South Sudan. The specific objectives are to determine:

1- describe the participants of the study,

2- determine the participants attitude toward cattle rusting,

3- determine the cultural norms of cattle rustling,

4- determine the levels of control participants have related to cattle rustling,

5- determine the levels of behavioral intention toward cattle raiding, and

6- explain the dependent variable of cattle rustling intention with independent variables of demographics, attitude, norms and control.

Theoretical Framework

The Theory of Planned Behavior (Fishbein & Ajzen, 2010) is the theoretical framework that was used to focus this research on cattle rustling activities in South Sudan. Fishbein & Ajzen posit that behavior is a result of intention. Intention can be predicted or explained through attitudes, perceived norms, perceived behavioral control, behavioral beliefs, normative beliefs and control beliefs.

Attitude, perceived norm, and perceived behavioral control are a function of specific beliefs which influence intention. Attitude is dictated by behavioral beliefs. Perceived norm is dictated by normative beliefs, which analyze perceptions of social support from other members of social networks and perceived behavioral control is dictated by control beliefs. All of these variables can be used to predict or explain situational circumstances that facilitate or hinder a particular behavior (Yzer *et al.,* 2015).

In a study to assess whether reasoned action approach variables predicted the intention in the use of condoms among adolescents in Cape Town (South Africa); Bryan *et al.* (2006) found that, the subjective norms (perceived norms) was the strongest predictor construct, followed by self-efficacy (Perceived behavior control) and attitudes. Collectively, they accounted 22% of the variance in intentions. Lugoe & Rise (1999) established that Perceived Behavioral Control (PBC) was the best predictor of intention. PBC together with subjective norms (Perceived Norms), and attitudes accounted for 42% of the variance in intentions to use a condom among adolescents in Tanzania.

A meta-analysis by Albarracin *et al*. (2001) of 96 condom use studies, of which 82 were conducted in Europe and the U.S. and an additional 9 in Australia, revealed that on average attitudes, subjective norms and perceived behavioral control accounted for 53% of the variance in intentions to use a condom. This meta-analysis further revealed that, attitudes was a strong predictor of intention (r=.58), followed by perceived behavioral control (r=.45) and subjective norms (r= .39).

In a study to examine socio-cognitive predictors of condom use and intentions among adolescents in three Sub-Saharan sites found that; in Cape Town, all the three constructs; attitudes, perceived norm and perceived behavioral control were significantly associated with intention. The Cape Town study accounted for 46% of the variance in intention. In Dares Salaam the three constructs explained about 52% of the variance in intention and in Mankweng, the study explained 37% of the variance in intention (Eggers *et al.,* 2016).

Van den Putte *et al.* (2009) found that the prediction of intention from attitude and perceived norm was higher for procreation behaviors (R^2=.80) compared with health behaviors (R^2=.61) and other behaviors (R^2=.71). Yzer *et al*. (2015) while working on interventions for tobacco use measured interventions of blue-collar workers and found that attitude (instrumental attitude, experiential attitude), perceived norms (injunctive norm, descriptive norm), perceived behavioral control (perceived capacity, and perceived autonomy) contributed 47 % of the variance in intention.

Limitations and Assumptions

It was expected that the sampling error and coverage error might occur due to the fact that civil unrest continues in some of the research sites and cattle keepers are always on the move. The deteriorating economic crisis, lack of four-season roads connecting the states, the lack

of reliable electricity and efficient internet were some of the hurdles the researchers had to overcome.

The mixed-mode means for distributing the questionnaires was in accordance to Dillman *et al.* (2009). The study reached the population via in personal delivery of the questionnaire, phone calls, emails, Skype, and Facebook utilizing an on-line survey (https://virginiatech.qualtrics.com/WRQualtricsControlPanel/).

Methodology

Population and Sampling

The stratified clustered study obtained primary data from 544 respondents from five states in South Sudan (Jonglei, Central Equatoria, Unity, Lake and Warrap State).The study sampled 10 cattle camps (two per state) and 5 livestock markets (one in each state). In addition, government officials and chiefs, youth, Cattle keepers, farmers and women were targeted in the five states. With the social unrest and economic turmoil in South Sudan it is not possible to know the number of people in each state or the country at this time. People are constantly leaving the war torn areas and exiting the country for safety. Given the circumstances in South Sudan, it is not possible to have a random sample. The results of this study can only be used to explain the intentions of the respondents.

Instrumentation and Data Collection

The survey mixed –mode delivery included; mail, telephone calls (government officials), internet (Facebook Messenger, e-mail and Skype). Qualtrics software at VirginiaTech: (https://virginiatech.qualtrics.com/WRQualtricsControlPanel/) was used for gathering participant responses using email (appendix H).

In the study, the independent variables were represented by 25 items in six constructs; ATTITUDE (Behavioral Belief and Attitude), NORMS (Normative Belief and Perceived Norms), CONTROL (Control Belief and Perceived Behavioral Control). Based on factor analysis with orthogonal rotation of the data set the researchers combined Behavioral beliefs with attitudes and called it ATTITUDES, it combined normative beliefs with perceived norms and control beliefs with perceived behavioral control and termed them as NORMS and CONTROL respectively to yield a stronger predictive model. Cattle rustling intention was the dependent variable measured with 4 items in the survey instrument.

The questionnaire used 5- point Likert Scale with choices including: (1) Strongly agree (2), Agree (3), Neutral (4), Disagree and (5) Strongly disagree to address constructs; behavioral beliefs, normative beliefs and perceived norms (NORMS) (6 items), control beliefs and perceived behavioral control (CONTROL) (9 items). The closed-ended questionnaire for attitude utilized a 7-point bi-polar semantic differential scale.

Two weeks prior to receiving the survey, Flyer and pre-notice emails (appendix D and E) were sent to the participants explaining the purpose of the study, the importance of completing and returning the survey and that they would receive a survey in approximately two weeks. The participants in the cattle camps, livestock markets received hard copies of survey with a resource person to translate/interpret and read to those who can't read. Thank you emails were sent immediately to those who completed the survey meanwhile, a two week reminder was sent to those who didn't finish the survey on time.

Data Analysis

The Likert Scaled data obtained was analyzed with Statistical Package for the Social Science (SPSS) software, version 24 (SPSS Inc., an, IBM Company). Orthogonal rotation factor

analysis, reliability, validity, simple and multiple regression and bivariate correlation coefficients were utilized to analyze the data.

Initially, when the overall 42 items from the seven constructs were tested for Cronbach's Alpha using orthogonal solution factor analysis, the survey instrument revealed Cronbach's Alpha (α)= .854 after the removal of some questions.

Findings

Objective One: Describe the Participants of the study

The 544 respondents' ages ranged from 25-77 (Table 4.1). Participants by state included: Unity with age range 25-77, 25-74, Lake, 25-65, Warrap, 26-58, Jonglei, and 25-64 for Central Equatoria State.

Table 4.1

Description of the participants

Variable	States (N=544)					
Age Range	Unity	Lake	Warrap	Jonglei	Central Equatoria	Total
25-35	21	25	15	18	11	90
36-45	25	20	17	20	18	100
46-55	24	18	19	23	31	115
56-65	25	19	33	27	22	126
66+	30	22	20	21	20	113
Total	125	104	104	109	102	544

The sample was over 80% male, with more females in Lake State and a large majority of males in Warrap (table 4.2). The sample was largely Christian (90%) with 8% Muslims and 2% Animist.

Table 4.2

Demographic Distribution of the Respondents by Gender

Variable	State						
Gender	Unity	Lake	Warrap	Jonglei	CE	Total	Total (n=544)
Male	109	89	80	81	70	439	80.7%
Female	16	15	24	28	32	105	19.3%
Total	125	104	104	109	102	544	100%

The sample consisted of 4.04% chiefs, 39.71% cattle keepers, 11.03% farmers, 21.32% youth, meanwhile women and government officials contributed each 11.95% (Table 4.3). Analysis of ethnic background revealed about 63.3% of the respondents were Dinka, 16.7% Nuer, 13.3% Mundari and 5.7% Bari and about 1% from other tribes.

Table 4.3

Demographic Distribution of Respondents by Occupation

Variable	Chiefs	Cattel keepers	Farmers	Youth	Women	Government Official	Total (n=544)
Occupation	22	216	60	116	65	65	544
Total (%)	4.04	39.71	11.03	21.32	11.95	11.95	100%

Nearly 56.43% of the participants were literate and Ninety percent of the respondents are jobless while 10% were either employees of the government or are self-employed.

Objective Two: Determine the Participants Attitude toward Cattle Rustling

Government officials had the highest cattle rustling ATTITUDES (Behavioral Beliefs and Attitudes) mean range (15.02) followed by the youth and cattle keepers (14.73 and 14.63)

respectively meanwhile, chiefs, farmers and women registered the lowest range (13.55, 13.84 and 13.91) respectively. Meaning that, the government official has the most positive cattle rustling mood and the chiefs are law abiding and enforcing community members.

By state; the farmer of Jonglei State registered the highest mean range (20.72), their youth recorded (17.03) and the youth of Lake State were the second in rank (18.17) meanwhile the famer of Central Equatoria had the minimal cattle rustling attitude rank (11.36).

Objectives Three: Determine the Cultural Norms of Cattle Rustling

Overall study revealed that, the Chiefs accounted for the highest mean range for NORMS (Normative Beliefs and Perceived Norms) (11.86) and lowest for farmers (10.56). Norms recorded more-less similar mean range for women, cattle keepers, youth and government official (11.53, 11.51, 11.41 and 11.21) respectively.

However, women in Lake State were leading (14.81) followed by their chiefs and cattle keepers from Jonglei State (13.80 and 13.79) respectively in cattle rustling norms this means women are also contributes to cattle rustling norms. However, farmer from Warrap State had the lowest cattle rustling norms (8.18) indicating that they have low opinion on rustling.

Objective Four: Determine the Levels of Control Participants have related to Cattle Rustling

Nearly (16.18) mean range was recorded for CONTROL (Control Beliefs and Perceived Behavioral Control) for chiefs and (16.08) for the government officials. Meanwhile Control were low and almost similar in ranges for women (15.83), cattle keepers (15.62), youth (15.17) and farmers (15.02).

In term of state; chiefs of Lake State (20.60) and their women (19.00) and government officials from Jonglei State (19.31) are leading in cattle rusting control. Meanwhile, Warrap State

youth recorded (11.40) the lowest cattle rustling control, meaning that, the chiefs, government and women can play a crucial role in mitigating cattle rustling if given the opportunities meanwhile those group that recorded rank at the bottom of the means are those who can't control themselves and are most of the time tempted to steal cattle.

Objective Five: Determine the Levels of Behavioral Intention toward Cattle Rustling

The study found that, state wide the intention to steal cattle was highest among government officials (6.97), youth (6.71) and cattle keepers (6.70). Meanwhile, women, chiefs and farmers had the lowest cattle rustling intention (6.40, 5.68 and 5.58) respectively. Meaning that, the government officials and others have high intention for stealing cattle and farmers don't entertained cattle stealing.

State wise, government officials from Lake and Jonglei State took the lead in cattle rustling intention (12.00 and 9.00) respectively. They could be the referent power for the cattle keepers in their respective state (7.93 and 8.42). Women from Unity and Chiefs from Warrap State scored the lowest (3.67 and 4.40) respectively. This signifies that, the higher the score is the higher the cattle rustling intention is and the vice versa is true.

Objective Six: Explain the Dependent Variable of Cattle Rustling Intention with Independent Variables of Demographics, Attitude, Norms and Control

Given the exploratory nature of this study and the researcher developed instrument factor analysis with orthogonal rotation was used to identify constructs (Isaac & Michael, 1979). Ten items contributed to the construct, ATTITUDE (combination of original questions related to behavioral belief and attitude (Cronbach's $\alpha = .848$). Six items measured NORMS with original questions from of normative belief and perceived norm (Cronbach's $\alpha = .624$). Nine items measured CONTROL a set of items originally designed to measure control belief and perceived

behavioral control (Cronbach's α = .692). Four original items measured intention (Cronbach's α = .616).

Multiple regression analyses of correlation matrix revealed that, ATTITUDE (Behavioral Beliefs and Attitudes), NORMS (Normative Beliefs and Perceived Norms) and CONTROL (Control Beliefs and Perceived Behavioral Control) were strongly correlated to cattle rustling intention at (r= .476**, .489** and .505**) respectively meaning that, the constructs can easily trigger cattle rusting intention, meanwhile, literacy negatively and significantly correlates with cattle rusting intention (r=-.100*), signifying that as education level increases cattle rustling intention decreases.

Table 4.4

Matrix of Correlations for the Demographic Factors, Cattle Rustling Attitudes, Norms, Control and Intention (N=544)

Constructs	Age	Literacy	Gender	Bb_A (ATTITUDE)	Nb_pn (NORMS)	Cb_pbc (CONTROL)	Int (INTENTION)
Age	1	-.051	.051	-.030	-.020	-.058	-.007
Literacy		1	.082	-.049	.001	-.049	-.100*
Gender			1	-.020	-.030	-.029	-.001
Bb_A(ATTITUDE)				1	.469**	.553**	.476**
Nb_pn(NORMS)					1	.572**	.489**
Cb_pbc(CONTROL)						1	.505**
Int(INTENTION)							1

Stepwise multiple regression was used to explain cattle rustling intention, the model explained nearly 35.7% of the variance in intention to rustle or support cattle rustling behavior (Table 4.5).

Table 4.5

Model Summary for Demographic Factors, Cattle Rustling Attitudes, Norms, Control and Intention (N=544)

Model Summary[h]									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.007[a]	.000	-.002	3.25487	.000	.027	1	535	.868
2	.007[b]	.000	-.004	3.25791	.000	.002	1	534	.968
3	.102[c]	.011	.005	3.24387	.010	5.630	1	533	.018
4	.483[d]	.233	.226	2.86109	.222	154.050	1	532	.000
5	.571[e]	.325	.318	2.68580	.092	72.571	1	531	.000
6	.598[f]	.357	.349	2.62466	.032	25.983	1	530	.000

a. Predictors: (Constant), Age

b. Predictors: (Constant), Age, Gender

c. Predictors: (Constant), Age, Gender, Literacy

d. Predictors: (Constant), Age, Gender, Literacy, Bb_A (ATTITUDE)

e. Predictors: (Constant), Age, Gender, Literacy, Bb_A (ATTITUDE), Nb_pn (NORMS)

f. Predictors: (Constant), Age, Gender, Literacy, Bb_A (ATTITUDE), Nb_pn (NORMS), Cb_pbc (CONTROL)

g. Dependent Variable: Int (INTENTION)

Conclusions

The Theory of Planned Behavior (TPB) has been used in behavioral studies in many fields with good results. This research utilized the constructs to account for nearly 35.7% of the variance in cattle rustling intention. This finding concurs with the work of McEachan *et al.* (2011 and 2016), Eggers *et al*. (2016) and Abamecha *et al*. (2013).

According to the ethnicity the respondents were mostly Dinka, Nuer, Mundari, Bari and other tribes who has been having ethnic tension for decades, this is in agreement with the findings of Robertshaw (1987), Holt & Daly (1988) and Anon (2012) who cited that, these tribes are from the epic centers of cattle rustling as confirmed by Mkutu (2008) and Tom (2011).

Some of the participants are illiterate 43.20% meanwhile others are jobless giving justification to level of poverty, ignorance of the threat poses to them by rustling and establishment of education and extension service as recommended by and Knox *et al.* (2002), Russel & Harshbarger (2003), Khagram & Ali (2006), Meier *et al*. (2007), Kaimba *et al.* (2011), FAO (2012, 2013 and 2015), Omondi (2013) for initiating a long- time peace, development and for the communities to have alternative means of livelihood instead of depending entirely either on livestock keeping or farming. This has been further elaborated (table 4.4) by negative and significant correlation between intention and literacy again signifying that, educated individuals have lesser tendency for cattle rustling and are less likely to engage in rustling than the uneducated cattle keepers.

The demographic constructs from background factors; age and gender did not contribute to cattle rustling intention; however, (table 4.5) literacy status has an impact on cattle rustling intention. However, as age increased cattle rustling attitude, norms and control declined. This could be due to the facts that as age advances individuals tendency for engaging in physical activities declines. This finding is consistent with Fishbein & Ajzen (2010) and Hrubes *et al.* (2001).

Moreover, gender had weak non-significant and negative correlation with attitude, norms, control and intention signaling that, some males intend to engage in cattle rustling behavior. Meanwhile female may not be directly engaged in rustling and most of them have low opinion

on cattle rustling intention; but the young unmarried female may incite rustling so that they can get married. This is in line with the work of Markakis (1993), Jackson (2011) and Sudantribune (2015).

Cattle rustling ATTUTUDE (Attitude and Behavioral Beliefs) ranges were high for youth and government officials signifying that they are the most tempted to cattle stealing this could be due to their expert and referent power in addition to the conducive rustling environment. This is in agreement with the study of Andrew *et al.* (2016). Thus (table 4.4) ATTITUDE is significantly correlates to Norms, Control and Intention similar to the finding of Conner & Norman (2005), Fishbein &Ajzein (2010), McEachan *et al*. (2011 and 2016) and Kaveh *et al.* (2015) meaning that, the constructs are strong predicator of cattle rustling intention which in turn predicts behaviors.

Cattle rustling NORMS (Normative Belief and Perceived Norms) was high for the chiefs and lowest for farmers signifying that, they don't keep animals as such they are used to cultivation only. State wise, women were found to be topping the list in Lake State, this could be due to the facts that cattle are used for paying bride price. However, farmer from Warrap State had the lowest cattle rustling norms since they lacks cattle even if the steal they can be easily identified. This is in confirmation with (table 4.5) where Norms contributed a significant amount of variance in cattle rustling intention and it is also strongly correlated to the intention. This is in agreement with the works of Kaveh *et al.* (2015); however, the figure is lower in the findings of Fishbein & Ajzen (2010) and Ajzen (2011a) indicating that, the norms of the cattle keepers revolves around their livestock.

Furthermore, Norms being a function of social background may strongly predict cattle rustling behavior since most cattle keepers are familiar with rustling for decades in addition to encouragement from the reward and referent power.

Meanwhile the strong correlation between NORMS and ATTITUDES means that, as soon as individual has strong cattle rustling norms, cattle rustling attitude will be form and eventually it will culminate to cattle rustling intention, this is in agreement with the study of Hinsz & Nickell (2015), Fishbein & Ajzen (2010), Bryan *et al*. (2006) and Albarracin *et al.* (2001).

The cattle rustling CONTROL (behavioral control and perceived behavioral control) were recorded the highest for the chiefs and government officials. This could be reflected to the facts that, cattle camps are armed at will by the officials who owns cattle and also suggesting that if they are given the mandate they would be able to coordinate and ameliorate rustling, this is in agreement with the work of Mkutu (2008), Case *et al*. (2015) and Jozkowski & Geshnizjani (2016). Therefore, the two constructs jointly plays a crucial role in mitigation strategies since they accounted for a significant amount of variable in cattle rustling intention in addition to their stronger correlation with ATTITUDES, NORMS and INTENTION (table 4.4).

Therefore, CONTROL was the strongest predictor of intention agreeing with the finding of Lugoe & Rise (1999) followed by NORMS and ATTITUDE was the last in the rank. This may be attributed due to the fact that, once cattle rustlers are experienced, skillful and the environment is enabling they can rustle at will, this is in line with the research of Kaveh *et al*. (2015) and Albarracin *et al*. (2001).

Despite, age and gender from background factors are non-significant contributor of the variable in cattle rustling intention agreeing with the work of McEachan *et al*. (2011) who used

RAA in understanding health behavior. It is also in line with the studies of Abamecha *et al*. (2013), Bryan *et al*. (2006), Hinsz & Nickell (2015) and Yzer *et al.* (2015). However, the figure is lesser than the ones in TPB, Van Den Putte *et al.* (2009), Lugoe & Rise (1999) and others because this instrument has been designed and used for the first, may be with improvement the instrument may yield a better results.

It is to be noted that, age negatively correlates to ATTITUES, NORMS and CONTROL signaling that, when age increases cattle rustling attitude, norms and control reduces this most probably may be as a result of increase experience, wisdom, cognitive style and aging making it difficult to perform energy draining tusks.

ATTITUES, NORMS and CONTROL constructs strongly correlates to intention and line with the study carried out by McEachan *et al.* (2016), Riebl *et al.* (2015) and Andrew *et al.* (2015). Signifying that as soon as the three opinion are formed cattle rustling intention is inevitable. This could be due to hostilities between the tribes and among communities as a result of revenge, competition over resources and the breakdown of social fabric.

However, literacy is significant and negatively correlated to intention suggesting the establishment of education and agricultural extension services as suggested by the findings of, Barro (1997), Aghion *et al*. (1999), Knox *et al.* (2002), Russel & Harshbarger (2003), Khagram & Ali (2006), Jackson (2011), Kaimba *et al*. (2011), Robertson & Olson (2012) and FAO (2012, and 2013).

In conclusion the youth, cattle keepers and government officials had the highest rank in rustling intention. However, literacy correlates negatively with intention suggesting that, the more educated a person is the less likely he/she is to condone cattle rustling, meanwhile (table 4.4) cattle rustling attitude, norms and control are strongly correlated with intention also cattle

rustling control strongly correlates with attitudes and norms and Norms strongly correlates with cattle rustling attitudes. This means that, the constructs are strong predictors of cattle rustling intention agreeing with the findings of Fishbein & Ajzen (2011), Ajzen & Driver (1991), and Albarracin *et al*. (2001).

Implication

Cattle in most part of South Sudan are regarded as sources of wealth, sign of prestige and social status. Therefore, some cattle keepers who either losses cattle or are rustles on by neighboring communities may reciprocate and avenge their lost due to the fear of losing their wealth and status in their community.

Thus, the salient beliefs that accrued to attitude norms and control from the background factors are strong predictors of cattle rustling intention this was echoed by Fishbein & Ajzein (2010), Ajzein (2011a) and Case *et al.* (2015).

Therefore, the study would like to reiterate that, ATTITUDES (Behavioral Beliefs and Attitudes) has detrimental effect on in triggering cattle rustling intention that culminates to rustling behavior since it is spear headed by the government officials who have access to the state resources, the youth who have the skills and experience and the cattle rustlers who are encourage by the reward power. Thus rustling is becoming a dangerous behavior to be reckoned with.

Despite the NORMS (Normative Beliefs and Perceived Norms) exposed that, the most communities' members don't speak in favor of cattle rustling; however, some individuals approves of it due to the reward power, expert power, referent power and revenge attacks. Thus, the study will like to acknowledge that, cattle rustling salient beliefs are affecting the pastoral, farmers and others social system.

From CONTROL (Control Beliefs and Perceived Behavioral Control) views, it is to be noted that, the civil war, hostilities among pastoralists and break down of rule of law as a result of weaker institution might have contributed to cattle rustling behavior since perpetrators are not held accountable for stealing and the availability of the cheap automatic machine guns made cattle rustling environment conducive. This is supported by the works of Agbu & Okeke (2008), Musinga *et al*. (2010), Jackson (2011), and Schilling *et al.* (2012)

However, the three constructs; ATTITUES, NORMS and CONTROL have significantly contributed to cattle rustling intention and have detrimental effect on cattle rustling communities, since the pastoral social systems and structures have been subjected to drastic changes due to: disempowerments of traditional authority, competition over scare resources, civil war, cheap and abundant guns, hostilities between communities and lucrative livestock business eventually strengthens cattle rustling attitudes and norms.

Recommendations

In order to change the salient cattle rustling beliefs which are connected to the background factors, there should be introduction of educational services with special emphasis on agricultural extension with particularly emphasis in the field of integrated agricultural and animal production. This is vital for improving the natives' literacy level and giving them an alternative opportunities for improving their livelihood. This can be done by focusing on youth education since they are the future leaders and worse affected by the rustling activities. This educational empowerment would also enable them to change their communities for generations to come.

Secondly, since cattle rustling Attitude (Behavioral Beliefs and Attitudes) is high among government officials, the youth and cattle keepers. The study would like to categorically states

that, the empowerment of traditional administration and social system would strengthen the rule of laws and support law enforcing agents in reducing cattle rustling activities.

Thirdly, cattle rustling norms (Normative Beliefs and Perceived Norms) are becoming stronger due to the desire, expert and reward power associated with stealing livestock as a result of the conductive environment. Thus, the study suggests the development of physical infrastructures connecting the states to enable easy tracking of rustlers and coordination by law enforcing agents.

Fourthly cattle rustling Control (Control Beliefs and Perceived Behavioral Control) can be by enhance by reducing the conductive cattle rustling environment by comprehensive disarmament of the communities and ridding cattle camps free of arms. This will downgrade rustlers' skills and expert power to rustle on one hand and improve security on the other.

In conclusion, the study would like to bring to notice that, there may be other strategies for curbing down cattle rustling activities but are beyond the scope of this research. However, the plan would have to take into consideration *the planning the table theory* of Caffarella & Daffron (2013) into consideration in drawing the mitigation tools.

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Chapter 5

Conclusion

Study Summary

Cattle rustling has become an endemic problem in many South Sudanese communities, and the activity seems to have increased significantly after the independence of South Sudan. The ever-changing climatic conditions, civil war, and economic crisis made the situation even worse.

Cattle rustling is escalating due to its swift rewarding power, it is becoming an obstacle to the development of the livestock industry in the country in addition to causing insecurity to the rural communities. Thus, without any meaningful studies and broad- spectrum strategies, this anomaly has become a grave issue for the national government to mitigate, let alone the ability of the pastoral and farming communities to thrive in its presence.

Therefore, this stratified and clustered sequential exploratory mixed methods study was conducted in five South Sudanese states: Central Equatoria (Juba and Terekeka); Unity (Bentiu), Warrap (Kwajok), Lake (Rumbek), Jonglei State (Bor).

The study was initiated as a qualitative phase in which the researcher conducted primary data collection through interviews, observations, and took field note. Therefore, the results of the qualitative study informed the quantitative follow-up study for developing the quantitative instrument after the analysis and interpretation of the qualitative data with the aims of development to enrich and deepen the understanding of intention that predicts cattle rustling behavior.

The research questions of the study are:

1- What are the causes of cattle rustling in South Sudan?

2- What are the perceptions of government officials, cattle keepers, farmers, chiefs, youth, and women about cattle rustling?

3- What are the effects of cattle rustling in rural South Sudanese communities? and

4- Given the cause of cattle rustling, perceptions of the communities and effect of cattle rustling what are the possible strategies for mitigating cattle rustling?

To triangulate, corroborate, and expand the study, the following objectives were taken into consideration in the subsequent quantitative phase:

1- describe the participants of the study,

2- determine the participants attitude toward cattle rusting,

3- determine the cultural norms of cattle rustling,

4- determine the levels of control participants have related to cattle rustling,

5- determine the levels of behavioral intention toward cattle raiding, and

6- explain the dependent variable of cattle rustling intention with independent variables of demographics, attitude, norms and control.

Qualitative Study

The qualitative phase emerged with the following themes after the transcription and coding of the interviews:

1- Cattle are a source of social status and financial stability,

2 There is disagreement as to whether cattle rustling is good or bad.

3- Cattle rustling causes social, economic and political problems and

4- Cattle rustling mitigation is possible through education, law enforcement, infrastructure improvements, and disarmament.

Theme: Cattle are a Source of Social Status and Financial Stability

Livestock is the primary means of livelihood for the pastoral communities and a way to establish social status within a community. Thus, cattle are sources of pride and identity as well as a capital resource. They are used for paying bride dowry, fines, compensation and trade. As a results some of these factors in addition to numerous marriages by polygamists, revenge attacks, poverty and drought encourages rustling. This is in line with the finding of Johnson (2011), Robertshaw (1987) and Holt & Daly (1988) who exposed that, the cattle keeping tribes of Mundari, Dinka, Nuer and Bari depends on the livestock as mean of livelihood. This has been further supported by the work of Fishbein & Ajzen (2010 and 2011) that background information shapes behaviors.

Theme: There is Disagreement as to Whether Cattle Rustling is Good or Bad

In most communities cattle rustling has been depicted as a bad practice, despite most youth, cattle keepers and rustlers believe that rustling is a good and cheap means of cattle's acquisition to sustain their livelihood and establish their social status and according to Ajzen (2005 and 2010) such perceptions are shaped by attitude toward the behavior in question, perceived norms and perceived behavioral control.

Therefore, drawing of conclusion for mitigating rustling has not been an easy one due to the divergent views caused by the breakdown of rule of law, weak institutions, disempowering of chiefs and lack of legislation for punishing cattle rustlers. This is in agreement with the study of Ocan (1994), Ocan and Ocan (1994) and Markakis (1993).

Theme: Cattle Rustling Causes Social, Economic and Political Problems

The study found that, cattle rustling results in unnecessary loss of innocent lives and destruction of properties. In fact cattle rustling negatively affects cattle rearing and farming

communities; economically, socially, politically. It is affecting the economy of the country and the development of the livestock sector which is supposed to be income generating resources for replacing the non-renewable oil industry as Musinga *et al*. (2010) and Jackson (2011) confirmed that, many people losses their lives and millions of South Sudanese pounds are lost in the event.

Rustling has broken down the social cohesion that used to be cherished by the communities. It has caused lack of trust between tribes and among communities thus hampering trade between them.

Theme: Cattle Rustling Mitigation is Possible through Education, Law Enforcement, Infrastructure Improvements, and Disarmament

The study exposed that for remedying the current mess and circle of violence; there should be comprehensive disarmament of the communities and ridding cattle camps free of arms, establishment of educational program to focus on literacy and child education in addition to provision of integrated agricultural and animal production services as suggested by FAO (2013 and Jackson (2011).

The research also acknowledge the provision of services such as veterinary services, animal production demonstration farms, proper numbering of animals and supervision of slaughter houses would curb down cattle rustling. The study further suggested the sensitization of communities about the danger posse by cattle rustling through; workshop, seminars, and conferences. This may be in line views in the control beliefs, perceived behavioral control and actual control (Fishbein & Ajzen, 2010 and 2011).

Quantitative Study

The following objectives were developed for the successive quantitative study aimed at assessing the causes of cattle rustling, the perception of the communities effected by cattle

rustling, the effect of rustling on them and based on those findings to propose possible paths forward to mitigate cattle rustling in South Sudan.

1- describe the participants of the study,
2- determine the participants attitude toward cattle rusting,
3- determine the cultural norms of cattle rustling,
4- determine the levels of control participants have related to cattle rustling,
5- determine the levels of behavioral intention toward cattle raiding, and
6- explain the dependent variable of cattle rustling intention with independent variables of demographics, attitude, norms and control.

Objective One: Describe the Participants of the Study

The study found that, most of the respondents were; Dinka, Nuer, Mundari, Bari and other tribes who have been stealing cattle from one another for decades, this concurred with the findings of Robertshaw (1987) and Holt & Daly (1988) and confirmed by Tom (2011).

Some of the respondents are illiterate 43.20% meanwhile others are jobless giving justification to level of poverty and ignorance of the threat poses to them by rustling as suggested by FAO (2012 and 2015), Omondi (2013), Kaimba *et al.* (2011) and Meier *et al*. (2007) that there in need for educational services. This is supported by negative correlation between literacy (-1.00*) a background factor from the demographic construct with cattle rustling intention.

Also age was negative and non-significant significant suggesting that as age increased; cattle rustling attitude, norms and control declined consistent with the findings of Hrubes *et al.* (2001).

Objective Two: Determine the Participants Attitude toward Cattle Rusting

Cattle rustling ATTUTUDE (Attitude and Behavioral Beliefs) ranges were high for youth and government officials indicating that these groups are the most engaged in cattle stealing due to their expert and referent power encouraged by the reward power and the conducive rustling environment. This is in line with the findings of Andrew *et al.* (2016).

Therefore, since ATTITUDE is significantly and strongly correlates to Norms, Control and Intention, this means it is a predictor of cattle rustling behavior concurring with the finding of Conner & Norman (2005), Fishbein &Ajzein (2010), McEachan *et al*. (2011 and 2016) and Kaveh *et al.* (2015).

Objective Three: Determine the Cultural Norms of Cattle Rustling

Cattle rustling NORMS (Normative Belief and Perceived Norms) was high for the chiefs and lowest for farmers. However, state wise; women were found to be topping the list in Lake and farmer from Warrap State had the lowest cattle rustling norms. This is in confirmation with strong and significant correlation between Norms with cattle rustling intention. It is in agreement with the works of Kaveh *et al.* (2015).

Furthermore, the strong correlation between NORMS and ATTITUDES suggests that the constructs are crucial for formation of cattle rustling intention, this is in agreement with the study of Hinsz & Nickell (2015), Fishben & Ajzen (2010), Bryan *et al*. (2006) and Albarracin *et al.* (2001).

Objective Four: Determine the Levels of Control Participants have related to Cattle Rustling

The cattle rustling CONTROL (Control beliefs and perceived behavioral control) was the highest for the chiefs and government officials. Therefore Control plays a crucial role in

mitigation strategies since they accounted for a significant amount of variable in cattle rustling intention in addition to their stronger correlation with ATTITUDES, NORMS and INTENTION. This is in agreement with the research of Ajzen & Driver (1991), Conner & Norman (2005), Fishbein & Ajzen (2010 and 2011) and McEachan *et al.* (2011).

Furthermore, CONTROL was the strongest predictor of intention followed by NORMS and ATTITUDE was the last in the rank. This may be attributed due to the fact that, once cattle rustlers have the expert and referent powers and the environment is enabling they will be tempted to rustle, this is in line with the research of Albarracin *et al*. (2001) and Hinsz & Nickell (2015).

Objective Five: Determine the Levels of Behavioral Intention toward Cattle Rustling

The background factors; age and gender are non-significant contributor of the variable in cattle rustling intention agreeing with the work of McEachan *et al*. (2011), Abamecha *et al*. (2013), Bryan *et al*. (2006), Hinsz & Nickell (2015) and Yzer *et al.* (2015).

Cattle rustling Intention was significantly correlated to literacy from the background factor, Attitude, Norms and Control suggesting that the constructs are strong influencers of intention as suggested by the work of Ajzen (2005), Fishbein &Ajzen (2010 and 2011), Case et al, (2015), McEachan *et al*. (2016), Riebl *et al*. (2015) and Anderw *et al*. (2015).

Objective Six: Explain the Dependent Variable of Cattle Rustling Intention with Independent Variables of Demographics, Attitude, Norms and Control.

Age and gender negatively correlates to cattle rustling intention signaling that, when age increases cattle rustling intention reduces this may be due to experience, wisdom, cognitive style and aging can't support energy draining tusks.

Also literacy is negative but significantly correlated to intention suggesting that with education, cattle rustling intention reduces. This embraced the suggestion by FAO (2013 and 2015) that education is crucial for the development of the communities.

ATTITUES, NORMS and CONTROL constructs strongly correlates to intention and line with the study carried out by McEachan *et al.* (2016), Riebl *et al.* (2015) and Andrew *et al.* (2015). Signifying that as soon as they are strong predictors of cattle rustling intention.

Discussion

Question 1: What are the Causes of Cattle Rustling in South Sudan?

The qualitative phase revealed that cattle are sources of food, sign of social status, prestige, and wealth (power). Livestock are also used for trade/business, conducting marriage ceremonies and celebrations, and as compensation. This has been confirmed by the background factors and salient beliefs in the quantitative phase in which age, gender, literacy, attitudes, norms, and control are jointly explained about R^2= .357, F(530)= 25.983, p<.05 variance in cattle rustling intention. These inferences are in line with the findings of FAO (2013), Jackson (2011), Fishbein & Ajzen (2011), McEachan *et al*. (2011 and 2016) and Abamecha *et al*. (2013).

Furthermore, the cause of rustling may be associated with revenge attacks and social motivation (reward power, referent power, and expert power) which are directed by Norms and Attitudes which has the highest range for the government officials, youth and cattle keepers (15.02, 14.73 and 14.63) respectively as demonstrated by Fishbein & Ajzen (2010) and Fishbein & Ajzen (2011) theories.

Thus, the internal consistency (α) of the TPB constructs ranges from .616 to .848, despite the fact there were mostly strong and positive correlations between cattle rustling intention with the constructs; however, literacy constructs (r=-.100*, p<.05) from the background factors were

negatively correlated with intention suggesting that education reduces cattle rustling intention as suggested by the interviewees.

Finally, based on the quantitative inferences, marriage (about 75 percent) topped the cause of rustling and poverty (less than 10 percent) was the last in ranking. This concurred with the participants' testimonies.

Question 2: What are the Perceptions of Government Officials, Cattle Keepers, Farmers, Chiefs, Youth, and Women about Cattle Rustling?

The cattle rustling perception being controlled by NORMS (normative and perceived norms) explained about 31.8 percent, $F(531)=72.571$, $p<.05$ variance in cattle rustling intention. The salient beliefs (behavioral, normative, and control beliefs) confirmed that most communities' members, including community leaders, don't speak in favor of cattle rustling as shown by the negative and significant correlations between cattle rustling intention with literacy ($r=-.100^*$, $p<.05$), gender ($r=-.001$, $p>.05$) and negative and weak correlation between intention with age ($r=-.007$, $p>.05$) from background factors.

However, some with their referent powers due to the rewarding power and expert power take the advantage of the current economic crisis, civil war, and the conducive environment created by the chaos to rustle. This is aggravated by collusion of some powerful government officials and army officers who own cattle camps as confirmed by the high cattle rustling norms' mean range for the government officials (11.21), youth (11.41) and cattle keepers (11.51). This is again supported by strong and significant correlation between NORMS, ATTITUDE, and CONTROL with cattle rustling intention ($r= .489^{**}$, $p<.05$, $.476^{**}$, $p<.05$ and $.505^{**}$, $p<.05$), respectively.

Finally, as seen above the three constructs are strong predictors of cattle rustling intention. Furthermore, the scenario of cattle rustling has been further explained by cattle rustling ATTITUDE (behavioral belief and attitude), which accounted for about 22.6 percent $F(532)=154.050$, $p<.05$ of the variance in cattle rustling intention.

Question 3: What are the Effects of Cattle Rustling in Rural South Sudanese Communities?

Cattle rustling has a diversified effect on the communities in terms of economic, political, social, and physical aspects as a result of the loss of innocent community members especially women, children, and youth due to the usage of automatic rifles.

Therefore, the highest and most frequent rustling incidents occurred in Warrap State, accounting more than 80 percent. Central Equatoria State was the least with about 20 percent of cattle rustling incidents as Jackson (2011) and Musinga *et al.* (2010) testified.

Rustling also retards trade/business among tribes and communities due to hostilities and lack of trust. It also creates poverty and renders women to widows and children to orphans. This has been explained by the 35.7 percent variance in intention by the cattle rustling constructs.

In agreement with findings of McEachan *et al.* (2011 and 2016), Riebl *et al*. (2015) and Andrew *et al.* (2015) ATTITUDE ($r= .476^{**}$, $p<.05$), NORMS ($r=.489^{**}$, $p<.05$) and CONTROL ($r=.505^{**}$, $p<.05$) strongly predicted cattle rustling intention, which in turn produces cattle rustling behavior that ultimately affects the pastoral and farming social systems and structures.

Question 4: Given the cause of Cattle Rustling, Perceptions of the Communities and Effect of Cattle Rustling What are the Possible Strategies for Mitigating Cattle Rustling?

The possible strategies to address cattle rustling may be controlled by CONTROL (control belief and perceived behavioral control) constructs $F(530)= 25.983$, $p<.05$, which also accounted for about ($R^2=.349$) of the variance in cattle rustling intention, and it strongly correlates with the intention ($r=.505^{**}$, $p<.05$).

Thus, Control is also strongly correlated to NORMS and ATTITUDES ($r=.572^{**}$, $p<.05$, $r=.553^{**}$, $p<.05$), respectively. This is in agreement with the studies of Case *et al.* (2015) and Jozkowski & Geshnizjani (2016) thus, deepening the understanding that the actual control resulted from lack of educational services, abundant and cheap guns, weak institutions, and poor infrastructures.

It is also to be noted that the civil war is conducive for the cattle rustling environment since the rustlers have capacity and autonomous control over their actions and disempowerment of tribal chiefs. This is supported by the high mean range recorded for the chiefs (16.18) and government officials (16.08). The breakdown of the social system and structures also accounts for lack of control as testified by the participants.

Agricultural extension, education, sensitizations and disarmament could be some of the solutions to ameliorate cattle rustling in the Republic of South Sudan. However, until then, South Sudan has a long way to walk and live with this anomaly that is tearing the social fabric apart.

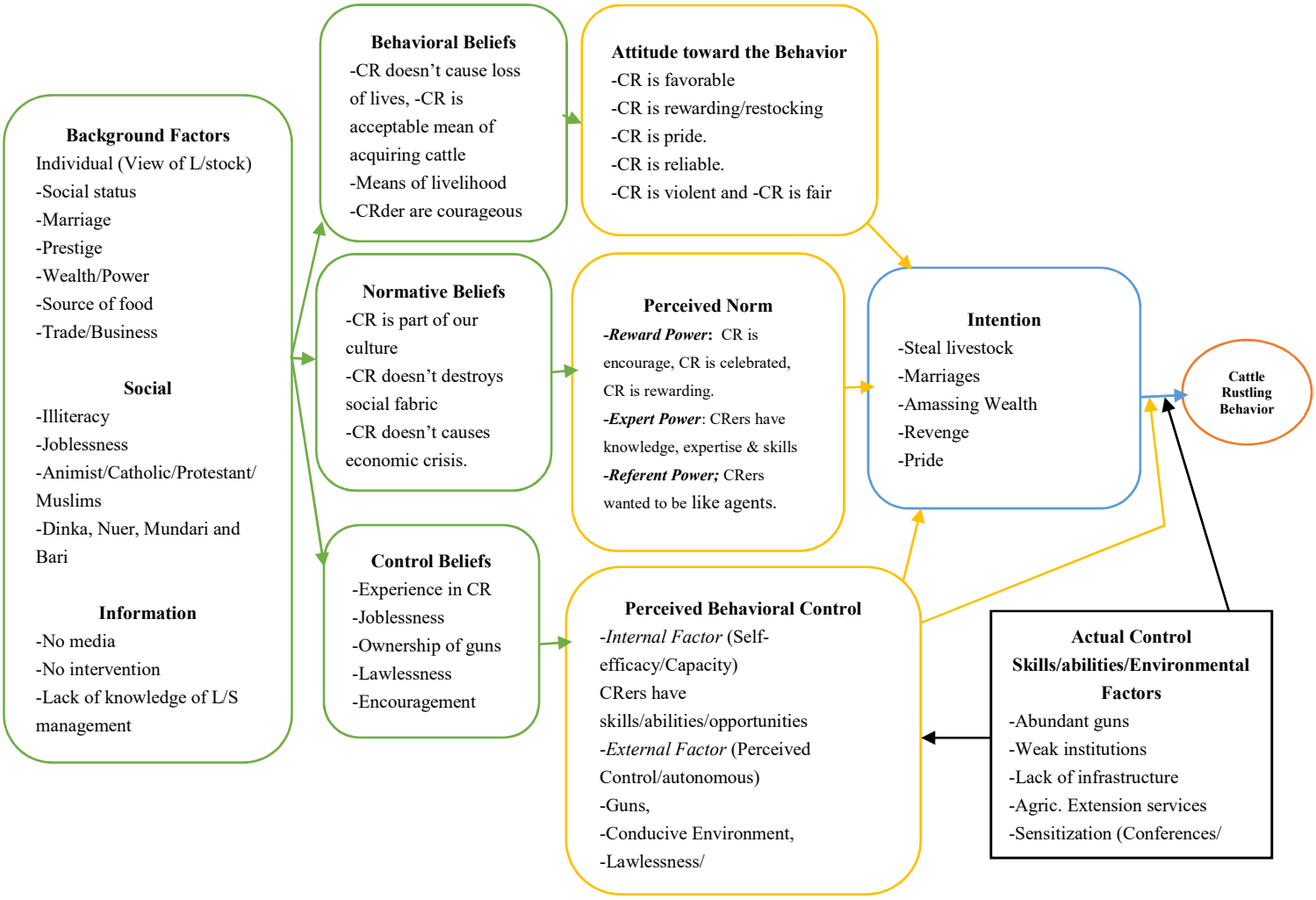

Figure 5.1 Showing: Schematic Presentation of Reasoned Action Model on Cattle Raiding as Behavior

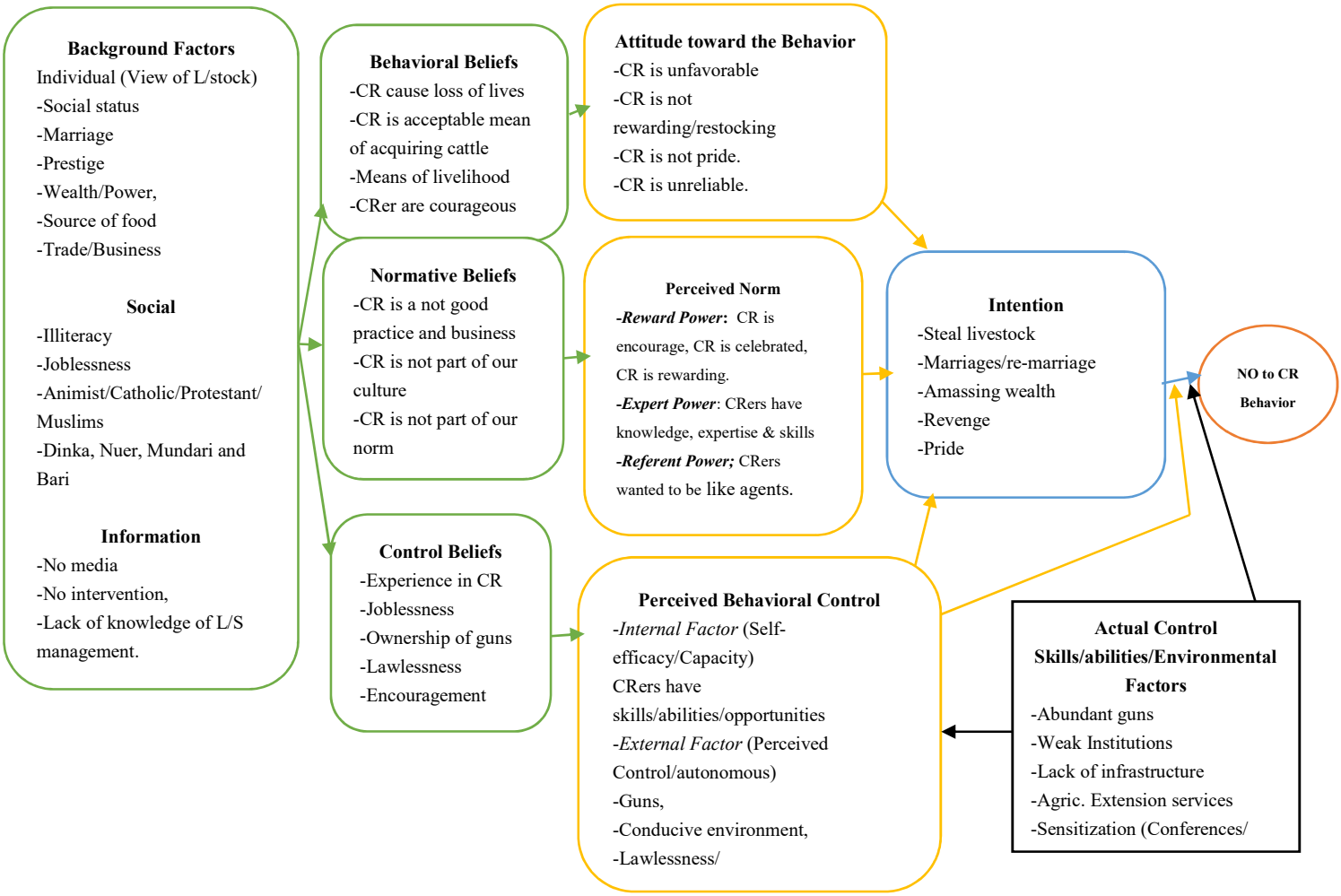

Figure 5.2 Showing: Schematic Presentation of Reasoned Action Model on Cattle Raiding Not as a Behavior

In conclusion, cattle rustling behavior is directly shaped by intention, actual control, and perceived behavioral control. The attitude toward the behavior, perceived norms and perceived behavioral control that dictated upon the intention are incited upon by behavioral beliefs, normative beliefs and control beliefs which in term are controlled by background factors such as individual perspectives, social and information flow (figure 5.1.and 5.2).

Implications

This study is very crucial because cattle rusting is getting out of control in most part of South Sudan, thus if an urgent steps in curbing this anomaly is not devised it would possess a long term security threat to the rural population, it would retard economic development of the livestock sector and eventually impacts on the economy of the country.

It is to be noted that, the salient beliefs that accrued as a result of the background factors are detrimental to the development of rural population who are supposed to be the backbone of the economy. Thus ATTITUDES (Behavioral Beliefs and Attitudes) easily triggers cattle rustling behavior (Fishbein &Ajzen, 2010 and 2011) and Case *et al.* (2015).

Paramount attention is to be paid to the NORMS (Normative Beliefs and Perceived Norms) that shapes the perceptions of the cattle rustling communities. Furthermore, CONTROL (Control Beliefs and Perceived Behavioral Control) that are triggered by expert power and conducive cattle rustling environment need to be address as Agbu and Okeke (2008) and Musinga et al. (2010), Jackson (2011) and Schilling *et al,* (2012) proposed.

In conclusion, if all the salient beliefs and other factors are removed from the equation we may see South Sudan ushering into a dawn of cattle rustling free zone like others who have battled the anomaly for decades.

Practice Recommendations

First of all for curbing down the cause of cattle rustling the study recommends the establishment of agricultural extension services so that, the communities will have alternative resources for supporting the livelihood of the communities.

Educational services for remedying the literacy gap, changing the perception and mind-set of the communities about cattle rustling.

Thirdly, as cattle rustling norms tries to over-power moral norms, there is a need for instituting stronger legislation and empowering local traditional authorities who should be tasked with the mandate of stemming cattle rustling activities.

Finally, comprehensive disarmament of the communities including cattle camps and development of physical infrastructure would ameliorate and control cattle rustling.

Research Recommendations

1- Explicit studies should be conducted in cattle rusting behavior with special emphasis on attitude (instrumental and experiential attitudes), perceived norms (injunctive and descriptive norms), and perceived behavioral control (autonomous and capacity).

2- There is need for replicating the study with much higher number of participants and covering a much wider pastoral areas in order to assess the attitude, norms and the level of control the pastoral and farming communities have towards cattle rustling.

3- Further studies may be needed to shed light on rustling that occurs across the border of South Sudan involving citizen from the neighboring countries such as Kenya (Turkana, Masai, Pokot tribes, etc.) and Uganda (Karamajong, Baganda, Sebei tribe, etc.) using Theory of Planned Behavior (TPB) (Fishbein & Ajzen 2010).

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Appendices

Appendix A VT IRB-15-869 Approval (2015-16)

VirginiaTech

Office of Research Compliance
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax 540/231-0959
email irb@vt.edu
website http://www.irb.vt.edu

MEMORANDUM
DATE: October 15, 2015
TO: Rick Rudd
FROM: Virginia Tech Institutional Review Board (FWA00000572, expires July 29, 2020)
PROTOCOL TITLE: The Phenomenal and Effect of Cattle Rustling on South Sudanese Communities
IRB NUMBER: **15-869**

Effective October 15, 2015, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements

outlined at: http://www.irb.vt.edu/pages/responsibilities.htm

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As:	**Expedited, under 45 CFR 46.110 category(ies) 5,6,7**
Protocol Approval Date:	**October 15, 2015**
Protocol Expiration Date:	**October 14, 2016**
Continuing Review Due Date*:	**September 30, 2016**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

* Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office (irbadmin@vt.edu) immediately.

Appendix B VT IRB-15-869 Approval (2016-17)

VirginiaTech

Office of Research Compliance
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax 540/231-0959
email irb@vt.edu
website http://www.irb.vt.edu

MEMORANDUM

DATE: October 25, 2016

TO: Rick Rudd, Martin Baru Baru Richard Sebit

FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)

PROTOCOL TITLE: The Phenomenal and Effect of Cattle Rustling on South Sudanese Communities

IRB NUMBER: **15-869**

Effective October 25, 2016, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the Amendment request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at: http://www.irb.vt.edu/pages/responsibilities.htm

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As:	**Expedited, under 45 CFR 46.110 category(ies) 5,6,7**
Protocol Approval Date:	**October 15, 2016**
Protocol Expiration Date:	**October 14, 2017**
Continuing Review Due Date*:	**September 30, 2017**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this

requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

* Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office (irbadmin@vt. edu) immediately.

Appendix C Research Protocol

VirginiaTech

Institutional Review Board
Research Protocol

Once complete, upload this form as a Word document to the IRB Protocol Management System:
https://secure.research.vt.edu/irb

Section 1: General Information

1.1 DO ANY OF THE INVESTIGATORS OF THIS PROJECT HAVE A REPORTABLE CONFLICT OF INTEREST?
(http://www.irb.vt.edu/pages/researchers.htm#conflict)

☒ **No**
☐ **Yes,** explain:

1.2 WILL THIS RESEARCH INVOLVE COLLABORATION WITH ANOTHER INSTITUTION?

☒ **No,** go to question 1.3
☐ **Yes,** answer questions within table

IF YES
Provide the name of the institution [for institutions located overseas, please also provide name of country]**:**
Indicate the status of this research project with the other institution's IRB: ☒ Pending approval ☐ Approved ☐ Other institution does not have a human subject protections review board ☐ Other, explain:
Will the collaborating institution(s) be engaged in the research? (http://www.hhs.gov/ohrp/policy/engage08.html) ☒ No ☐ Yes
Will Virginia Tech's IRB review all human subject research activities involved with this project? ☐ No, provide the name of the primary institution: ☒ Yes *Note: primary institution = primary recipient of the grant or main coordinating center*

1.3 IS THIS RESEARCH SPONSORED OR SEEKING SPONSORED FUNDS?

☒ **No,** go to question 1.4
☐ **Yes,** answer questions within table

IF YES
Provide the name of the sponsor [if NIH, specify department]:
Is this project receiving federal funds? ☒ No ☐ Yes **If yes,** **Does the grant application, OSP proposal, or "statement of work" related to this project include activities involving human subjects that are <u>not</u> covered within this IRB application?** ☒ No, all human subject activities are covered in this IRB application ☐ Yes, however these activities will be covered in future VT IRB applications, these activities include: ☐ Yes, however these activities have been covered in past VT IRB applications, the IRB number(s) are as follows: ☐ Yes, however these activities have been or will be reviewed by another institution's IRB, the name of this institution is as follows: ☐ Other, explain: **Is Virginia Tech the primary awardee or the coordinating center of this grant?** ☐ No, provide the name of the primary institution: ☒ Yes

1.4 DOES THIS STUDY INVOLVE CONFIDENTIAL OR PROPRIETARY INFORMATION (OTHER THAN HUMAN SUBJECT CONFIDENTIAL INFORMATION), OR INFORMATION RESTRICTED FOR NATIONAL SECURITY OR OTHER REASONS BY A U.S. GOVERNMENT AGENCY?

For example – government / industry proprietary or confidential trade secret information

☒ **No**
☐ **Yes,** describe:

1.5 DOES THIS STUDY INVOLVE SHIPPING ANY TANGIBLE ITEM, BIOLOGICAL OR SELECT AGENT OUTSIDE THE U.S?

☒ **No**
☐ **Yes**

Section 2: Justification

2.1 DESCRIBE THE BACKGROUND, PURPOSE, AND ANTICIPATED FINDINGS OF THIS STUDY:

About 350,000 cattle are stolen a year, costing farmers 200 million South Sudanese pounds in lost revenue, according to a 2010 study carried out by SNV, a non-profit organization, for the Ministry of Animal Resources and Fisheries. In 2009, about 2,500

people were killed in cattle raids, the study estimated (Musinga et al., 2010 and Jackson, 2011).

Cattle's rustling is becoming a very grave problem for South Sudanese communities at national as well as states government level to contain. It is worsening and proliferating at alarming rate on almost daily basis at states such as Central Equatoria, Unity, Warrap, Lake, Jongle State, with persistent unnecessary loss of lives of cattle rustlers, farmers and their families. Currently it is encroaching and has started claiming the lives of innocent farmers in Western Equatoria and Central Equatoria, Eastern Equatoria States, etc. states that used to be peaceful.
Thus the purposes of this phenomenological study is to investigates the following:
(i) How does cattle's rustling affects your community?
(ii) What are the perceptions of chiefs/cattle keepers/ farmers/wives about cattle rustling?
(iii) What can be done to discourage cattle rustling?

The study will have a sequencial Exploratory Mixed Method with two phases; (i) Qualitative Phase and Quantitative Phase. The Qualitative approach will develop the Survey Questionnaire for the Quantitative Part which will coorborate, complement and expand the first phase.

The study will expose some anomalies and root causes associated with cattle rustling and add an ingredient to strategies to be put forward for mitigating the illegal practices. Furth more, the research will acts as a resource among resources that will reduce the illegal trade.

2.2 EXPLAIN WHAT THE RESEARCH TEAM PLANS TO DO WITH THE STUDY RESULTS:
For example - publish or use for dissertation

My adviser and I plans to pulbish and/or present the study's results in scholarly journals and/or conferences. We also planned to disseminate the resullts to the stakeholders (Ministry of Eduacation and Scientific Research in South Sudan, the cattle keeping communities, Farmers, Women Association, and youth from the affected states).

Section 3: Recruitment

3.1 DESCRIBE THE SUBJECT POOL, INCLUDING INCLUSION AND EXCLUSION CRITERIA AND NUMBER OF SUBJECTS:
Examples of inclusion/exclusion criteria - gender, age, health status, ethnicity

Participation for the sequencial exporatory mixed method will be limited to:
1-In phase one (qualitative approach) will recruit 30 participants for the one-on-one in-depth interview.

2- Phase two (Quantitative Survey) will recurit 500 Subjects (100 each) from five States (Unity, Warrap, Jonglei, Central Equatoria and Lake State). The Subject will be recruited throught, e-mail, phone call, personal visit and electronic questionnaire. (We shall not use the psot office due to poor postal services in South Sudan).
- **The subject will be recruited from 18 years or older**
- **They should be either cattle keepers, farmers, youth, women and government offiicials from the states.**

3.2 WILL EXISTING RECORDS BE USED TO IDENTIFY AND CONTACT / RECRUIT SUBJECTS?

Examples of existing records - directories, class roster, university records, educational records

☒ **No,** go to question 3.3
☐ **Yes,** answer questions within table

IF YES
Are these records private or public? ☐ Public ☒ Private, describe the researcher's privilege to the records:
Will student, faculty, and/or staff records or contact information be requested from the University? ☒ No ☐ Yes, provide a description under Section 14 (Research Involving Existing Data) below.

3.3 DESCRIBE RECRUITMENT METHODS, INCLUDING HOW THE STUDY WILL BE ADVERTISED OR INTRODUCED TO SUBJECTS:

The researcher will recruit via the Flyer, email, personal contact, electronic survey, phone calls and it will be send to:
• Chiefs, cattle keepers, farmers, women, youth and government officials from the mentioned five states (Jongle, Warap, Bentiu, Lake and Central Equatoria State) in South Sudan.

3.4 PROVIDE AN EXPLANATION FOR CHOOSING THIS POPULATION:

Note: the IRB must ensure that the risks and benefits of participating in a study are distributed equitably among the general population and that a specific population is not targeted because of ease of recruitment.

This population was selected to ensure all participants are of legal age to consent to research, and are currently active in cattle rearing, and practicing agricultural in the affected states.

Section 4: Consent Process

For more information about consent process and consent forms visit the following link:
http://www.irb.vt.edu/pages/consent.htm

If feasible, researchers are advised and may be required to obtain signed consent from each participant unless obtaining signatures leads to an increase of risk (e.g., the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting in a breach of confidentiality). Signed consent is typically not required for low risk questionnaires (consent is implied) unless audio/video recording or an in-person interview is involved. If researchers will not be obtaining signed consent, participants must, in most cases, be supplied with consent information in a different format (e.g., in recruitment document, at the beginning of survey instrument, read to participant over the phone, information sheet physically or verbally provided to participant).

4.1 CHECK ALL OF THE FOLLOWING THAT APPLY TO THIS STUDY'S CONSENT PROCESS:

☒ Verbal consent will be obtained from participants
☒ Written/signed consent will be obtained from participants

☐ Consent will be implied from the return of completed questionnaire. Note: The IRB recommends providing consent information in a recruitment document or at the beginning of the questionnaire (if the study only involves implied consent, skip to Section 5 below)
☐ Other, describe:

4.2 PROVIDE A GENERAL DESCRIPTION OF THE PROCESS THE RESEARCH TEAM WILL USE TO OBTAIN AND MAINTAIN INFORMED CONSENT:

Informed consent will be obtained both verbally and in written form. Written consent will be obtained by the primary interviewer prior to the collection of data. Verbal consent will be recorded at the beginning of the audio-recorded interview. Signed consent forms will be secured in a locked filing cabinet at University of Juab, CNRES' Dean's Office and Litton Reaves Hall office 214A. All audio recordings will be password protected.

4.3 WHO, FROM THE RESEARCH TEAM, WILL BE OVERSEEING THE PROCESS AND OBTAINING CONSENT FROM SUBJECTS?

The co-investigator is responsbile for obtaining both written and verbal consent. Meanwhile my Primary investigatory; adviser will have a copy of the recording in his office.

4.4 WHERE WILL THE CONSENT PROCESS TAKE PLACE?

Consent will be obtained in a safe and quiet space, mutually agreed upon for the comfort of both participants and the researcher.

4.5 DURING WHAT POINT IN THE STUDY PROCESS WILL CONSENTING OCCUR?
Note: unless waived by the IRB, participants must be consented before completing any study procedure, including screening questionnaires.

Consent will be obtained at the time of the interview, prior to the collection of any data.

4.6 IF APPLICABLE, DESCRIBE HOW THE RESEARCHERS WILL GIVE SUBJECTS AMPLE TIME TO REVIEW THE CONSENT DOCUMENT BEFORE SIGNING:
Note: typically applicable for complex studies, studies involving more than one session, or studies involving more of a risk to subjects.

Participants will be provided with a copy of the consent form prior to the interview. The interviewer will allow participants time to read the document, will summarize the document, and then answer any questions pertaining to consent, confidentiality, and data security prior to obtaining a signature on the consent form. The signed form will be secured by the primary interviewer and an additional copy will be provided to the participant.

☐ Not applicable

Section 5: Procedures

5.1 PROVIDE A STEP-BY-STEP THOROUGH EXPLANATION OF ALL STUDY PROCEDURES EXPECTED FROM STUDY PARTICIPANTS, INCLUDING TIME COMMITMENT & LOCATION:

Participants will:
1-Qualitative Phase:
- **Provide informed consent to an audio recorded interview during which the researcher will take field notes.**

The participant will be interviewed for about 60 minutes using in-depth open ended interview.
- **Provide basic demographic data including age, sex, and State of origin.**
- **Respond to and reflect on in-depth interview questions.**

2-Survey Questionnaire:
Provide informed consent either written or verbal consent that will be tape recorded.
Fill Survey Questionnaire developed from constructs/themes from the interviews and this may take about 5-10 minutes
- **Be given the opportunity to voluntary provide the physical location of their farm or cattle camp.**
- **Be given the opportunity to allow researchers to visit their farm or cattle camp.**
- **Be given the opportunity to consent to photographs/video recordings of their farm or cattle camp**

5.2 DESCRIBE HOW DATA WILL BE COLLECTED AND RECORDED:

The study is a sequencial Expolratory mixed method, thus, the data collection will be in two phases:
1- Qualitative Phase:
Primary Data will be collected through in-depth interviews, site visits, and publically available information. Interviews will be collected by a primary interviewer. The reseracher will audio record the sessions and keep field notes for further follow up. Site visits will be recorded in field notes and, if consent is provided, information through photographs or video will be recorded. If there is publically available information on websites/blogs/social media/news papers will be recorded.

2-Quantitative Phase (Surevy Questionnaire):
This phase will be developed by using the themes extracted from the qualitative interviews, Data will be collected via random stratified sampling. This phase will corrobrate, complement and strengthen the rigor of the findings.

5.3 DOES THE PROJECT INVOLVE ONLINE RESEARCH ACTIVITES (INCLUDES ENROLLMENT, RECRUITMENT, SURVEYS)?
View the "Policy for Online Research Data Collection Activities Involving Human Subjects" at *http://www.irb.vt.edu/documents/onlinepolicy.pdf*

☒ **No,** go to question 6.1
☐ **Yes,** answer questions within table

IF YES
Identify the service / program that will be used: ☐ www.survey.vt.edu, go to question 6.1 ☐ Blackboard, go to question 6.1 ☐ Center for Survey Research, go to question 6.1 ☐ Other **IF OTHER:** Name of service / program: URL: This service is… ☐ Included on the list found at: http://www.irb.vt.edu/pages/validated.htm

☐ Approved by VT IT Security
☐ An external service with proper SSL or similar encryption (https://) on the login (if applicable) and all other data collection pages.
☐ None of the above (note: only permissible if this is a collaborative project in which VT individuals are only responsible for data analysis, consulting, or recruitment)

Section 6: Risks and Benefits

6.1 WHAT ARE THE POTENTIAL RISKS (E.G., EMOTIONAL, PHYSICAL, SOCIAL, LEGAL, ECONOMIC, OR DIGNITY) TO STUDY PARTICIPANTS?

There are minimal risks to participants associated with this study.

6.2 EXPLAIN THE STUDY'S EFFORTS TO REDUCE POTENTIAL RISKS TO SUBJECTS:

Researchers will make every effort to reduce potential risks to participants by:
- **Maintaining the security of signed informed consent documents.**
- **Assigning pseudonyms and**
- **Masking all identifiers.**

6.3 WHAT ARE THE DIRECT OR INDIRECT ANTICIPATED BENEFITS TO STUDY PARTICIPANTS AND/OR SOCIETY?

The benefits of this study include:
- **An opportunity for participants to assit in mitigation of cattle raiding incidences, reduction of unneccessary lost of human lives in the process of rustling, capacity building of the commmunities, sustainability of the project, coexistance of farming and cattle rearing communities.**

Section 7: Full Board Assessment

7.1 DOES THE RESEARCH INVOLVE MICROWAVES/X-RAYS, OR GENERAL ANESTHESIA OR SEDATION?

☒ **No**
☐ **Yes**

7.2 DO RESEARCH ACTIVITIES INVOLVE PRISONERS, PREGNANT WOMEN, FETUSES, HUMAN IN VITRO FERTILIZATION, OR MENTALLY DISABLED PERSONS?

☒ **No,** go to question 7.3
☐ **Yes,** answer questions within table

IF YES
This research involves: ☐ Prisoners ☐ Pregnant women ☐ Fetuses ☐ Human in vitro fertilization ☐ Mentally disabled persons

7.3 DOES THIS STUDY INVOLVE MORE THAN MINIMAL RISK TO STUDY PARTICIPANTS?

Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily activities or during the performance of routine physical or psychological examinations or tests. Examples of research involving greater than minimal risk include collecting data about abuse or illegal activities. Note: if the project qualifies for Exempt review (http://www.irb.vt.edu/pages/categories.htm), it will not need to go to the Full Board.

☒ **No**
☐ **Yes**

IF YOU ANSWERED "YES" TO ***ANY ONE*** OF THE ABOVE QUESTIONS, 7.1, 7.2, OR 7.3, THE BOARD MAY REVIEW THE PROJECT'S APPLICATION MATERIALS AT ITS MONTHLY MEETING. VIEW THE FOLLOWING LINK FOR DEADLINES AND ADDITIONAL INFORMATION: http://www.irb.vt.edu/pages/deadlines.htm

Section 8: Confidentiality / Anonymity

For more information about confidentiality and anonymity visit the following link:
http://www.irb.vt.edu/pages/confidentiality.htm

8.1 WILL PERSONALLY IDENTIFYING STUDY RESULTS OR DATA BE RELEASED TO ANYONE OUTSIDE OF THE RESEARCH TEAM?
For example – to the funding agency or outside data analyst, or participants identified in publications with individual consent

☒ **No**
☐ **Yes,** to whom will identifying data be released?

8.2 WILL ANY STUDY FILES CONTAIN PARTICIPANT IDENTIFYING INFORMATION (E.G., NAME, CONTACT INFORMATION, VIDEO/AUDIO RECORDINGS)?
Note: if collecting signatures on a consent form, select "Yes."

☐ **No,** go to question 8.3
☒ **Yes,** answer questions within table

IF YES
Describe if/how the study will utilize study codes: A key will be created assigning a pseudonym to each participant.
If applicable, where will the key [i.e., linked code and identifying information document (for instance, John Doe = study ID 001)] **be stored and who will have access? The key will be stored, separate from transcripts and other data sources, in a locked cabinet at University of Juba, CNRES Dean's Office and Litton reaves office 241A and the primary researcher will have primary access to the key as indcated on IRB 15-196.** *Note: the key should be stored separately from subjects' completed data documents and accessibility should be limited.*
The IRB strongly suggests and may require that all data documents (e.g., questionnaire responses, interview responses, etc.) do not include or request identifying information (e.g., name, contact information, etc.) from participants. If you need to link subjects' identifying information to subjects' data documents, use a study ID/code on all data documents.

8.3 WHERE WILL DATA BE STORED?

Examples of data - questionnaire, interview responses, downloaded online survey data, observation recordings, biological samples

All hard copy data, when not being directly worked with by the researcher, will be stored in a locked filing cabinet in Litton Reaves Hall office 214A and primary invstigator's office. All recordings, field notes, transcriptions, coding forms, survey questionnaire forms, and any additional data collected as a result of this study will be password protected.

8.4 WHO WILL HAVE ACCESS TO STUDY DATA?

Access to the study data is limited to the primary and co-researchers indicated on IRB # 15-869.

8.5 DESCRIBE THE PLANS FOR RETAINING OR DESTROYING THE STUDY DATA

All data will be kept for a minimum period of 5 years or until all presentations and publications are completed, at which point, all recordings will be erased, files will be deleted, and paper documents will be shredded.

8.6 DOES THIS STUDY REQUEST INFORMATION FROM PARTICIPANTS REGARDING ILLEGAL BEHAVIOR?

☒ **No,** go to question 9.1
☐ **Yes,** answer questions within table

IF YES
Does the study plan to obtain a Certificate of Confidentiality? ☐ No ☐ Yes (Note: participants must be fully informed of the conditions of the Certificate of Confidentiality within the consent process and form) *For more information about Certificates of Confidentiality, visit the following link:* *http://www.irb.vt.edu/pages/coc.htm*

Section 9: Compensation

For more information about compensating subjects, visit the following link:
http://www.irb.vt.edu/pages/compensation.htm

9.1 WILL SUBJECTS BE COMPENSATED FOR THEIR PARTICIPATION?

☒ **No,** go to question 10.1
☐ **Yes,** answer questions within table

IF YES
What is the amount of compensation?

Will compensation be prorated?

☐ Yes, please describe:

☐ No, explain why and clarify whether subjects will receive full compensation if they withdraw from the study?

Unless justified by the researcher, compensation should be prorated based on duration of study participation. Payment must not be contingent upon completion of study procedures. In other words, even if the subject decides to withdraw from the study, he/she should be compensated, at least partially, based on what study procedures he/she has completed.

Section 10: Audio / Video Recording

For more information about audio/video recording participants, visit the following link:
http://www.irb.vt.edu/pages/recordings.htm

10.1 WILL YOUR STUDY INVOLVE VIDEO AND/OR AUDIO RECORDING?

☐ **No,** go to question 11.1

☒ **Yes,** answer questions within table

IF YES
This project involves: ☐ Audio recordings only ☐ Video recordings only ☒ Both video and audio recordings
Provide compelling justification for the use of audio/video recording: Audio recordings will be used to assist in the accurate transcritption of interviews. Video recordings and photographs will be confined to the physical locations of cattle camps/farms, and will not include participants in any idetnfiable manner, and are intended only for the purpose of further developing thick rich description to supplement participants' experiences.
How will data within the recordings be retrieved / transcribed? Researchers will use word processing to transcribe recorded data.
How and where will recordings (e.g., tapes, digital data, data backups) be stored to ensure security? All digitial media and documents will be secured through password protection. All hard copies of data will be locked in a filing cabinet in Litton Reaves Hall Office 214A and the Primary investigator's office.
Who will have access to the recordings? Access to the recordings is limited to the primary and -my adviser as indicated in IRB 15-869.
Who will transcribe the recordings? The primary interviewer is responsible for the transcritpion of audio recordings and for the statistical analysis of the survey questionnaire.
When will the recordings be erased / destroyed? All data will be maintained for a minimum period of 5 years or until all presentations and publications are

completed, at which point all recordings will be erased and photographs will be shredded.

Section 11: Research Involving Students

11.1 DOES THIS PROJECT INCLUDE STUDENTS AS PARTICIPANTS?

☐ **No,** go to question 12.1
☒ **Yes,** answer questions within table

IF YES
Does this study involve conducting research with students of the researcher? ☒ No ☐ Yes, describe safeguards the study will implement to protect against coercion or undue influence for participation: *Note: if it is feasible to use students from a class of students not under the instruction of the researcher, the IRB recommends and may require doing so.*
Will the study need to access student records (e.g., SAT, GPA, or GRE scores)? ☒ No ☐ Yes

11.2 DOES THIS PROJECT INCLUDE <u>ELEMENTARY</u>, <u>JUNIOR</u>, OR <u>HIGH SCHOOL</u> STUDENTS?

☒ **No,** go to question 11.3
☐ **Yes,** answer questions within table

IF YES
Will study procedures be completed during school hours? ☐ No ☐ Yes **If yes,** **Students not included in the study may view other students' involvement with the research during school time as unfair. Address this issue and how the study will reduce this outcome:** **Missing out on regular class time or seeing other students participate may influence a student's decision to participate. Address how the study will reduce this outcome:**
Is the school's approval letter(s) attached to this submission? ☐ Yes ☐ No, project involves Montgomery County Public Schools (MCPS) ☐ No, explain why:

You will need to obtain school approval (if involving MCPS, click here: http://www.irb.vt.edu/pages/mcps.htm). Approval is typically granted by the superintendent, principal, and classroom teacher (in that order). Approval by an individual teacher is insufficient. School approval, in the form of a letter or a memorandum should accompany the approval request to the IRB.

11.3 DOES THIS PROJECT INCLUDE COLLEGE STUDENTS?

☐ **No,** go to question 12.1
☒ **Yes,** answer questions within table

IF YES
Some college students might be minors. Indicate whether these minors will be included in the research or actively excluded: ☐ Included ☒ Actively excluded, describe how the study will ensure that minors will not be included: **Participants will be asked to provide proof of age and catttle keeping and farming background.**
Will extra credit be offered to subjects? ☒ No ☐ Yes **If yes,** **What will be offered to subjects as an equal alternative to receiving extra credit without participating in this study?** **Include a description of the extra credit (e.g., amount) to be provided within question 9.1 ("IF YES" table)**

Section 12: Research Involving Minors

12.1 DOES THIS PROJECT INVOLVE MINORS (UNDER THE AGE OF 18 IN VIRGINIA)?

Note: age constituting a minor may differ in other States.

☒ **No,** go to question 13.1
☐ **Yes,** answer questions within table

IF YES
Does the project reasonably pose a risk of reports of current threats of abuse and/or suicide? ☐ No ☐ Yes, thoroughly explain how the study will react to such reports: *Note: subjects and parents must be fully informed of the fact that researchers must report threats of suicide or suspected/reported abuse to the appropriate authorities within the Confidentiality section of the Consent, Assent, and/or Permission documents.*

Are you requesting a waiver of parental permission (i.e., parent uninformed of child's involvement)?

☐ No, **both** parents/guardians will provide their permission, if possible.
☐ No, **only one** parent/guardian will provide permission.
☐ Yes, describe below how your research meets **all** of the following criteria (A-D):

Criteria A - The research involves no more than minimal risk to the subjects:

Criteria B - The waiver will not adversely affect the rights and welfare of the subjects:

Criteria C - The research could not practicably be carried out without the waiver:

Criteria D - (Optional) Parents will be provided with additional pertinent information after participation:

Is it possible that minor research participants will reach the legal age of consent (18 in Virginia) while enrolled in this study?

☐ No
☐ Yes, will the investigators seek and obtain the legally effective informed consent (in place of the minors' previously provided assent and parents' permission) for the now-adult subjects for any ongoing interactions with the subjects, or analysis of subjects' data? If yes, explain how:

For more information about minors reaching legal age during enrollment, visit the following link: http://www.irb.vt.edu/pages/assent.htm

*The procedure for obtaining assent from minors and permission from the minor's guardian(s) must be described in **Section 4** (Consent Process) of this form.*

Section 13: Research Involving Deception

For more information about involving deception in research and for assistance with developing your debriefing form, visit our website at http://www.irb.vt.edu/pages/deception.htm

13.1 DOES THIS PROJECT INVOLVE DECEPTION?

☒ **No,** go to question 14.1
☐ **Yes,** answer questions within table

IF YES
Describe the deception:
Why is the use of deception necessary for this project?
Describe the debriefing process:
Provide an explanation of how the study meets all the following criteria (A-D) for an alteration of consent: Criteria A - The research involves no more than minimal risk to the subjects: Criteria B - The alteration will not adversely affect the rights and welfare of the subjects:

Criteria C - The research could not practicably be carried out without the alteration:

Criteria D - (Optional) Subjects will be provided with additional pertinent information after participation (i.e., debriefing for studies involving deception):

By nature, studies involving deception cannot provide subjects with a complete description of the study during the consent process; therefore, the IRB must allow (by granting an alteration of consent) a consent process which does not include, or which alters, some or all of the elements of informed consent.

The IRB requests that the researcher use the title "Information Sheet" instead of "Consent Form" on the document used to obtain subjects' signatures to participate in the research. This will adequately reflect the fact that the subject cannot fully consent to the research without the researcher fully disclosing the true intent of the research.

Section 14: Research Involving Existing Data

14.1 WILL THIS PROJECT INVOLVE THE COLLECTION OR STUDY/ANALYSIS OF EXISTING DATA DOCUMENTS, RECORDS, PATHOLOGICAL SPECIMENS, OR DIAGNOSTIC SPECIMENS?
Please note: it is not considered existing data if a researcher transfers to Virginia Tech from another institution and will be conducting data analysis of an on-going study.

☒ **No,** you are finished with the application
☐ **Yes,** answer questions within table

IF YES
From where does the existing data originate?
Provide a detailed description of the existing data that will be collected or studied/analyzed:
Is the source of the data public? ☐ No, continue with the next question ☐ Yes, you are finished with this application
Will any individual associated with this project (internal or external) have access to or be provided with existing data containing information which would enable the identification of subjects: ▪ **Directly** (e.g., by name, phone number, address, email address, social security number, student ID number), or ▪ **Indirectly through study codes** even if the researcher or research team does not have access to the master list linking study codes to identifiable information such as name, student ID number, etc or ▪ **Indirectly through the use of information that could reasonably be used in combination to identify an individual** (e.g., demographics) ☐ No, collected/analyzed data will be completely de-identified ☐ Yes,

If yes,

Research will not qualify for exempt review; therefore, if feasible, written consent must be obtained from individuals whose data will be collected / analyzed, unless this requirement is waived by the IRB.

Will written/signed or verbal consent be obtained from participants prior to the analysis of collected data? -select one-

This research protocol represents a contract between all research personnel associated with the project, the University, and federal government; therefore, must be followed accordingly and kept current.

Proposed modifications must be approved by the IRB prior to implementation except where necessary to eliminate apparent immediate hazards to the human subjects.

Do not begin human subjects activities until you receive an IRB approval letter via email.

It is the Principal Investigator's responsibility to ensure all members of the research team who interact with research subjects, or collect or handle human subjects data have completed human subjects protection training prior to interacting with subjects, or handling or collecting the data.

----------END----------

Appendix D Recruitment Flyer

Cattle Keeper or Farmers
Needed For
Volunteer Research Interviews

I am looking for volunteers to participate in not more than one-hour interview about their experiences with *Cattle Raiding and Its Effect on Communities.*

Participants must be from Jongle, Central Equatoria, Unity, Warap and Lake State, he/she should be a chief/cattle keeper/farmer/woman/youth, she/he must be 18 or older, and be engaged in either cattle keeping or farming.

Participation is voluntary and confidential; compensation will not be offered. Interviews will be held between December 2015 to May 2017 at University of Juba campus and the above mentioned states.

If you are interested, please call martin Sebit at +211954262653 or email at msebit@vt.edu.

Thank you!

Appendix E Recruitment Email

Virginia Tech Polytechnic Institute and State University
College of Agriculture and Life Science
Department of Agricultural Leadership and Community Education (ALCE) Litton-Reaves Hall, Room 214
175 West Campus Drive, Blacksburg, VA, 24061
wwe.alce.vt.edu
Date: Sept. 26th 2016

Subject: Online Survey on Cattle Rustling in South Sudan under IRB # 15-869
Dear Sir/Madam,
You're Excellency, I am writing to ask your help with an important study on the above mentioned subject conducted by Agricultural Leadership and Community Education at Virginia Tech. to understand cattle rustling in South Sudan.
In the next few days you will receive a request to participate in an online survey by answering about your experience with cattle rustling.
My dear friend, I will do everything within my capacity to make it easy for you to participate in the study. This study can see the light of the day only with the generous support of people like you!
Please, send me your street address to facilitate the process of sending you a small token in appreciation of your good work. I hope you will take about 5-10 minutes of your precious time to help the study.
I hope you will enjoy the survey and the chance to voice your thoughts and opinion about cattle rustling in South Sudan.

Yours Faithful,
Martin Sebit
msebit@vt.edu
+1540-449-3372

Appendix F Informed Consent for Participants

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Informed Consent for Participants
in Research Projects Involving Human Subjects

Title of Research: ***The Phenomenal and Effect of Cattle Rustling on South Sudanese Communities***

Primary Investigator Prof. Rick Rudd email: rrudd@vt.edu
Co-Investigator: Martin Sebit USA Phone: 540-449-3372 and
South Sudan Phone +211954262653 e-mail msebit@vt.edu

I. Purpose of this Sequential Exploratory Mixed Method is to investigate:

(i) How does cattle's rustling affects your community?

(ii) What are the perceptions of chiefs/cattle keepers/ farmers/wives/youth about cattle rustling?

(iii) What can be done to discourage cattle rustling?

This study will have Quantitative Phase;

Quantitative Survey

The study will recruit about 500 subjects, 100 from each of the five states of Jonglei, Central Equatoria, Unity, Upper Nile, Warap and Lake State) these participants will include the following:

a) Chiefs
b) Cattle keepers
c) Farmers
d) Women and wife of cattle and farming community
e) Government Officials from the States and
f) Youth

In order to reduce nonresponses errors the recruitment will be done via; e-mail, phone call, personal visit and electronic survey (that may take about 5-10 minutes to fill).

II. Procedures

Part Two: Qualitative Phase; if a subject agrees to join the study, I will ask him/her to participate in filling a less than 10 minute electronic survey questionnaire or paper survey questionnaire on either University of Juba campus or a cattle camp/farm, scheduled at a time and location convenient for the participant. The interviews will take place between October and January 2017.

In addition to participating in the interview, you have the option to:

- ❑ Disclose the physical location of your cattle camp/farming site.
- ❑ Allow the primary researcher to visit your cattle camp/farming site
- ❑ Allow your cattle camp/farming site to be video recorded/photographed
- ❑ Be contacted by either phone or email after the interview to clarify information you provided.

III. Risks

There are minimal risks involved in this study.

IV. Benefits

The benefits of this study include:

- An opportunity for you to reflect on your experiences participating in cattle rearing/farming.
- A contribution to existing research related to adult participation in cattle camp/farming.
- Possibly influencing the creation and/or funding of cattle management/farming.

We do not offer you a promise or guarantee of benefits to encourage you to participate.

V. Extent of Anonymity and Confidentiality

Anything the primary researcher record in your interview, any images he take of your cattle camp/farming site, or any other information you offer will be kept separate from your name or other identifying information you provide. All of this information will be stored in a locked file cabinet in an office on Virginia Tech's campus (Litton Reaves Hall office 241A and a copy in my adviser's office) when we are not using it. Unless you provide written consent, we will not release results from our study with your name or identifying information to anyone, other than researchers working on the project. In the case our research study is audited, the Virginia Tech (VT) Institutional Review Board (IRB) may look at the information you provide. The VT IRB is responsible for making sure researchers do everything they can to protect research participants, like yourself.

VI. Compensation

Participation in this study is completely voluntary and no compensation is offered.

VII. Freedom to Withdraw

It is important for you to know that you are free to withdraw from this study at any time without penalty. You are free not to answer any questions that you choose or respond to what is being asked of you without penalty.

Please note that there may be circumstances under which the investigator may determine that a subject should not continue as a subject.

Should you withdraw or otherwise discontinue participation, you will be compensated for the portion of the project completed in accordance with the Compensation section of this document.

VIII. Questions or Concerns

Should you have any questions about this study, you may contact me the primary research investigator, my contacts information are included at the beginning of this document.

Should you have any questions or concerns about the study's conduct or your rights as a research subject, or need to report a research-related injury or event, you may contact the VT IRB Chair, Dr. David M. Moore at moored@vt.edu or (540) 231-4991.

IX. Subject's Consent

I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent:

_____ Date_____
Subject signature

_____
Subject printed name

Participant should be given a copy of this form.

Appendix G Interview Protocol

The Phenomenal and Effect of Cattle Rustling on South Sudanese Communities **Interview Protocol**

The purpose of this phenomenal qualitative study is to investigate; the effect of cattle's rustling on South Sudanese communities, the perceptions of chiefs/cattle keepers/ farmers/wives/youth about cattle rustling and what should be done to discourage cattle rustling.

Date: December 2015 to May, 2017

Location: South Sudan

Interviewee (*Code*):

Interviewer:

Consent Form:

Introductory Protocol
(Turn recording gadget on)
To help with my note-taking, I would like to audiotape our conversations as indicated in the consent form we just have discussed. I will use the recording to make sure I have written your words exactly. Only researchers on this project will have access to this recording and we will erase them when the research project is complete.

Do you feel comfortable with the Consent Form you signed?
Do you have any further questions about participating in this interview?

I am trying to discover more about ***The Phenomenal and Effect of Cattle Rustling on Your Community***, and you have offered to speak with me today because you are currently involved in cattle keeping/farming. Thank you for participating. I have planned this interview to less than one hour during which I have several questions that I will ask you; however, am here mainly to listen to your experiences.
Questioners: For December, 2015 to January, 2016

1.0 Stage One: Pre-interview Questions:

Table 1: Format of the Questioners

Questioners	Chiefs	Cattle Keepers	Farmers	Wives
How does cattle's rustling affect your community?				

What are your perceptions about cattle rustling?				
I want to understand what you do to better understand your best experiences and lessons learned from cattle rustling.				
I'd like you to focus on an event that you have learned a lot from, something that others who want to do this kind of work might find instructive.				
Do you have a specific project/program for enhancing cattle rearing to avert cattle rustling that might serve as the focus for the interview? Can you give me a quick overview of it?				
What can be done to discourage cattle rustling?				

STAGE TWO (2): (From May, 2016 to May, 2017)

2.1.0 Phase Two: Interview Questions:

2.1.1 Part One: Background and Experiences

1. What would you say most motivates you to do what you do in the area of cattle keeping and cattle rustling?

2. What are you most excited or passionate about with cattle keeping and rustling? What are the goals you most want to accomplish in your work?
3. I want to understand how and why you ended up here working in the cattle camp in Warrap/Unity/Jongle/Western Bahr El Ghazal State/Western Equatoria/Central Equatoria/Eastern Equatoria. What led you to this job? What were you doing before you came here?
4. What attracted you to work as cattle keeper/rustler?
5. Did you have any key mentors or people who deeply influenced you, what you believe in and what you are committed to in your work and life?

2.1.2 Part Two: The Practice Story:

1. What is the specific even in cattle rustling that, you are going to be telling me about today that you have witnessed? Give me a brief overview of it.
2. Tell me about your specific role and contributions in cattle keeping/rustling. Let's start with the first thing you did. What was it?

3- Were there any key turning points in cattle keeping/rustling?

4- Were there any surprises and challenges?

5- How did you mitigate cattle stealing?

6- What were the key relationships that mattered most with other cattle owners? How so?

7- What were the key sources of support you encountered in cattle rustling/keeping? From whom or where? And why was that?

8- What was most rewarding in cattle rustling? How so?

9- What was the most depressing? How so?

10- What impacts have you seen in your community?

10 What was most challenging in cattle keeping/rustling? What did you do to deal with these challenges?

11 What motivates you to keep on rearing cattle or rustling cattle?

3.0 Part Three: Reflections and Lessons:

1. What are the lessons for anyone in cattle rustling, who might be embarking on such activity similar to this one?
2. How has cattle rustling affected your life?
3. Do you view your contributions in cattle rustling as success? In what ways?
4. What specifically was accomplished in averting and mitigating cattle rustling?
5. What were the practices that did not work so well? Why?
6. What would you do differently?
7. What do the cattle keeping you have just talked about tell me about community security? What exactly are cattle keeping in your community?
8. What do the cattle rustling impacted on the community you have just talked about tell me about the central benefits and challenges to mitigate cattle rustling in your area?
9. When you think of the future of cattle keeping you have talked about here, what gives you a sense of hope?
10. What would you like to see happen in 5 years from now? I know cattle keeping are challenging tusks?
11. What is next for you in your work as a cattle keeper/rustler?
12. What do you thing can minimize cattle rusting?
13. What are you looking forward to next and why?
14. Do you have any specific message?

2.1.5 Demographic Information

1. How old are you?
2. What sex do you identify as?
3. What is your marital status?
3. What ethnicity/race do you identify as?

Post Interview Comments and/or observations made by participant:

Appendix H Quantitative Survey

Questionnaires on Cattle Rustling on South Sudanese Communities

To be completed by the head of the Household (age 18 and over) in your and our community so that we can get solutions together for mitigating cattle rustling

Survey on: *The Phenomena and Effect of Cattle Rustling on South Sudanese Communities*
Instruction: Check (√) the appropriate box of your choice

Questioners	**Strongly agree 5**	**Agree 4**	**Neutral 3**	**Disagree 2**	**Strongly disagree 1**
1) I do not speak in favor of cattle rustling					
8) Cattle rustling is part of our culture.					
9) I believe lawlessness does not encourage cattle rustling.					
12) I believe cattle rustling is not acceptable means of acquiring cattle.					

13) I oppose stronger laws to mitigate cattle rustling.						
14) I believe cattle rustling does not result in the loss of innocent human and animal lives.						
16) I believe cattle rustling exists due to lawlessness.						
17) I do not agree with rustling cattle for marriage						
18) Cattle rustlers have guns.						
19) Cattle rustlers shouldn't be celebrated.						
21) Cattle rustling destroys social fabric						
22) I believe cattle rustling is as a result of rampant gun ownership.						
23) Laws should be enacted to deter cattle rustling.						
24) I believe cattle rustling exists due to illiteracy.						
25) Cattle rustlers shouldn't be rewarded.						
26) I believe cattle rustling is not as a result of rampant gun ownership.						
27) I would speak in favor of cattle rustlers						
28) I believe cattle rustling is acceptable means of acquiring cattle.						
29) Cattle rustling causes economic crisis						
30) I believe cattle rustling results in the loss of innocent human and animal lives						
31) Cattle rustlers do not have guns.						
33) I believe cattle rustlers should continue with rustling to earn money						
34) Cattle rustling is not part of our culture						

Instruction: Please Rate the Following Traits by putting (X) in the Appropriate Box:

Cattle Rustling is…								
	7	6	5	4	3	2	1	
Q2_1-Good								**Bad**
QID16_1-Bloody								**Not Bloody**
QID17_1-Favorable								**Unfavorable**
QID18_1-Violent								**Non-violent**
QID19_1-Fair								**Unfair**
Q12_1-Reliable								**Unreliable**
For Example								
Non competitive					***X***			***Competitive***

For any clarification and more information, please, don't hesitate to contact us at:

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ALCE at VirginiaTech

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Thanks Once more for completing this survey
“Let us together find solutions to our problems”

You’re Excellency, if you have more information the community can benefit from, please share in the space below