

Hazards of Modernity on the Talensis Indigenous Livestock Rearing (Guul Pohum)

Luu Yin *

Industrial Mathematics Department, SMS, CKT-UTAS, Navrongo

* E-mail of the corresponding author: luuyin2006@gmail.com

Abstract

Livestock rearing (*Guul*) is a major economic activity of indigenes in the Talensis Kingdom. Civilisation and the injection of Western educational systems have redirected the Economic and Developmental drives of the Indigenous *Taleng* from many traditional economic activities. Subsistent livestock rearing which augments whatever income source one may be relying upon, has endured the test of modernity. However, catering for these animals has been very challenging in recent times because of the need to educate all children. The study assessed the perceptions of respondents on the influence of modernity as a hazard on the livestock economy of indigenes. A sample of 400 respondents, above the age of 16 years, were drawn from twenty communities in the Talensi District of the Upper East Region. Interviews, observations and questionnaires were the main primary data collection instruments. The key findings of the study were that inadequate herding, stealing of animals on free range as well as those with Fulani herds men are major perils with a very high severity on indigenous livestock rearing. Western education system and rural urban migration were identified as the root causes of inadequate herding because the potential herders have to sacrifice herding for western school system and greener pastures in the cities. The study recommends cooperative ranching system (CRS) as a strategic push to manage the *Guul Pohum*.

Keywords: Indigenous livestock, risk taxonomy, subsistent livestock rearing, Indigenous risk management strategies

DOI: 10.7176/JESD/16-1-09

Publication date: February 28th 2025

1. Introduction

Livestock rearing (*Guul*) is a major economic activity of indigenes in the Talensis Kingdom. Civilisation and the injection of Western educational systems have redirected the economic and developmental drive of the Indigenous *Taleng*. This, notwithstanding, has not successfully delinked the rural dwellers from keeping livestock. The sustainability of the industry is associated with their belief systems and the financial gain it generates for the individual farmers. According to Agyemang *et al* (2009), Indigenous Africans such as the Talei, rear goats, sheep cattle, and even poultry for food, wealth, status, social recognition, and to meet their ritual and cultural needs. This is confirmed by Madalena *et al*, (2017) that the system has a long-standing history that dates back to the age of the founding ancestors to support their livelihoods and survival.

2. Usefulness of Livestock in the Indigenous Societies

2.1 Concepts

The Food and Agriculture Organisation (FAO) of the United Nations Organisation, affirmed the economic usefulness of livestock to Indigenous subsistent farmers as providing essential products and services to the farmers in their subsistence and commercial activities (FAO, 2021). It has been a complementarity to crop cultivation that boosts high yield and continuous cultivation on the same farmlands to allow more farm land for future generations. According to Wabacha *et al* (2020), Indigenous livestock rearing promotes biodiversity and environmental health. The traditional grazing and integrated farming systems fertilise the soil and enhance the resilience of the ecosystem. This makes the Indigenous mix-farming system a sustainable livelihood practice.

2.2 Livestock Risk Exposition

Considering the assertion of Millar, Apusigah, and Boonzaaijer, (2012) citing Haverkort, (2003), that African

traditional knowledge systems provide sustenance for Africans in a diverse, complex, and risk-prone environment, it is imperative that no conclusion can be drawn on the resilience and the sustainable capabilities of the Indigenous livestock system without visiting the challenges and risk expositions the system is exposed to.

2.3 Climatic or Environmental Related Risk Expositions

The study area's geographical location is characterized by land degradation – (sand weaning and small scale mining), and pressures of industrial agriculture. This has affected pasture availability, water resources, and livestock productivity (Thornton *et al.*, 2009; Herrero *et al.*, 2010). Blench (2001), had earlier identified increased urbanisation and encroachment of commercial agriculture as hazardous perils that limits grazing land and water resource access for Indigenous livestock. These perils are threats to the ecosystem's genetic diversity which is crucial for effective Indigenous Livestock Management. Emphasising the environmental expositions, Thornton *et al* (2018) and Herrero *et al* (2020) asserted that although the Indigenous breeds often exhibit some resilience, the extreme weather conditions significantly threaten livestock health and productivity.

2.4 Diseases and Parasites

Aside from climate change perils, Indigenous livestock is susceptible to various endemic diseases like foot and mouth diseases, tick-borne infections, and others (Perry & Grace, 2009) and increased risk of zoonotic diseases due to the human animal cohabitation (Lichoti *et al*, 2016). These infectious diseases have become so dynamic in their mode of infections and sometime break through the resilience of the indigenous breeds livestock. This, couple with limited access to veterinary services in rural areas, generate higher morbidity and mortality rates (Mekonnen *et al.*, 2021).

2.5 Socio-Economic Risk Expositions

The benefits of keeping livestock as asserted by the FAO, (2021) in their report as livestock being a source of food, wealth, and status of ranch owners is challenged by various social and economic risk expositions. Wealth is generated in increased equity holding either by recurrent income or capital gain. In the case of livestock farmers, especially subsistence Indigenous farmers, wealth if monetised, is assessed based on the market value or price of the animals and other products like dairy, meat, and hides. Market fluctuations, trade barriers, difficulty in accessing market centre among others have derail the actual values of the farmers (Bailey *et al.*, 1999). According to Kristjaanson *et al.*, (2002), also emphasised that rural Africa is characterised with poor infrastructure, roads and market which negatively contribute to farmers ability to access markets and sell their products at competitive prices. Omondi *et al.*, (2021) re-emphasised poor access to markets, fluctuating prices for livestock products as operational to challenges that exposes their wealth to risks of decline. He added the difficulty of small holder farmers' access to financial credit facilities from formal financial intermediaries and had to rely on their livestock for subsistence and income generation. This exposes their actual wealth to a risk of decline due to force sales.

2.6 Socio-Cultural Risks

Livestock is often deeply embedded in the social and cultural practices of subsistent farmers' societies. The increasing westernisation of African communities in the name of modernisation according to Haverkort, (2003) has influenced the peoples' explanation and their sacred cultural stance. Formal education has particularly injected so much diversity that has eroded the Indigenous Knowledge (IK) systems (Bickhard, 2006). The IK erosion has negatively affected its applications in Indigenous livestock management and the general subsistence livelihood (Berkes, 2008, Galvín, 2009, and Adano *et al.*, 2012).

Livestock are the moving Bank Accounts of the small holder farmers, any lost or death of these animals could mean a complete disaster to a family yet there is virtually no insurance policy for subsistent farmers in most rural African communities.

2.7 Technological risks

Technology like most modern development drivers, inject both opportunities and threats to indigenous knowledge systems in general. Focusing on Indigenous livestock rearing, technology offers opportunities such as mobile platforms for veterinary care, and market access to mitigate some of the risks (Suri, 2011). It however, also injects some perils into Indigenous livestock rearing. As reported by the FAO (2012), the online

veterinary care is an opportunity to commercial livestock farmers but to the indigenous livestock farmers, such services are mostly not accessible or unaffordable. This results in preventable diseases destroying livestock population. Salihu et al., (2020) considered the risk of advanced technology from the perspective of the technology being not compactible to local conditions can disrupt the Indigenous livestock practices and generate some unplanned negative consequences.

These confirm Bonzaaijer and Apusigah (2012) assertion that the influence of modernity on the African Indigenous knowledge systems and practices leads to the over exploitation of natural resources, land use and practices, misuse of position and knowledge by modern political and traditional / local leaders exposes the environment, health and social settings, and the value systems of the indigenous people to various risk perils.

All these point to the fact that in the wake of modernity, indigenous societies suffer increasing risky conditions in their communities.

3. Research Methodology

This study ventured into a terrain where an in-depth understanding was key and the need to generalise was also necessary to enhance any possible injection of complementarities from main stream science risk management strategies to augment the identified indigenous ones. To effectively achieve these objectives of the study, there was the need to use a research method that is flexible enough to integrate both the qualitative and quantitative approaches. The qualitative approach facilitates the eliciting of data on the behaviours, beliefs, opinion, emotions, social norms and perceptions among others from the respondents. The quantitative method on the other hand, aids to gather data that can be analysed statistically and be compared with the qualitative data to aid the researcher draw decisive conclusions from the findings.

On this basis, the study adopted the exploratory sequential method of the mixed research design. This method draws opines of selected individuals on risk and risk management across selected communities of the Talensis Kingdom. Going by this approach, the qualitative approach was the first phase of the study then followed by the quantitative one (Creswell, 2009). Baxter and Jack, (2008) reveals that qualitative research supports the exploration of issues through different lenses using a variety of data sources to allow for multiple facets of the phenomenon to be revealed and understood. The need for population figures and other data from the respondents called for some quantitative analysis to validate the qualitative data, so as to enhance the generalization of various aspects of the study.

The Taxonomy-based risk profiling approach (Webstar, 2004 as cited in (Maniasi, Britos, & Garcia-Martinez, 2006)) was adopted for the identification, classification and analysis of the risk expositions. The identified perils were categorised and cross tabulated with the demographic characteristics of respondents to build contingency tables. From these tables, Fishers Exact Test and/or chi squares, and *p*-values were computed on some of the risk categories. These computations added statistical evidence (McLeod, 2019) to help assess whether or not the respondents' acceptance or rejection of the expositions identified by the informants are significantly influenced by the demographic characteristics of the respondents.

4.0 Findings and Discussions

4.1 Perils of Modernity on Indigenous livestock rearing

Modernity and its drives are urban life-focused. Its patrons are people with skills acquired through formal or functional education. The younger generation therefore spend their time schooling at the expense of herding animals and other rural economic activities. The farmers are thus compelled to peg their animals, especially during the rainy season while they till the crops. This inadequate herding limits the animals' grazing and watering and therefore minimizes their growth, fattening, littering, and milk production. Some get strangled by the ropes and die, others are stolen by unsuspecting internal thieves, and a host of other expositions. Except for inadequate herding, the pre and post-modernity periods have common perils. Table 1 summarises the risk taxonomy of livestock in Indigenous settings.

Table 1: Taxonomy of Risks associated with Indigenous Livestock

Category	Peril Code	Risk Expositions	Risk Category
Climate/Nature (0)	AL01	Diseases /deaths of livestock *	AC
	AL02	Polythene bags consumption by livestock *	A
	AL03	Reptiles attack on animals *	A
	AL04	Inadequate Pastures & Water *	AB
People (1)	AL11	Inadequacy of Herding	B
	AL12	Inadequate access to Veterinary Services	B
	AL13	Missing animals *	ABC
	AL14	Stealing of animals *	ABC
Wealth/ Finance (2)	AL21	Breakdown of farm Houses /Pens *	A
	AL22	Unfavourable Prices of animals	ABC
	AL23	Bad debt	ABC

The perils marked (*) are mostly seen to be accidental and therefore pure risk in character
 Source: Field Data (2022)

The livestock perils identified were not necessarily peculiar to the study area but relatively common across the region. Aside from AL02, AL04 and AL11 all the perils are applicable to both poultry and livestock which together constitute “*Guul Pohum*”. Like any other business setting, human resource is a key success factor to livestock rearing (*Guul*). From the perils identified, herding which involves labour, was identified to be the root cause of most of the perils associated with *Guul Pohum*.

This inevitable factor of production called labour is hardly ignored in any business venture. In the indigenous poultry and livestock rearing, operations are mostly labour intensive. For instance every serious farmer will not release newly hatched chicks and their mother hen to the open. They will normally confine these chicks and their mother for about three to four weeks by which time they would have grown some wings that will enable them to jump over certain obstacles and effectively follow the hen. Even with that the farmer still keeps an eye on them, so that in the event of a predatory attack, or climatic hazards like rain he/she will rescue them. All these require human interferences where effort is exerted for production. In a similar manner, labour is essential in animal rearing just as it is in crop cultivation.

During the rainy season, owners of animals go through some difficulties to control their animals from evading people’s crops. During the Pre-modernity periods younger herders were whipped by farm owners if cattle or sheep evaded their farms. In fact, some parents even beat their own children who are herding their animals when they evade their crop farms. This time round, there are no herders to be beaten. The animals are arrested and confined awaiting the owner to come and pay for the damage the animals caused in the crop farm. Sometimes these cases find their way to Chiefs’ Palaces or even Police Stations. Modernity has, to some extent, washed off the brotherhood spirit of indigenes. People read meanings to cost-and-benefits of material gains rather than values attributable to the communal social capital.

Pegging cattle has now become the order of the day. The farmer simply gets some nylon ropes and pegs all the cattle so that he can work in the crops farm. This limits the cattle to the radius of their ropes and thus expose them to inadequate grazing. They are sometimes released after 15:00 GMT and sent to the stream to drink. That means if an animal was thirsty in the morning and needed a drink before it can graze well, such an animal will be starving while awaiting the opportunity to drink late in the afternoon. Because they are pegged, they are exposed to some flies and insects that they could have driven away by moving to some plants that the insects will not like to go near. Exogenous perils to animals such as snake bites, flood waters killing pegged animals, anthrax and other air-bone diseases. All these thieves taking advantage of the pegged animals confinement.

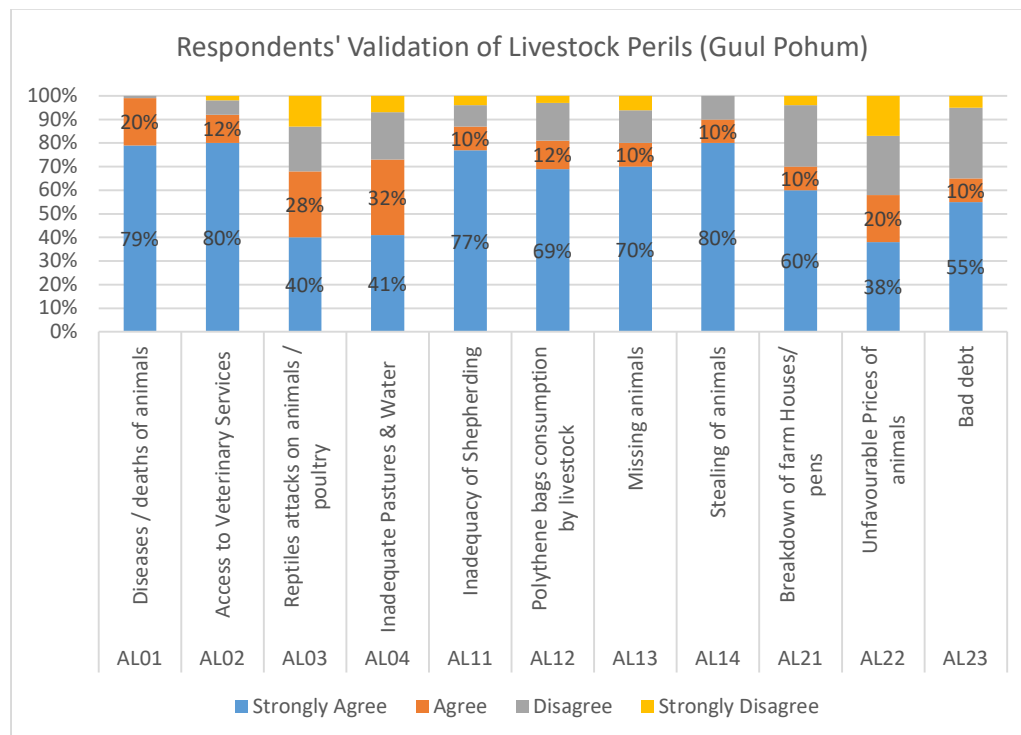


Figure 1: Respondents perception of perils associated with livestock
 Source: Field Data 2023

From Figure 1, although none of the risks was found to be a peculiar exposition to the study area, respondents endorsed all the identified perils as elements of risk expositions associated with livestock rearing in the study area. Diseases / death of animals (AL01) was the least contested peril while unfavourable prices of animals (AL22) was the most contested peril and thus attracting the least endorsement as an element of risk.

To determine the independence of the responses from any demographical influences of the respondents, chi-square and p-value statistics were computed to assess the hypothesis that the responses are not biased as in Table 2.

Table 2: Summary of Chi-square and P-value Statistics

Cross Tabulation of Livestock Perils and:	DF	Sign	Chi Sq. Cal χ^2_c	Critical Val χ^2_T	P-Value
Age of respondent	50	0.05	21.77	67.505	0.9998
Educational level of respondents	40	0.05	23.55	55.758	0.9821
Marital Status of respondents	40	0.05	26.87	55.758	0.9442
Occupational Status of respondents	60	0.05	30.18	79.082	0.9995
Religious Status of respondents	30	0.05	15.63	43.773	0.9856

Source: Field Data 2022

Rationale:

- The χ^2 and P-value statistics test the independence of the responses from any demographical influences.
 - Ho: Responses are not influenced by the respondents' demographic characteristics
 - H1: Responses are influenced by the respondents' demographic characteristics

Decision rules:

- Since all the calculated chi squares $\chi^2_c < \chi^2_t$

We fail to reject the Ho that the responses are free from any demographical biases.

The P-Values also added to the χ^2 statistical credence and confirmed the independence of responses from any biases of the respondents' demographic characteristics.

Re-categorisation of Perils into the Cosmivision framework of Risk

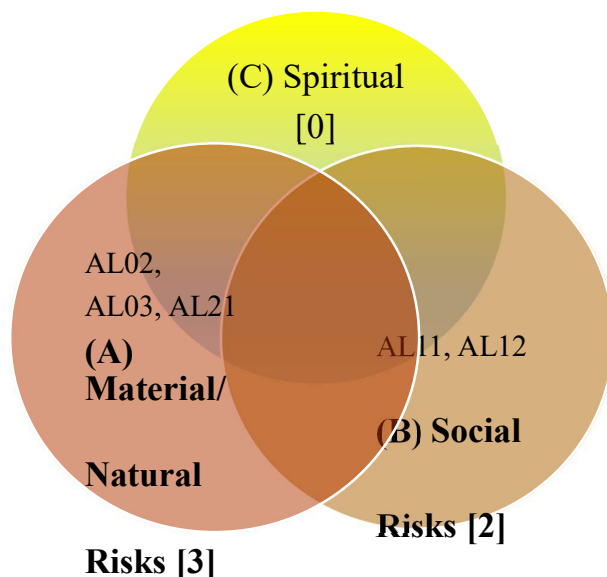


Figure 2: Constellations of the Livestock Risk Environment

Source: Miller (2012)

From Figure 2, the identified risk elements were re-categorised into the seven constellations of Millar (2012) Cosmivision Frame Work which is identified with the Talensis world view of risk. Livestock is predominantly a material factor that feed into the social and spiritual constellations. Although most of the livestock are sacred and are used for sacrifices to their Ancestors and other Deities, the interplay of the spiritual and any of the other two pillars do not produce any significant risk expositions on livestock. The livestock risk expositions are mostly generated through the interactions of material and social pillars of the life systems.

Probability of Perils Occurrence & Severity of Losses

Figure 3 is a cluster chart of the respondents' experience or knowledge of loss occurrence rates and loss severity of the perils.

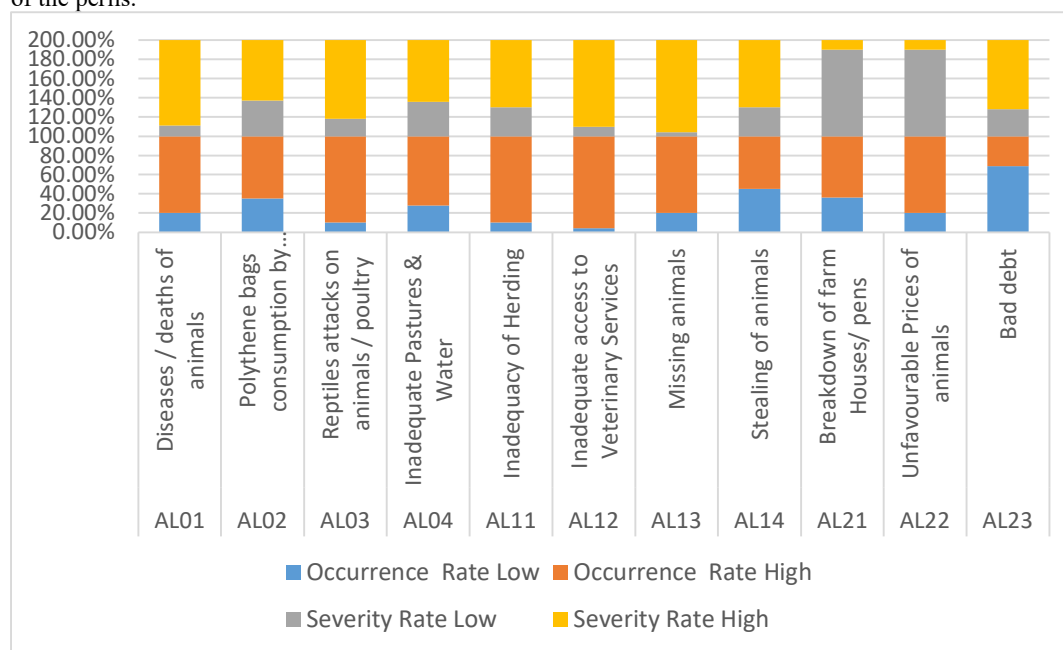


Figure 3: Cluster Chart of Perils Occurrence Probabilities and Severity of Loss

Source: Field Data 2023

From Figure 3, all the perils have high probabilities of occurrence except bad debts. Regarding the loss severity, only losses associated with the breakdown of farm houses and unfavourable prices of animals recorded low severities. The rest generate high severity of losses.

4.2 Indigenous Livestock Risk Management

The increasing rate of the people who have gone through the Western Education System has resulted in an equivalent growing diversification of their economic lives. Many households now depend on non-agriculture income for their everyday livelihood. This has resulted in a decreasing involvement in agricultural activities and less stress on farmlands. Nonetheless, majority of the resident population in each community setting are agriculture dependent. Irrespective of the various sources of income, agriculture provides the food and meat products for the indigenous settings.

The Talensi Indigenes sequentially applies spiritual and physical strategies to manage their exposition under the identified perils. They would normally consult the diviners first to ascertain the opinion of the ancestors on an exposition before seeking the physical solutions as in Table 3.

The indigenes see the risks associated with agriculture as cyclical and regular. They predict and assess such risk based on the historical wisdom of their ancestors that has been passed down orally over generations to them. Risk retention is about a default strategy Indigenes apply in managing their livestock risks. Table 3 is a summary of the risk management strategies of the profiled livestock risks.

Table 3: Indigenous Strategies for managing Livestock Risk Exposures

Peril ID#	Risk Expositions	Physical Strategies	Spiritual	Classification of Strategy
AL01	Diseases / deaths of animals	(i) Seek Veterinary Services (ii) Augment the Veterinary services with some herbal medications	(iii) Assign to deity to prevent death provided it is not a diversion from the humans but genuine livestock illness.	Both (i) and (ii) reduces to occurrence of the hazard
AL02	Polythene bags consumption by livestock	Few communities organise polythene bags control measures (burning or disposing them in a big pit).	n. a.	Retain risk if any ruminant falls prey. Else the strategies reduce the chances of the animals getting some to eat.
AL03	Reptiles attacks on animals / poultry	(i) Farmer monitors livestock periodically with his hunting dogs. (ii) Chicks and other young birds are released late in the morning for free range feeding	n. a.	Both strategies reduce the rate of occurrence. But if it does occur, risk is retained .
AL04	Inadequate Pastures & Water	(i) Bye laws are passed in most communities prohibiting bush burning and dry season fishing in the smaller ponds (ii) children are specifically warned against the acts (iii) identified offenders are heavily charged or punished	(iv) Sometimes, some feared deities are evoked to scare perpetrators from attempting to carry out any of the prohibited acts	All the strategies seek to reduce the prospect of one worsening the already bad situation of inadequate pastures and water for the animals
AL11	Inadequacy of Herding	Animals are pegged during rainy seasons and monitored by farmers themselves during the dry season	n. a.	Peril is retained as the opportunity cost of educating their children

Peril ID#	Risk Expositions	Physical Strategies	Spiritual	Classification of Strategy
AL12	Inadequate access to Veterinary Services	Herbal medication is utilised to augment the scarce veterinary services	n. a.	reduces livestock mortalities
AL13	Missing animals	(i)Farmers frequently monitor their flock. (ii)Some entice their animals to return home by themselves every evening during the dry season	(iii)Some apply charm on their animals especially new ones to prevent them from attempting to return to their former owners.	all strategies reduces the chances of an animal getting lost
AL14	Stealing of animals	(i)Farmers monitors their flock frequently with hunting dogs. (ii)Some train the dogs to herd the animals during the dry season	(iii)Some farmers pledge selected deities to protect the animals from thieves during the year and then pacify at the end of the year.	Strategies (i) and (ii) reduces the risk exposition. Strategy (iii) transfers the risk to a spiritual guardian at pacification premium
AL21	Breakdown of farm Houses/ pens	(i) Sand create blocks are now used to construct animals' pens. (ii)The cattle are also pegged to restrain their movement in the yard.	n.a.	(i) Reduces the hazard of heavy rains pushing down weak mud walls. (ii)Restrain cattle movement to avoid /prevent the walls being pushed off.
AL22	Unfavourable Prices of animals	Delay sales to the lean or dry season / latter days	n.a.	It aids the farmer to avoid/ reduce the hazard's impact on him/ her.
AL23	Bad debt	(i)Discourage credit sales. (ii)Utilisation of social capital to hook other family members to the transaction	(iii) Assign to deity for payment	(i) Avoids the risk. (ii) and (iii) Reduces the prospect loss.

Source: Field Data (2022)

From Table 3, the indigenous strategies applied in managing livestock perils are dominated by reduction and retention. Only three perils (AL21, AL22, and AL23) attracted some elements of avoidance, while AL01 and AL14 had some elements of risk transfers. The domination of reduction and retention strategies as listed in Table 3, explains the rural peasant farmers' level of resilience to the various expositions of their economic lives. It also explains how most of the Indigenes are wholly or greatly dependent on agriculture for their livelihood and for which reason they cannot avoid the risky actions therein.

In Figure 3, it is clear that most of the perils were ranked by respondents as having high occurrence rates and high severity rates. That means, all the perils so rated, require the avoidance strategies as their management strategies. Yet the strategies identified as being applied in the study area are reduction and retention strategies.

Although the Ghana Agricultural Insurance Pool (GAIP) established in 2011 offers innovative and affordable insurance solutions tailored to the specific needs of farmers, no single farmer was identified to have any insurance cover for his/her livestock. The lack of guaranteed prices is evident in unfavourable prices of animals (AL22) which is very critical to their economic sustainability, yet the respondents rated it as having low severity or loss impact. The rating seems to suggest that the indigenes have a high level of resilience towards the exposition. It could be that the grown heirs in the diaspora or earning income from employment are supporting their aged and

dependent parents or relatives back home. Thus boosting the recipients' economic lives such that the severity of losses associated with unfavourable prices for their products do not seriously affect them.

Aside from the assumption that heirs are supporting, one can see a general resilience or high risk tolerance of indigenes towards Agriculture perils. For instance, if Dorfman (2008) Quadrants of risk management is to be applied in addressing these perils, all those with high occurrence and Severity rates merit the avoidance strategy. From the Cluster Chart in figure 3, only perils AL21, AL22, and AL23 would have escaped the axe of avoidance as in Table 4.

4.2 Indigenous Livestock Risk Management

The increasing rate of the people who have gone through the Western Education System has resulted in an equivalent growing diversification of their economic lives. Many households now depend on non-agriculture income for their everyday livelihood. This has resulted in a decreasing involvement in agricultural activities and less stress on farmlands. Nonetheless, majority of the resident population in each community setting are agriculture dependant. Irrespective of the various sources of income, agriculture provides the food and meat products for the indigenous settings.

The Talensi Indigenes sequentially apply spiritual and physical strategies to manage their exposition under the identified perils. They would normally consult the diviners first to ascertain the opinion of the ancestors on an exposition before seeking the physical solutions as in Table 3.

The indigenes see the risks associated with agriculture as cyclical and regular. They predict and assess such risk based on the historical wisdom of their ancestors that has been passed down orally over generations to them. Risk retention is about a default strategy Indigenes apply in managing their livestock risks. Table 3 is a summary of the risk management strategies of the profiled livestock risks.

Table 3: Indigenous Strategies for managing Livestock Risk Exposures

Peril ID#	Risk Expositions	Physical Strategies	Spiritual	Classification of Strategy
AL01	Diseases / deaths of animals	(i) Seek Veterinary Services (ii) Augment the Veterinary services with some herbal medications	(iii) Assign to deity to prevent death provided it is not a diversion from the humans but genuine livestock illness.	Both (i) and (ii) reduces to occurrence of the hazard
AL02	Polythene bags consumption by livestock	Few communities organise polythene bags control measures (burning or disposing them in a big pit).	n. a.	Retain risk if any ruminant falls prey. Else the strategies reduce the chances of the animals getting some to eat.
AL03	Reptiles attacks on animals / poultry	(i) Farmer monitors livestock periodically with his hunting dogs. (ii) Chicks and other young birds are released late in the morning for free range feeding	n. a.	Both strategies reduce the rate of occurrence. But if it does occur, risk is retained .
AL04	Inadequate Pastures & Water	(i) Bye laws are passed in most communities prohibiting bush burning and dry season fishing in the smaller ponds (ii) children are specifically warned against the acts (iii) identified offenders are heavily charged or punished	(iv) Sometimes, some feared deities are evoked to scare perpetrators from attempting to carry out any of the prohibited acts	All the strategies seek to reduce the prospect of one worsening the already bad situation of inadequate pastures and water for the animals
AL11	Inadequacy of Herding	Animals are pegged during rainy seasons and monitored by farmers themselves during the dry season	n. a.	Peril is retained as the opportunity cost of educating their children

Peril ID#	Risk Expositions	Physical Strategies	Spiritual	Classification of Strategy
AL12	Inadequate access to Veterinary Services	Herbal medication is utilised to augment the scarce veterinary services	n. a.	reduces livestock mortalities
AL13	Missing animals	(i)Farmers frequently monitor their flock. (ii)Some entice their animals to return home by themselves every evening during the dry season	(iii)Some apply charm on their animals especially new ones to prevent them from attempting to return to their former owners.	all strategies reduces the chances of an animal getting lost
AL14	Stealing of animals	(i)Farmers monitors their flock frequently with hunting dogs. (ii)Some train the dogs to herd the animals during the dry season	(iii)Some farmers pledge selected deities to protect the animals from thieves during the year and then pacify at the end of the year.	Strategies (i) and (ii) reduces the risk exposition. Strategy (iii) transfers the risk to a spiritual guardian at pacification premium
AL21	Breakdown of farm Houses/ pens	(i) Sand create blocks are now used to construct animals' pens. (ii)The cattle are also pegged to restrain their movement in the yard.	n.a.	(i) Reduces the hazard of heavy rains pushing down weak mud walls. (ii)Restrain cattle movement to avoid /prevent the walls being pushed off.
AL22	Unfavourable Prices of animals	Delay sales to the lean or dry season / latter days	n.a.	It aids the farmer to avoid/ reduce the hazard's impact on him/ her.
AL23	Bad debt	(i)Discourage credit sales. (ii)Utilisation of social capital to hook other family members to the transaction	(iii) Assign to deity for payment	(i) Avoids the risk. (ii) and (iii) Reduces the prospect loss.

Source: Field Data (2022)

From Table 3, the indigenous strategies applied in managing livestock perils are dominated by reduction and retention. Only three perils (AL21, AL22, and AL23) attracted some elements of avoidance, while AL01 and AL14 had some elements of risk transfers. The domination of reduction and retention strategies as listed in Table 3, explains the rural peasant farmers' level of resilience to the various expositions of their economic lives. It also explains how most of the Indigenes are wholly or greatly dependent on agriculture for their livelihood and for which reason they cannot avoid the risky actions therein.

In Figure 3, it is clear that most of the perils were ranked by respondents as having high occurrence rates and high severity rates. That means, all the perils so rated, require the avoidance strategies as their management strategies. Yet the strategies identified as being applied in the study area are reduction and retention strategies.

Although the Ghana Agricultural Insurance Pool (GAIP) established in 2011 offers innovative and affordable insurance solutions tailored to the specific needs of farmers, no single farmer was identified to have any insurance cover for his/her livestock. The lack of guaranteed prices is evident in unfavourable prices of animals (AL22) which is very critical to their economic sustainability, yet the respondents rated it as having low severity or loss impact. The rating seems to suggest that the indigenes have a high level of resilience towards the exposition. It could be that the grown heirs in the diaspora or earning income from employment are supporting their aged and dependent parents or relatives back home. Thus boosting the recipients' economic lives such that the severity of losses associated with unfavourable prices for their products do not seriously affect them.

Aside from the assumption that heirs are supporting, one can see a general resilience or high risk tolerance of indigenes towards Agriculture perils. For instance, if Dorfman (2008) Quadrants of risk management is to be

applied in addressing these perils, all those with high occurrence and Severity rates merit the avoidance strategy. From the Cluster Chart in figure 3, only perils AL21, AL22, and AL23 would have escaped the axe of avoidance as in Table 4.

Table 4: Livestock’s Loss Occurrence and Severity Frequency quadrant

	LOW SEVERITY	HIGH SEVERITY
LOW FREQUENCY	Risk assumption Risks in this quadrant are retained because the frequency and severity of loss are both low.	Transfer/ Insure the potentially large losses of the perils. AL23
HIGH FREQUENCY	Loss Reduction/Control to reduce the frequencies of loss occurrence and it’s Severity. AL21, and AL22	Risk Avoidance Scale down /cut off the causes of such risk exposition to prevent it. AL01, AL02, AL03, AL04, AL11, AL12, AL13 & AL14

Source: Dorfman (2008:59)

4.2.1 Further Analysis

From the profiled risk expositions of indigenous Agriculture livestock, the study identified inadequate herding (AL11) as the core exposition problem exhibits a higher chance of influencing the other perils. Figure 4 is a problem tree that illustrates Peril AL04 as a major problem of livestock rearing in the study area. It is primarily caused by modern education system where children of the animal herding age are sent to school at the expense of herding the cattle and sheep. The situation gets worse when the junior high school leavers / dropouts also refuse to take over the herding but instead migrate to urban areas in search for non-existing jobs. The third and final cause of inadequate herding is that the resident adults are overwhelmed with year-round busy schedules and therefore resort to pegging the animals during the rainy season. During the dry season, however, the animals move freely and eat anything they get including polythene bags and drinking waste water from bathhouses and boreholes in the communities.

The effects of the core problem, “Inadequate Herding of Animals” generate all the other perils except access to veterinary AL11 and AL12. Pegging the animals during the rainy season exposes them to inadequate pasture and watering (AL04), reptiles’ attacks (AL03), indiscriminate selling to reduce stock (AL22) for easy control during the rainy season. Some of the animals pull off their pegs in desperation and sometimes get entangled in areas where they may die unnoticed (AL01) or taken away by thieves (AL14).

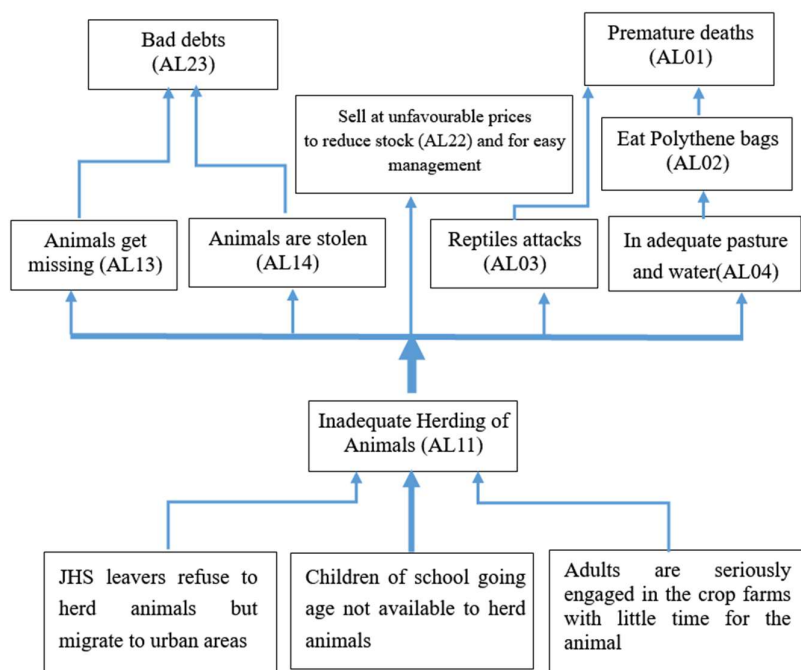


Figure 4: Problem Tree of inadequate herding on Livestock Risks
 Source: Researcher's Construction (2022)

In a similar manner, during the dry season, the animals on free range without a herder could suffer any of these perils except selling to reduce stock. The burnt grass leaves the animals with little to feed on. So some end up eating improperly disposed polybags with salty taste (A12).

5.1 Conclusion

1. The Talensis perceive risks in their livestock rearing. They appreciate that risk may generate either low or high loss impacts (severities). They however, do not depend on these high or low severities or rate of occurrence to determine the specific risk management strategy to apply in managing any risk.
2. In the Livestock Risk Taxonomy, risks elements are either physically oriented and mostly triggered accidentally or mistakenly by the actions or inactions of the individual, or spiritually oriented. The latter has lots of underlying spiritual and mythical implications and therefore are exogenous to the individual's physical life.
3. No specific sustainable strategies to mitigate the reducing livestock to boost indigenous economies. Children education are sometime disrupted during farming seasons to herd cattle.

5.2 Recommendations

Considering the significant influence of the herding peril (AL11), and the potential of the study area being agrarian bias, the study recommends a community-based cattle ranching project for all the communities that may be interested internal plug-in from within the indigenes for the mitigation of these chain of perils and to help revamp the cattle rearing sector in particular and their livestock sector in general.

The study also recommends

References

- Agyemang, K., Bosso, N. A., van der Waaji, E. H., & van Arendonk, J. A. M. (2009). Genetic parameters for growth traits in N'Dama cattle under tsetse challenge in The Gambia. *Livestock Research for Rural Development (LRRD)*, 21(3)
- Ajitoni S. O., and Omiyefa, M. O., (2015), reviving traditional social values for sustainable development in Nigeria, *Education and Science Journal of Policy review and curriculum development* 5(1): 74-80.

- Akinpelu J. A., (2003), The Effect of Western Education on Africa Traditional Values
https://www.academia.edu/37705415/the_effect_of_western_education_on_africa_traditional_values
- Asimeng-Boahene L., (2014), The Social Construction of sub-Saharan Women's Status through African Proverbs. *Mediterranean Journal of Social Sciences*, Vol. 4 (1) 122-131
- Baumeister R. F. and Leary M. F., (1995), Desire for interpersonal attachments as a fundamental human motive, *Psychological Bulletin*, 117 pp 497-529
- Beck Ulrich, (2006), Risk Society, towards a new modernity. Buenos Aires: Paidos.
- Bickhard M. H., (2006), Developmental Normativity and Normative Development. In L. Smith, J. Voneche (Eds.) *Norms in Human Development*. (57-76). Cambridge: Cambridge University Press.
- Boonzaaijer C., and Apusigah A.A., (2012), Endogenous Development in sub-Saharan Africa Revisited, A Systematisation of Experiences
- Dzobo N. K. (2006), African Proverbs: A guide to conduct (3rd ed). Accra, Ghana: Woeli Publishing services
- Dzobo N. K., (2007), African Proverbs: A guide to conduct (3rd ed). Accra, Ghana: Woeli Publishing services
- Geertz, C., (1973), Interpretation of Cultures. New York: Basic Books.
- Harris M., (2001), Cultural Materialism: *The Struggle for a Science of Culture*. Walnut Creek, CA: AltaMira Press.
- Herskovits, M.J., (1948), Man and his Works: *The Science of Cultural Anthropology* New York: Knopf.
- ICSI., (2014), the Institute of Company Secretaries of India, Professional Programme Study Material Insurance Law and Practice. New Delhi: Tan Prints.
- Ifemesia C., (2002), Traditional Humane Living among the Igbo People: A Historical Perspective. Enugu: Fourth Dimension. 1979;33-34
- Iroegbu P., (1994), Enwisdomization and African Philosophy. Owerri: Owerri International University Press.
- Chapman Alan, (2003), *A model for self-awareness, personal development, group development and understanding relationship*, Johari Window, accessed from www.businessballs.com on 6/2/2020.
- Kanu I. A., (2010), "Towards an African Cultural Renaissance". *Professor Bassey Andah Journal of Cultural Studies*. Volume (3) 146-155
- Kanu I. A., (2012), The Contribution of Igbo Ontology to Pantaleon's Concept of Being, Internet Afrev: *An International Online Multi-disciplinary Journal* Vol. 1(1) 36-40
- Kanu M. A., (2013), The indispensability of the basic social values in Africa Tradition: a philosophical appraisal
- Kanu M. A., (2017), The Philosophical Background of African Humanism: The Genuine Way to Development. *World Applied Sciences Journal* 35(9):2015-2024, IDOSI, Available on DOI:10.5829/idosi.wasj.2017.1015.2024
- Malinowski, B., (1931), Culture. In E.R.A. Seligman (ed.), *Encyclopedia of the Social Sciences*, Vol. 4 (pp. 621–646). New York: Macmillan.
- Mead, M., (1953), The Study of Culture at a Distance. In M. Mead and R. Metraux (eds.), *The Study of Culture at a Distance*. Chicago: University of Chicago Press.
- Millar, D., (2012), Our Sciences: Indigenous Knowledge Systems of northern Ghana, UDS
- Millar, D., Apusigah A.A. & Boonzaaijer C., (2012), Endogenous Development in Africa Revisited, A Systematisation of Experiences
- Okafor L., (2003), Enhancing business-community relations: Sir David Osunde Foundation case study.
- Okoro K. N, and Okoli, C.C. N., (2014), The Synergy between Social Justice and Compassion in African [Igbo] Traditional Society: A Re-Consideration, *Scholars Journal of Arts, Humanities and Social Sciences*; 2(6B):922-933.
- Onwubiko K. B., (2004), An introduction to Education: First Edition: Nsukka University Press Publications, Nsukka
- Sirakayaa Ercan and Woodside Arch G., (2005), Building and testing theories of decision making bytravellers, *Tourism Management* 26, pp 815–832
- Southard Nicole, (2017), "The Socio-Political and Economic Causes of Natural Disasters", *CMC Senior Theses*. 1720. http://scholarship.claremont.edu/cmc_theses/1720
- Tylor, E.B., (1871), Primitive Culture: Researches in the Development of Mythology, Philosophy, Religion, Language, Art and Custom. London: John Murray.
- UNISDR., (2009), *Terminology on disaster risk reduction. United Nations International Strategy for Disaster Reduction*. Geneva, Switzerland: UNO. Retrieved from unisdr.org/eng/library/lib-terminology-eng.htm
- Agyemang, K., et al (2009) Livestock Keeping in the Context of Rural Development.