Sudan University of Science and Technology

College of Graduate Studies

A thesis submitted in partial fulfillment requirements for the degree of Master of Science (M.Sc.) in Livestock's Development Economics

The Economic Relationship between the Livestock Underwriting, Insured Herd Size, Mortal Animal, Mortality Rate and Loss Ratio of Livestock Insurance Portfolio of TICo ltd in Khartoum 2016 ~ 2019

العلاقة الاقتصادية بين مستوى الاكتتاب الحيواني، حجم القطيع المؤمن والحيوانات النافقة، معدل النفوق ومعدل الخسائر لمحفظة التأمين الحيواني بالشركة التعاونية للتأمين المحدودة بولاية الخرطوم خلال الفترة 2016~2019م

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2020

Dedication

To my Parents

My Teachers

Bestowing your Excellency

This effort

With love

Acknowledgement

Appreciation and Gratefulness

To Individuals and institutions

Sudan University for Science and Technology

(S.U.S.T)

Ta'awuniya Insurance Company

Agro-business insurance Directorate

(TICo ltd)

Dhow Akhdar R&D center

For agriculture and livestock production

Thankfulness

To

Every one handed or minded this

Work and realized its success

ABSTRACT

The study attentive on theAnalysis of livestock insurance among the agro-business insurance portfolio of Ta'awuniya Insurance Company (TICo ltd).The study examined the economic characteristics of insurance portfolio that are policies amount, loss ratio and insured herd size as animal units, mortal animal units and mortality ratio during the period 2016-2019, in Khartoum state. Considering data availability and accessibility, using convenient data sampling technique to select registration records of 48 months started from Jan 2016 up to Dec 2019. Study sketched and organized a sample representing sixteen years of livestock insurance since 2003. then data were treated using descriptive statistics and linear correlation analysis, due to the overeat of p-value in Pearson's coefficient test. Descriptive statistics showed that the means and annual averages of the policies amount 11.63 polices per year, insured animal units 55.15 A.Us/year, mortal animal units 0.31 A.Us/year, annual mortality ratio 1.98 % and annual loss ratio 55.41%. Pearson's coefficient test revealed that the intersection or the linear correlation coefficient (in bracts) and p-value between Polices amounts with Insured animal units was (0.017) 0.91 , Polices amounts with loss ratio equaled (-0.035) 0.816 , Polices amounts and mortal animal units was (-0.010) 0.94 , Polices amounts and mortality ratio equaled (-0.076) 0.60 , Insured animal units with loss ratio was(-0.035) 0.815 , Insured animal units with mortal animal units was(0.059) 0.68 , Insured animal units to mortality ratio (-0.072) 0.62 . Loss ratio with mortal animal units (0.868) 0.00, Loss ratio and mortality ratio (0.820) 0.00,finally mortal animal units with mortality ratio (0.853) 0.00. These results indicated there were correlations amongst these variables pairs: loss ratio with mortal animal units, loss ratio and mortality ratio, mortal animal units and mortality ratio and the same results indicated no population correlation for the other pairs of variables, and so suggested suitable recommendations of thesefindings and conclusions. Like Extending the umbrella of livestock insurance to address multi-stage risks of animal production. Developing a monitoring and evaluation

process of livestock insurance portfolio, Considering, minding and caring about the Intellectuality and attitudes about management capacities of the beneficiaries' and stakeholders.

ملخص الدراسة

ركزت الدراسة على تحليل تأمين الثروة الحيوانية ضمن محفظة التأمين الزراعي بالشركة التعاونية للتأمين المحدودة (TICo ltd)، اختبرت الدراسة بعض الخصائص الاقتصادية لمحفظة التأمين والتي تمثلت في خمسة عناصر تعداد الوثائق المصدرة، تعداد الوحدات الحيوانية لقطيع التأمين، معدل خسائر المحفظة وتعداد الوحدات الحيوانية النافقة بالقطيع المؤمن عليه مع معدلات النفوق خلال الفترة 2016 ~ 2019م بولاية الخرطوم. نسبة لوفرة البيانات وجودتها تم تحديد اسلوب المعاينة ليتم اختيار ثمان وأربعين (48) سجلاً من سجلات البيانات الشهرية لمحفظة التأمين الحيواني والخاصة بالفترة المعنية بالدراسة بدءاً من أول يناير 2016م وحتى نهاية ديسمبر 2019م. قامت الدراسة بتنظيم المعاينة بحيث تعبر عن أداء محفظة التأمين الحيواني منذ العام 2003م وحتى تاريخه. تم تطبيق قواعد الإحصاء الوصفي وتحليل الإرتباط الخطي بين متغيرات الدراسة المتمثلة في تعداد الوثائق المصدرة، تعداد الوحدات الحيوانية عند الاكتتاب، تعداد الوحدات الحيوانية النافقة بالقطيع المؤمن عليه، معدل النفوق ومعدل خسائر محفظة التأمين على النحو التالي: المتوسط السنوي لتعداد للوثائق المصدرة (11.63) وثيقة تأمين/العام، معدل خسائر المحفظة (55.41) في المائة وتعداد القطعان المؤمن عليها (55.15) وحدة حيوانية/العام ومتوسط تعداد القطعان النافقة (0.31) وحدة حيوانية/العام بمتوسط معدل نفوق سنوي (1.98%) ، وكشف معامل بيرسون للارتباط الخطي (ما بين القوسين) ومستوى معنوية العلاقة عن القيم التالية إرتباط تعداد الوثائق المصدرة مع تعداد القطعان المؤمن عليها كان 0.91 (0.017)وبلغ معامل الإرتباط بين تعداد الوثائق المصدرة ومعدل خسائر المحفظة (0.035-) 0.816 كما أرتبط تعداد الوثائق المصدرةو تعداد القطعان النافقة بالقيم0.94 (0.010-) وبلغ معامل ارتباط تعداد الوثائق المصدرةبمعدل النفوق 0.60 (0.076-)، تعداد القطعان المؤمن عليها وإرتباطها بمعدل خسائر المحفظة بلغ مكافئها 0.815 (0.035-) ، مكافئ ارتباط تعداد القطعان المؤمن عليها

مع تعداد القطعان النافقة كان يساوي 0.68 (0.059) وارتباط تعداد القطعان المؤمن عليها مع معدل النفوق 0.62 (0.072-)، كما بلغ معامل بيرسون للإرتباط الخطي (ما بين القوسين) ومستوى معنوية العلاقة بين كل من معدل خسائر المحفظة مع تعداد القطعان النافقة 0.00 (0.868) ، وكانت قيمه للارتباط بين كلا من معدل خسائر المحفظة مع معدل نفوق 0.00 (0.820)، ولارتباط تعداد القطعان النافقة مع معدل نفوق 0.00 (0.853). هذه النتائج توضح عدم وجود ارتباط خطي بين كلاً من معدل خسائر المحفظة مع تعداد القطعان النافقة، معدل خسائر المحفظة معمعدل النفوق وتعداد القطعانالنافقة مع معدل النفوق لقطعان التأمين، وذات النتائج توضح عدم وجود ارتباط خطي بين باقي أزواج متغيرات الدراسة ومن ثم صياغة توصيات تناسب تلك الخلاصات والنتائج منها: بسط مظلة التأمين لتغطي مختلف مخاطر الإنتاج الحيواني، تطوير عمليات المتابعة وتقييم الأداء بمحفظة التأمين الحيواني، الاهتمام بالتوجهات الفكرية والقدرات الإدارية للمستهدفين بخدمات التأمين من رعاة ومربيين.

Acronyms and Abbreviations

AMAN	TICo insurance information system
CEO	Chief Executive Officers
CFSAM	Crop and Food Security Assessment Mission
FAO	Food Agriculture Organization
FMD	Foot and Mouth Disease
M.Sc.	Master of Science
OIE	World Organization for Animal Health
P.V.S.	Performance of Veterinary Services
S.U.S.T	Sudan University for Science and Technology
The World Bank	International Bank for Reconstruction and Development
TICo ltd	Ta'awuniya Insurance Company limited.

CHAPTER ONE

Introduction

1.1. Background

Livestock signifies about 60 percent of the Sudan's agricultural gross domestic production GDP. Exports of sheep, mainly to Saudi Arabia, are reported at about 2.8 million heads in the first nine months of 2019. In the same period, around 90 000 camels were exported mainly to Egypt.

About 112 000 goats were exported in the same period of 2019 with a marked decline of about 60 000 heads in 2018. This is due to a ban on importing livestock from the Sudan by the Saudi Arabian Ministry of Environment, Water and Agriculture as a response to the announcement of the world organization for animal health OIE about documented cases of rift valley fever RVF. Compared with live animal exports, meat exports were relatively modest with a total value of about US$ 36 million. The country exports also considerable quantities of animal hides. In the first nine months of 2019, a total value of about US$ 7 million of fresh hides were exported **(*FAO – CFSAM, 2020*)**.

As the federal capital of Sudan Khartoum state is a center of economic activities as a headquarters for many of funding corporations or insurance institutions in all over the country. There for Ta'awuniya Insurance Co ltd, since 2003 is one of three pioneer Sudanese companies in agro-business insurance, with extended network of branches and offices all over Sudan. In Khartoum, state (TICo ltd) has up to fifteen (15) branches and outlets introduce integrated agro-insurance services, including suitable coverage for animal production and livestock rearing in addition to facilitation in payment and practitioner staff in agro-economics and techniques**. *(TICo doc, 2019)***

As a matter of livestock development this research was an outlook that targeting to test the relation and effects amongst some elements of the livestock insurance portfolio which were thepolicies amount, insured animal units, mortal animal units, mortality ratio and loss ratio through out The experience of Ta'awuniya Insurance co Ltd. in the State of Khartoum during the period 2016 ~ 2019.

1.2. Problem statement:

Agriculture and livestock production as a type of major economic activities in the state with a huge extension and growth that needs a solid base of financial services specially insurance coverage due to risky environment for production and marketing .Among that, circumstance insurance becomes a critical requirement for each livestock successful business. Does the performance of the livestock insurance portfolio related to any of policies amount, insured animal units, mortal animal units, mortality ratio and loss ratio? Way of optimizing the performance in the livestock insurance by planning the policies underwriting process (policies amount), identify its composition as animal units (herd structure), and lastly control the loss ratio?

1.3. objectives of the study:

The main objective is studying the relation of some economic factors of the livestock insurance portfolio.

This main objective yields the followings as secondary objectives:

1.3.1. To study the relationship between policies amount and insured animal units.

1.3.2. To study the relationship between the policies amount and mortal animal units.

1.3.3. To study the relationship between the policies amount and, mortality ratio.

1.3.4. To study the relationship between the policies amount and the loss ratio.

1.3.5. To study the relationship between the insured animal units and the mortal animal units.

1.3.6. To study the relationship between the insured animal units and the mortality ratio.

1.3.7. To study the relationship between the insured animal units and the loss ratio.

1.3.8. To study the relationship between the mortal animal units and the mortality ratio.

1.3.9. To study the relationship betweenthemortal animal units and the loss ratio.

1.3.10. To study the relationship betweenthemortality ratio and loss ratio as factors in the insurance portfolio.

1.4. Hypotheses of the study:

1.4.1. There is no relationship between polices amounts and insured animal units

1.4.2. There is no relationship between Polices amounts and loss ratio

1.4.3. There is no relationship between Polices amounts and mortal animal units

1.4.4. There is no relationship between Polices amounts and mortality ratio

1.4.5. There is no relationship between Insured animal units and loss ratio

1.4.6. There is no relationship between Insured animal units and mortal animal units

1.4.7. There is no relationship between Insured animal units and mortality ratio

1.4.8. There is no relationship between Loss ratio and mortal animal units

1.4.9. There is no relationship between Loss ratio and with mortality ratio

1.4.10. There is no relationship between Mortal animal units and mortality ratio

1.5. Methodology of the study:

1.5.1. Study area: Khartoum location in the middle of the populated areas in Sudan, at almost the northeast center of the country between 15 and 16 degrees latitude north, and between 31 and 32 degrees longitude east. Khartoum marks the convergence of the White Nile and the Blue Nile, where they join to form the bottom of the leaning-S shape of the main Nile. Khartoum is relatively flat, at elevation 385 m (1,263 ft.), as the Nile flows northeast past Omdurman to Shendi, at elevation 364 m (1,194 ft.) about 101 miles (163 km) away. (***https://en.wikipedia.org, 2019***)

Ta'awuniya Insurance Co ltd, (TICo) is Sudanese insurance companies. In Khartoum state TICo has up to fifteen (15) branches and outlets, since 2003 TICo introduce integrated agro-insurance services, including

suitable coverage for animal production and livestock rearing in addition to facilitation in payment and practitioner staff in agro-economics and techniques. (***TICo doc, 2019***)

1.5.2. Sampling technique: Due to data availability and convenience, using structured sampling technique to select registration records of 48 months started from Jan 2016 up to Dec 2019.this sample was sketched and organized to represent a sixteen years of livestock insurance since 2003.

1.5.3. Data collection: There are two sources of data

1.5.3.1.Primery data: Referring to TICo info-system (AMAN).data had recorded and tabulated as variables of year, month, policies number, animal units, sum insured, net premium, claim and loss rate.

1.5.3.2. Secondarydata : Referring to Insurance National Controlpublications, periodicals, journals or newslettersand info-notesbesides the World Wide Web sites.

1.5.4. Data analysis: Data were treated using descriptive statistics in addition of linear correlation analysis. Pearson‘s coefficient test and Correlation Significance (2-tailed) as p-value. By use of computer software package SPSS statistical package social science. Besides Loss Ratios and Mortality Ratios.

1.6. Organization of the study:

The study willbe presented in six chapters; Chapter (1) is an introductory. It includes background about the subject, the study problem, objectives of study, hypotheses to be tested and organization of study. Chapter (2) is a literature review related to the subject. Chapter (3) describes the methodology and the methods used for data collection and data analysis. Chapter (4) presents the descriptive statistics of policies amount, insured animal units, mortal animal units, mortality ratio and loss ratio and presents the analytical part of the results. Chapter (5) presents discussion, conclusions and recommendations suggested.

CHAPTER TWO

Literature Review

2.1. Insurance:

A contract whereby one party undertakes to indemnify another against loss by a particular contingency or risk, in exchange for regular payment of an annual premium. **(Roberts, 2007).** Insurance is one of the tools that farmers and other stakeholders can use to manage risks that are too large to manage on their own (risk layering). A Part transferred risk to another part, who takes it in return for a fee (or premium). **(The World Bank 2011)**

2.2. Risk in agriculture (Animal Production):

While risk is a factor that affects all areas of human endeavor and activity, risk in agriculture is particularly problematic. Agriculture's reliance on natural conditions (rain, temperature, sunlight, etc.) and lack of ability to either control them or effectively mitigate when they are insufficient or too abundant means that things go wrong in agriculture on a very regular basis (high frequency). These phenomena tend to affect large areas invariably means that when things do go wrong, a lot of people are affected (covariance). Finally, due to the nature of farming systems in developing countries, when things go wrong it can often result in big losses (high impact). Most insurance products are able to provide coverage from loss at attractive premiums because risks rarely materialize (low frequency), normally happen to only a very few of the insured (idiosyncratic) and oftentimes losses are low and below the threshold of the actual insurance (low impact). Today Livestock farming contributes 40% of the global value of agricultural output. The dominant livestock types are cattle (meat and milk), and poultry (meat and eggs).The reasons of losses within the scope of livestock insurance were emergency slaughter, calf death and abortion. In addition, death and emergency slaughter have higher share in these losses. Mortality due to accident and noncontiguous

diseases remains a constant threat to livestock farming, especially to smallholdings, where the loss of even a single animal means a significant loss of income. Larger farms can absorb single animal losses but fear large losses from accidents like stable fires or failure of ventilation (leading to suffocation) and the consequential Business Interruption. Farms with high-bred animals fear the reduction of income due to loss of certification, e.g. as a specific-pathogen-free (SPF), and the cost of sanitizing the herd and regaining the label ***(SwisRE- journal, 2016).***

The efficient approaches must assess and identify before managing agricultural risk. insurance is generally the first thing that comes to mind for most people when they think of risk, it is important to understand that in agriculture (due to the above problems), it is often the least attractive or practical approach. Risk management mainly consists of three types of activity—mitigation, transfer, and coping. Mitigation covers a number of traditional activities. From irrigation to hybrid seeds, from vaccinations to pest control, many agricultural activities are really the application of risk management approaches. Many veterinaries would not consider themselves risk managers, but in effect, that is a large part of what they do. Transfer is the simple act of passing one's financial risk to a third party, who is prepared to accept it because they charge a fee (or premium) for the service. Crop insurance and price hedging are the most common forms of transfer in agriculture, but they are often very expensive. Coping is often a residual activity, where a party is unable to either mitigate or transfer and therefore is forced to take either physical and/or financial measures to be able to cope with the impacts of a risk once it is realized. Before embarking on the use of a particular product, it is imperative to clearly identify the risk faced and to assess the potential to use one or a combination of the above risk management activities (***World Bank, 2011***).

2.3. Agricultural Insurance:

2.3.1. Insurance is one of the tools that farmers and other stakeholders can use to manage risks that are too large to manage, agricultural insurance (crop or livestock) can provide great benefits to farm households:

1. Insurance can (and should) be used to complement other risk management approaches. Farmers can rely on informal household- and community-level strategies such as crop and labor diversification to manage small to moderate risks. In the event of a major weather shock, insurance can be designed to protect against revenue or consumption losses. This enables households to avoid selling livelihood assets or drawing on savings.

2. Insurance can assist farmers in accessing new opportunities by improving their ability to borrow either money or in-kind credits. In doing so, farm households may potentially experience safer and possibly higher returns. Crop and livestock insurance are widely used in high-income countries. Markets are large, and there is a long experience in finding ways to insure agriculture with traditional insurance products. Given the focus of this paper on a particular type of crop insurance product for a specific set of risks, a wide discussion on agricultural insurance (including livestock insurance) will not be undertaken here. In the following sections we will consider both traditional and nontraditional crop insurance products and review their differences (***World Bank, 2011***).

There are two main indemnity products:

f Damage-based indemnity insurance(or named peril crop insurance). Damage-based indemnity insurance is crop insurance in which the insurance claim is calculated by measuring the percentage damage in the field soon after the damage occurs. The damage measured in the field, less a deductible expressed as a percentage, is applied to the pre-agreed sum insured.

The sum insured may be based on production costs or on the expected revenue. Where damage cannot be measured accurately immediately after the loss, the assessment may be deferred until later in the crop season. Damage-based indemnity insurance is best known for hail, but is also used for other named peril insurance products (such as frost and excessive rainfall).

ƒ Yield-based crop insurance (or Multiple Peril Crop Insurance, MPCI). Yield-based crop insurance is coverage in which an insured yield (for example, tons/ha) is established as a percentage of the farmer's historical average yield. The insured yield is typically between 50 percent and 70 percent of the average yield on the farm. If the realized yield is less than the insured yield, an indemnity is paid equal to the difference between the actual yield and the insured yield, multiplied by a pre-agreed value. Yield-based crop insurance typically protects against multiple perils, meaning that it covers many different causes of yield loss (often because it is generally difficult to determine the exact cause of loss) (***World Bank, 2011***).

2.3.2. Livestock Insurance:

the application of livestock insurance has not reached yet the desired levels depending on the development of agricultural insurance in recent years. It is expected that determination according to farmers' agricultural income levels in region of insurance premium prices calculated within the scope of the state supported livestock insurance have an effect on tendency to livestock insurance of farmers. Besides, it should be provided to extend of education and promotional activities that are conducted by public and private sector for farmers' consciousness raising in relation to livestock insurance and for inform of farmers' about the state supported livestock insurance applications. ***(Damla Özsayın, 2017)***

2.4. Livestock insurance policies:

In conventional livestock insurance policies, a claim leading to payment of an indemnity in the event of an insured peril leading to stock mortality, with the loss measured based on an agreed value for the stock. This is still by far the most common form of livestock insurance. Moreover, it is likely to be the most readily form of insurance cover, for most developing country situations, for the near future ***(Roberts, 2007)***.

2.5. TICo ltd Livestock insurance policy:

Due to the Sudanese low and according to the supervision of the national control of insurance here is the insurance POLICY, it is a contract that organizing relationship between the insured/client and the insurer/company and here under there is a summarized presentation for example of livestock insurance's policy wording in (T.I.Co ltd). One shall note that it consists of four parts: insurer promise, coverage, exclusions, conditions and insured agreement\. These parts in brief as the following, The company agrees and promise to compensate the insured in respect of the actual value of such animal at an accident (or the manifestation of the disease or illness) causing its death In details of the included risks and perils or excluded due to the policy. The coverage of the policy splits into basic covers and additional covers, basic covers including animals' mortality and death, enforced robbery. Additional covers containing transit risks, Prospective calf coverage and loss of use. Insurance policy contents a package of conditions which obligates the insured, There are three groups of conditions prevailing insurance usefulness through this policy, Conditions group (i) dealing with herd structure consideration, these look for animals ownership, animals health assurance and animals productivity or fruitfulness. Conditions group (ii) these responsible of owners (insured) capability in livestock production management (L.P.M) aspects as prevention or protection, feeding and breeding…etc. Conditions group (iii)

this group concerning administrative affairs like insurance duplication, animals' prices fluctuation, policy termination or conclusion and the truthfulness, morality of insured data and information. The last section of the policy document is a declaration by which Insured agrees he read, minded and understood all details of the insurance policy document, the insured approved that in signature. Finally, there is an extension of the short period insurance ratio in tabulated particulars. (***TICo*** documentaries, 2019)

2.6. Insurance Administration

This discussion focuses on conventional insurance. Index-based policies avoid the challenges posed by loss assessment. With livestock and aquaculture insurance, loss assessment procedures center on the need to ascertain that mortality has occurred, and that the cause was an insured peril. Where the policy is not 'all-risks' but rather 'named-perils' then any loss assessment process should also be able to determine as to whether the loss was caused by an insured peril. If this is difficult or impossible, then even at the product design stage, it might be necessary to make a judgment that an insurance approach may not be appropriate. As in any insurance contract, it is vital that the process of loss assessment is made clear, so that in the event of a loss, the assessment process can start in a manner that has the prior agreement of both insurer and insured. The loss must then be measured, and the indemnity to be paid determined. The whole process of assessing the loss, determining the indemnity and paying it, is known as loss adjustment. The loss assessment process will take into account any financial benefit that can accrue if the dead stock is sold. For example, in Finland, salmon dying as a result of some types of physical damage (from birds, for example) can be sold as food for

animals farmed for their fur pelts, e.g. minks. Cost containment The management of insurance, as a business, has several stages. These are: market identification, product development, setting indemnity and premium levels, marketing, risk selection and policy issuance, collecting premiums, accumulation control and handling claims. The over-riding aim in the design of administrative structures and procedures is to lay a foundation for minimizing costs. Since the potential clientele comprises small and often widely dispersed growers, costs can easily escalate to the point of non-viability of the business, unless special care is taken. In this connection, the new index insurance products, mentioned earlier, offer much scope for drastically lowering the costs of administering a financial risk management mechanism***(R.A.J. Roberts, 2007)***.

2.7. Underwriting considerations for insuring livestock

For livestock insurers, when insuring for epidemic diseases the following technical considerations are essential:

Risk quality: the first steps in any risk management scenario are risk avoidance, prevention and reduction. Therefore, sound husbandry practice is key, with adequate stabling, an animal identification and tracking system, good veterinary health care (e.g. vaccination) and qualified personnel. Considerationto robust bio-security. It is sound practice to check risk quality with specific questionnaires and, on larger farms, with a risk report prior to insurance. Promising candidates for a positive risk assessment will be isolated farms, with experienced, longstanding staff, state-of-the-art infrastructure, an animal register and good health indicators for herds.

Legal framework and veterinary system: the measures taken by the authorities need to be transparent, consistent and familiar to the underwriter. Ideally, the country ' s official OIE status will be " disease-

free ” . If not, the government should have a clear plan and target for reaching disease-free status, typically through zoning (disease free vs. not yet free) and systematic vaccination. To guarantee an efficient control of outbreaks, the national regulator should define clear procedures and roles. The veterinary authorities should be empowered to take action and be adequately staffed and trained, with emergency/contingency plans at hand and sufficient capacity to test and destroy infected animals and to disinfect premises. Farmers reporting an outbreak should receive a payout for animals lost rather than a penalty. See for example the OIE ’ s Performance of Veterinary Services (PVS) counseling, or the FAO ’ s Good Emergency Management Practice.

Exposure: the critical diseases in epidemic covers are foot and mouth disease(FMD) for cattle, sheep and goat, and AI for poultry. Other diseases tend to be of minor importance at this time.

Accumulation: areas with high livestock density require special attention. These areas may cause considerable accumulation problems for insurers and reinsurers alike. Exposure tracking with geo-referenced farms would be ideal.

Pricing: the main criteria for this type of catastrophe insurance are accumulation considerations and long-term aspects like severity and frequency of events. Due to sometimes long return periods, rates tend to come under pressure after a series of loss-free years, improving only following a major event.

Risk of change: a change in the animal health status of the country or a change in the containment policy should be assessed on its improving or impairing effect.

Diversification: epidemic covers diversify the agriculture insurance portfolio, as there is no correlation between the main epidemics and perils covered by crop insurance (e.g. hail, drought).***(SwisRE- journal, 2016)***

2.8. Index insurance:

Approaches to livestock and aquaculture insurance In conventional insurance policies, a claim leading to payment of an indemnity can be made in the event of an insured peril leading to stock mortality, with the loss measured on the basis of an agreed value for the stock. This is still by far the most common form of livestock and aquaculture insurance. Moreover, it is likely to be the most readily form of insurance cover, for most developing country situations, for the near future.

An alternative approach is when an insured peril impacts on the profit of the specific enterprise being insured, i.e. the gross margin. This impact may be due to mortality of numbers of The stock – or it could be due to loss of production due to adverse climatic factors, to a ban on marketing stock or stock products, to the outbreak of an infectious disease or pollution of the environment (particularly applicable to aquaculture enterprises). Again, it could be due to a marked increase in on-farm costs, following an insured event - even without the actual death of the insured stock.

When the contractual basis between the insured and the insurer focuses on the expected gross margin of an enterprise, any significant shortfall in the gross margin is then the basis for the determination of an indemnity payment, provided it is caused by a peril recognized under the insurance policy.

This approach is far from being in common use as yet, the only mature example known to the writer being a policy popular in recent years with German dairy farmers. In Mexico to the benefits of concentrating on the financial outcome of the enterprise have recently been recognized.

Detailed product development work has been completed in this country, and a commercial launch of insurance products expected in the near future.

Clearly, with its focus on the expected financial outcome of an enterprise, the new type of policy addresses the key factor in commercial farming. Despite this logical advantage, there will be difficulties in introducing gross margin products in most developing countries. These difficulties exist on both the supply side (the insurer) and on the demand side (potential insured farmer).

For the farmer, the circumstances that would make a gross margin trigger attractive include those where there is significant investment involved, and where there is limited personal risk bearing capacity, usually due in turn to high levels of borrowed funds for the enterprise. These circumstances certainly exist, but are by no means the rule in most developing countries.

For the insurer there must be confidence that the necessary records are available and reliable, so that a loss can be quantified. In developing countries, there will be limited situations where this condition can be met, though more and more farmers, including fish farmers, are known to be keeping records.

By contrast, insurance contracts where mortality as the basis for a claim are less demanding in terms of records, but still require a reliable system for the positive identification of the insured stock

2.8.1. Perils covered in traditional mortality insurance include:

a. Flood, windstorm
b. Pollution, poisoning, land subsidence
c. Machinery/electrical breakdown
d. Fire, lightning, explosion
e. Malicious damage, riot, strike

2.8.2. Common exclusions in the traditional policy were:

f. Consequential loss & legal liability
g. Epidemic diseases and Government slaughter order
h. Cannibalism/ malnutrition
i. Overcrowding

The challenge now for the insurance industry is to design products that would have wide, applicability for many developing country farming types and systems, and would cover:

1. Epidemic disease with or without a Government slaughter order
2. Ban on selling animals or animal products
3. Drop of production as a result of an insured peril

(Roberts, 2007).

2.9. Mortality index insurance:

The need to carefully consider how livestock insurance may influence the incentives of herders or/and breeders is significant. The overriding goal of maintaining and enhancing the risk mitigation strategies used by Herders or/and breeders mandates that careful thought be given to how livestock insurance might be structured. This report has provided some thinking to that end. This is at the core of the recommendation that a livestock mortality index be used to provide insurance on a sum or bag level. Such insurance would pay every herder based on the mortality levels within the region, regardless of the individual herder losses. Consequently, the individual herder who works hard to sustain their livestock during a dazed would be rewarded. Similarly, the herder who does not work to sustain their livestock will only be compensated at the losses for the community. This system will not reward the herder who has heavy losses when the community does not. Using the area mortality index to pay nearly

eliminates moral hazard and adverse selection. The major concern will be to maintain quality statistics for mortality rates.

Even if a mortality index is used, this study also reveals the high level of co-variant risk that would remain. The models developed here highlight the need for risk sharing in the international community. Just how that risk is - shared would depend heavily on the ultimate structure of government involvement in providing some level of reinsurance. In early stages, some level of government involvement is needed to spread the risk across Herders or/and breeders to the extent possible. However, this role should be as a risk aggregator

Should there be a desire to proceed with a pilot test of the mortality insurance concept; there are a number of additional items that would need attention as first steps. These steps should be taken to test the feasibility and acceptability of mortality index insurance. Some basic considerations and next steps follow:

1) Collect data on mortality and adult livestock numbers for more sum; make certain that these data are complete for all species of livestock for at least 30 years; create a data set for as many sum as possible but, at a minimum, obtain a geographic spread of sum within an aiming and complete at least five sum for each aiming
2) Investigate in some detail the statistical system that is being used to develop the census of animals and the reporting of mortality of animals. This investigation should be conducted with a clear picture of how these data might be used to make insurance payments. A number of issues should be investigated:
    1. What is the quality of these data?
    2. Could the data be developed at the bag level?
    3. Has the process for developing the data changed in any significant fashion in the last 30 years?

4. Have the data been used in the past to make emergency disaster payments and, if so, is there any evidence that this created any misrepresentation in the data?
5. Given that a census is taken every year, are there adequate safeguards and accounting systems in place to mitigate the opportunity for manipulating the data?
6. What auditing systems might be added to assure that the data process does not change when a insurance payments are being made on the basis of the data?
7. How do herders and others view the quality of the data?

3) Select a sample of sum to offer the mortality index insurance. Initially, the government could collaborate with the private insurers and make insurance offers in a select sample of sum. The sample should be selected with some geographical spread in mind. Ideally, the offers would be made in about 30 sums. Given that the mortality data are widely available, it may be possible to make select a representative sum in every aimed to begin the pilot. This would give as much geographic spread as possible and provide the needed publicity across Herders or/and breeders for the concept. Great care should be taken in making certain that the price that is charged reflects the relative risk. The premium rates charged herders and the design of the contracts should be consistent with market principles. Initially, the government could provide some level of reinsurance to private provides to get their involvement. Simultaneously, the concept and pilot design should be presented to the international capital markets obtaining their input and attempting to get their involvement in offering reinsurance.
4) Develop an extended education and marketing program. Any successful pilot must educate herders about the potential value and use of this

insurance. Some considerable attention should be paid to an educational effort.

5) Establish appropriate feedback and monitoring of the pilot. A pilot program should be designed to allow for learning about the concept. This learning must involve a number of dimensions:
   1. How have the private insurers respond to the opportunity?
   2. How have the herders responded?
   3. Are herders thinking of and using informal and formal mechanisms to share the index payments within the community?
   4. Has the introduction of the index insurance changed the data development process in any significant way?

In a pilot test, one may attempt to offset the cost of the insurance to herders so that herders would just pay the pure premium of the program. This would require some budget obviously. Additional financing would be needed for resources to examine the issues outlined above and for education and marketing. Thus, careful thought must be made as to the scope of a pilot and the total amount of funds available for running such a test. ***(Skees and Enkh-Amgalan, 2002)***

2.10. Payout Structure an Alternatives:

One concern with the contract designed above is that once the trigger mortality rate is crossed there would be a payment at that rate. This may encourage moral hazard on the part of the officials who are developing the statistics for mortality rates. If they believe that the numbers are close to trigging a payment, they may 'create losses' by Livestock Insurance amongst Herders or/and breeders. Making certain that the values will trigger a payment. This incentive is stronger given the fact that levels of payment are high once the trigger is crossed. An alternative to reduce these incentives would be to scale the payments in once the trigger is crossed.

For example, if the trigger were set at a 10% mortality rate, each 1 percentage point above that level could be considered what is referred to as a 'tick' and a certain level of payment could be tied to each 'tick'. With a tick system, payments would only begin when the mortality rate is equal to 1 1% and they would be made more gradually.

For example, if the corresponding value at risk for cattle is 100,000 Tg and a herder has 100 cattle, they would want insurance values of 10,000,000 Tg. If Exchange rate (1.00 US$ ≈ 2,858.78 ₮)

We consider that the maximum mortality rate in a sum may be 60%, then we have 50 ticks between the trigger value of 10% and 60%. We can divide the 10,000,000 Tg by 50 ticks to get a value per tick of 2,000,000 Tg. Thus, at 11% mortality the herder with 100 cattle would receive 2,000,000 Tg. If the mortality rate is 12%, the payment would be 4,000,000 Tg, nd so on.

Payment = (Mortality rate - Trigger) x Tick Value = (12% - 10%) x 2,000,000.

This system may also be more easily explained to a herder.

The explanation is simply - for each point above the trigger you will receive a payment of 2 million Tg.

Premium rates and all other considerations could be recalculated using procedures that are similar to those presented above with the new payout rules.

(***Jerry R. Skees, Ayurzana Enkh-Amgalan, 2002***)

2.11. **Livestock Units**:

Livestock units used for aggregating the numbers of different categories of livestock usually derived in terms of relative feed requirements. Generally, conversion ratios base on metabolisable energy requirements,

considered for one unit as the needs for maintenance and production of a typical dairy cow and calf (***Karin, 2020***).

2.12. Herd growth model:

A mathematical equation system described the herd structure by the numbers of animals in each age and sex cohort. Annual transition probabilities, for the birth-rate, transfers between cohorts, mortalities and off-take rates, are applied to determine the change in herd structure and numbers each year and hence the growth of the herd over time(***Karin , 2020***).

2.13. Stocking rates:

Stocking rates are the basic relationship between the forage resource and livestock. It is the number of animals on a whole grazing unit for a whole grazing season. Stocking rates are dependent on how much forage is growing in the pastures, as well as how many animals in it, their weights, and how much they consume (***Karin, 2020***).

2.14. Loss Ratios

Loss Ratios are a means for insurers, underwriting agents and brokers alike to assess the profitability of their businesses, an insurance policy or even a relationship with a partner company ***(Adam Bishopon, 2009)***.

2.15. Loss Ratios importance:

Without a quick and simple way of comparing the profitability of different accounts, no insurance operation has much hope of success. Critically we must determine the ratio between income and outgoings, which in insurance terms means Premiums vs. Claims ***(Adam Bishopon, 2009)***.

CHAPTER THREE

Methodology of The study

3.1. Study area: Khartoum location in the middle of the populated area in Sudan, at almost the northeast center of the country between 15 and 16 degrees latitude north, and between 31 and 32 degrees longitude east. Khartoum marks the convergence of the White Nile and the Blue Nile, where they join to form the bottom of the leaning-S shape of the main Nile (see map, upper right). Khartoum is relatively flat, at elevation 385 m (1,263 ft.), as the Nile flows northeast past Omdurman to Shendi, at elevation 364 m (1,194 ft.) about 101 miles (163 km) away. (https://en.wikipedia.org- March 2019)

Ta'awuniya Insurance Co ltd, (TICo) is Sudanese insurance companies. In Khartoum, state TICo has up to fifteen (15) branches and outlets, since 2003 TICo introduce integrated agro-insurance services, including suitable coverage for animal production and livestock rearing in addition to facilitation in payment and practitioner staff in agro-economics and techniques. (TICo doc-2019)

3.2. Sampling technique: due to data availability aneaseofaccess, using Convenience Sampling technique ،whichis quick, inexpensive. Samplesare selected from elements of a population that are easily accessible, and convenient. To select registration records of 48 months started from Jan 2016 up to Dec 2019.this sample was sketched and organized to represent sixteen years of livestock insurance since 2003.

3.3. Data collection:

3.3.1. Primary data sources: referring to TICo info-system (AMAN 2019).data had recorded and tabulated as variables of year, month, policies number, animal units, sum insured, net premium, claim and loss rate.

3.3.2. Secondary datasources: referring to researches, development economic reports, insurance arrangements documents, agricultural insurance publications (books, manuals and magazine…etc.), web bloggers

3.4. Data analysis:

3.4.1. Descriptive statistics: Descriptive statistics are used to describe the basic features of the data in a study. They provide simple summaries about the sample and the measures. ... Descriptive statistics are typically distinguished from inferential statistics. descriptive statistics is simply describing what is or what the data shows.(Hassan A.Allajabow, 2014)

3.4.2. Correlation analysis: Correlation analysis is a method of statistical evaluation used to study the strength of a relationship between two, numerically measured, continuous variables. ... If there is correlation found, depending upon the numerical values measured, this can be either positive or negative. Correlation coefficient: A statistic used to show how the scores from one measure relate to scores on a second measure for the same group of individuals. A high value (approaching +1.00) is a strong direct relationship, values near 0.50 are considered moderate and values below 0.30 are considered to show weak relationship. A low negative value (approaching -1.00) is similarly a strong inverse relationship, and values near 0.00 indicate little, if any, relationship. (Boddy etal - 2009)

3.4.3. Loss Ratios: Loss ratio is the ratio of total losses paid out in claims plus adjustment expenses divided by the total earned premiums.(Adam ,2009), Loss ratio is used in the insurance industry, representing the ratio of losses to premiums earned. Losses in loss ratios include paid insurance claims and adjustment expenses. The loss ratio formula is insurance claims paid

plus adjustment expenses divided by total earned premiums. For example, if a company pays $80 in claims for every $160 in collected premiums, the loss ratio would be 50% (Adam ,2009)

3.4.4. Mortality Ratios: The relative frequency of deaths in a specific herd during a specified time often cited as the percentage of livestock deaths during an animal health crisis, or of wildlife deaths due to environmental perils. It is an unexpected and undesirable loss of an animal. Negative economic consequences resulting from the death of a cow include loss of production, possible treatment expenditures, and cost of waste management in addition to indirect costs.(Fetrow J et al .2006)

CHAPTER FOUR

Results

4.1. Descriptive statistics:

Tab (4 - 1)shows that the mean or average for the policies amount is 11.63 polices, insured animal units 55.15 A.U, mortal animal units 0.31 A.Us, mortality ratio is 1.98 % and loss ratio 55.41% , and the standard deviation for each of them is 12.321, 91.80714, .99108 , 12.13832 and 225.69798 respectively. The largest monthly average is loss ratio 55.41 % , and the least monthly average is mortal animal units 0.31A.Us, other ways the largest monthly standard deviation is loss ratio 225.70 % , the least monthly standard deviation is mortality ratio 12.14 % .

Tab (4 - 1) Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Insured animal units	48	.00	522.20	55.1500	91.80714
loss ratio	48	.00	1279.35	55.4065	225.69798
Mortal animal units	48	.00	5.90	.3081	.99108
Mortality ratio	48	.00	84.24	1.9828	12.13832
Polices amounts	48	0	55	11.63	12.321
Valid N (listwise)	48				

4.2. Analytical statistics

4.2.1. The relationship between the policies amount and insured animal units:

Table (4 - 2)shows that a Pearson‘s coefficient test revealed the intersection between Polices amounts and Insured animal units is (0.017) and p-value 0.91 that results means there is no relationship betweenthe policies amount and insured animal units.

Table (4 - 2) Correlations of the polices amounts and Insured animal units

		Polices amounts	Insured animal units
Polices amounts	Pearson Correlation	1	.017
	Sig. (2-tailed)		.910
	N	48	48
Insured animal units	Pearson Correlation	.017	1
	Sig. (2-tailed)	.910	
	N	48	48

4.2.2. The relationship between the policies amount and mortal animal units:

Pearson‘s coefficient test as in table (4 - 3) the intersection between Polices amounts and mortal animal units is (-0.010) and p-value 0.94, that means no correlation or relationship between the policies amount and mortal animal units.

Table (4 - 3) Relationship between polices amounts and mortal animal units.

		Polices amounts	mortal animal units
Polices amounts	Pearson Correlation	1	-.010
	Sig. (2-tailed)		.946
	N	48	48
mortal animal units	Pearson Correlation	-.010	1
	Sig. (2-tailed)	.946	
	N	48	48

4.2.3. The relationship between the Polices amounts and mortality ratio:

Table (4 - 4) shows that a Pearson‘s coefficient test between Polices amounts and mortality ratio equals (-0.076) and p-value is 0.608 from this result there is no correlation between the policies amount and mortality ratio.

Table (4 - 4)Relationship between Amounts of polices and mortality ratio

		Polices amounts	mortality ratio
Polices amounts	Pearson Correlation	1	-.076
	Sig. (2-tailed)		.608
	N	48	48
mortality ratio	Pearson Correlation	-.076	1
	Sig. (2-tailed)	.608	
	N	48	48

4.2.4. The relationship between the policies amount and the loss ratio:

Table (4 - 5) shows that the linear correlation coefficient between the Polices amounts and the loss ratio is (-0.035) and p-value 0.816, these results indicate that there is no correlation between the Polices amounts and the loss ratio.

Table (4 - 5) Relationship between polices amounts and loss ratio.

		Polices amounts	loss ratio
Polices amounts	Pearson Correlation	1	-.035
	Sig. (2-tailed)		.816
	N	48	48
loss ratio	Pearson Correlation	-.035	1
	Sig. (2-tailed)	.816	
	N	48	48

4.2.5. The relationship between the insured animal units and the mortal animal units:

Table (4 - 6) shows that the connection or the linear correlation coefficient between, Insured animal units and mortal animal units is (0.059) and p-value 0.689, these results revealed that there is no correlation or relationship between the Insured animal units and mortal animal units.

Table (4 - 6)Relationship between Insured animal units and mortal animal units

		Insured animal units	mortal animal units
Insured animal units	Pearson Correlation	1	.059
	Sig. (2-tailed)		.689
	N	48	48
mortal animal units	Pearson Correlation	.059	1
	Sig. (2-tailed)	.689	
	N	48	48

4.2.6. The relationship between The Insured animal units and the mortality ratio:

Table (4-7) indicates that the linear correlation coefficient between Insured animal units and mortality ratio is (-0.072) and p-value is 0.62, these results revealed that there is no population correlation between the Insured animal units and the mortality ratio.

Table (4 - 7) Relationship between Insured animal units and mortality ratio.

		Insured animal units	mortality ratio
Insured animal units	Pearson Correlation	1	-.072
	Sig. (2-tailed)		.627
	N	48	48
mortality ratio	Pearson Correlation	-.072	1
	Sig. (2-tailed)	.627	
	N	48	48

4.2.7. The relationship between the insured animal units and the loss ratio:

Table (4 - 8) indicates that the linear correlation coefficient between the Insured animal units and the loss ratio is (-0.035) and p-value is 0.815, these results revealed that there is no population correlation between the Insured animal units and the loss ratio.

Table (4 - 8) Relationship between Insured animal units and the loss ratio.

		Insured animal units	loss ratio
Insured animal units	Pearson Correlation	1	-.035
	Sig. (2-tailed)		.815
	N	48	48
loss ratio	Pearson Correlation	-.035	1
	Sig. (2-tailed)	.815	
	N	48	48

4.2.8. The relationship between the mortal animal units and the mortality ratio:

Pearson‘s coefficient test shows that the connection or the linear correlation coefficient between the mortal animal units and the mortality ratio is (0. 853) and p-value 0.00, as shown in table (4 - 9) .These results revealed that there is no correlation or relationship between the mortal animal units and the mortality ratio.

Table (4 - 9) Relationship between mortal animal units and mortality ratio.

		mortal animal units	mortality ratio
mortal animal units	Pearson Correlation	1	.853**
	Sig. (2-tailed)		.000
	N	48	48
mortality ratio	Pearson Correlation	.853**	1
	Sig. (2-tailed)	.000	
	N	48	48

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

4.2.9. The relationship between the mortal animal units and the loss ratio:

Pearson‘s coefficient test shows the connection or the linear correlation coefficient between the mortal animal units and the loss ratio is (0. 868) and p-value 0.00, as shown in table (4 - 10) .These results revealed that there is no correlation or relationship between the mortal animal units and the loss ratio is reject able.

Table (4 - 10)Relationship between mortal animal units and loss ratio

		loss ratio	mortal animal units
loss ratio	Pearson Correlation	1	.868**
	Sig. (2-tailed)		.000
	N	48	48
mortal animal units	Pearson Correlation	.868**	1
	Sig. (2-tailed)	.000	
	N	48	48

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

4.2.10. The relationship between the loss ratio and mortality ratio:

Table (4 -11) shows that the intersection or the linear correlation coefficient between loss ratio and mortality ratio is (0.820) and p-value 0.00.Due to these marks, means that there is a population correlation amongst these variables pairs loss ratio and mortality ratio.

Table (4 -11) - Relations of variables of mortality ratio and loss ratio.

		loss ratio	mortality ratio
loss ratio	Pearson Correlation	1	.820**
	Sig. (2-tailed)		.000
	N	48	48
mortality ratio	Pearson Correlation	.820**	1
	Sig. (2-tailed)	.000	
	N	48	48

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

Chapter Five

Discussion, Conclusion and Recommendations

5.1. Discussion

5.1.1. The monthly average and standard deviation:

Table (4 -1)shows that the largest monthly average was loss ratio 55.41 % , and the least monthly average was mortal animal units 0.31A.Us, other ways the largest monthly standard deviation was loss ratio 225.70 % , the least monthly standard deviation was mortality ratio 12.14 % ,Economic conditions significantly worsened since late 2017, following the sharp devaluation of the currency, as the removal of the international economic sanctions on the country increased the demand for imports and, consequently, for US dollars. This prompted high inflationary, high inflationary pressures have contributed to diminish the purchasing power of consumers and farmers, resulting in lower access to food and agricultural inputs. (Central Bureau of Statistics 2019)

5.1.2. Relationship between Polices amounts, Insured animal units, loss ratio, mortal animal units and mortality ratio

In spite of that results were of no linear correlation, it is noticeable that economic factors (The policies amount, insured (vital animal) units, (mortal animal) units, the loss ratio and mortality ratio) associated with herd structure consideration as indicated in conditions group (i) of the insurance policy wording (TICo documents 2019) and practically any more amounts of polices should increase the population of Insured animal units In general, the more commercial the operation, the more likely that insurance need to be designed to address certain of the risks involved. (R.A.J. Roberts 2005)

5.1.3. Relationship between insured animal units, loss ratio, mortal animal units and mortality ratio:

(See tables4.8 – 4.11) with these results the null hypothesis of no population correlation among these pairs of variables: insured animal units, the mortal animal units, the mortality ratio and the loss ratio. They reflect the responsibility of the owners (insured) their capability in avoiding thus indications of risk and loss by developing their method of **l**ivestock **p**roduction **m**anagement (L.P.M) technically and economically. In addition holding insurance was also correlate with reduced herd size, which suggests that insured herders are less likely to rely on herd maximization as a risk management strategy. (Alla Safieldin 2018)

5.1.4. Relationship between the mortal animal units, the mortality ratio, the loss ratio.

In spite of these result, no population correlation amongst these variables pairs mortal animal units, loss ratio and mortality ratio, or generally the null hypothesis would be rejected. This relation is very important for planning the portfolio competence in responding to broadband of risks, and logically it relates to conditions group (iii) of the insurance policy this group rules the level of cooperation between the insured and the insurer especially in efforts of information integration. (TICo documents 2019) Insurance protection against these events (mortality, burglary) is usually possible, at least from an underwriting point of view. For the farmer, these types of events bring the expectation that disaster relief will be forthcoming from public funds. This will reduce the demand for insurance, even if insurance products are available in the market.

5.2. Conclusion:

Livestock insurance was discussed as an economic factor of animal development through the experience of TICo in Khartoum state by studying some elements of the livestock insurance portfolio as loss ratio, mortal animal units, loss ratio, and mortality ratio and policy amount. In addition, analyzing the intersection amongst them to search their interaction and affections. Due to the results of no population correlation amongst these pairs of variables: loss ratio with mortal animal units, loss ratio and mortality ratio, mortal animal units beside mortality ratio, and so suggested suitable recommendations of the study finds.

5.3. Recommendations:

Considering above mentioned out puts the recommendations articulated and focused on risk management tools and teams with perfect use of communication and information technology systems to support and supply chief executive officers (CEO) a sight view of variability in the livestock insurance portfolio resembles in herds' vitality or/and mortality all of that would be realized by means of:

5.3.1. Extending the umbrella of livestock insurance to address multi-stage risks of animal production as ranches rehabilitation (the animal husbandry facilities and the herds), livestock production marketing and ranches operation hazards as the perils in application of Animal production techno-packages.

5.3.2. Developing a compatible monitoring and evaluation process in registration, analyzing, recording and reporting the situation of livestock insurance portfolio as restocking rate, mortality rate as well as loss ratio.

5.3.3. Considering, minding and caring about the insurance awareness, Intellectuality and attitudes of the beneficiaries' and stakeholders about their risk management capacities and proficiencies.

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Annex and Addition

وثيــقة تـأمين الماشية

(أبقار – ضأن – ماعز)

سم الله الرحمن الرحيم

وثـيقة تـأمين الماشــية

(أبقار – ضان – ماعز)

بما أن المؤمن له قد تقدم إلي الشركة بطلب للتأمين (الذي يعتبر مع أي بيانات أخرى أساساً لهذا العقد ومندمجاً فيه) فقد تم الاتفاق بين المؤمن له المذكور بجدول هذه الوثيقة.والشركة التعاونية للتامين (ويشار أليها فيما بعد بالشركة) نيابة عن المؤمن لهم حملة الوثائق، بحيث يدفع المؤمن له للشركة اشتراك التأمين المبين في جدول الوثيقة تبرعاً لحملة الوثائق.

تلتزم الشركة للمؤمن له، وفق ما ورد أدناه، أنه في حالة نفوق أي من الحيوانات المؤمن عليها، وفي خلال فترة التأمين المبينة بجدول هذه الوثيقة. نتيجة حادث عرضي ، أو مرض ، أو وباء أو داء ، يصيب أي حيوان من الحيوانات ، موضوع هذا التأمين ، وفي خلال فترة التأمين المبينة بجدول الوثيقة (أو بعد ثلاثين يوما من انتهاء سريان الوثيقة في حالة ما يكون التامين لعام كامل وان المؤمن له قد اخطر الشركة بالحادث ، أو المرض ، أو الوباء ، أو الداء الذي أصاب الحيوان/ الحيوانات المؤمنة قبل انقضاء فترة التأمين المذكورة بالجدول) بتعويض المؤمن له في حدود مبلغ التامين المبين في الجدول أو المبلغ الفعلي لقيمة الحيوان/ الحيوانات المؤمنة أيهما اقل.

يخضع التزام الشركة للشروط الواردة في هذه الوثيقة ولأي شروط ترفق بها أو تظهر عليها أو تضاف أليها بشكل أخر في المستقبل وتعتبر جزءا منها

الاستثناءات: -

1. **لا يغطى هذا التامين الذبح أو القتل العمدي** ، سواء كان بأمر أي سلطة حكومية أو محلية أو أي جهة اختصاص لها هذه الصلاحية أو غيره.

ولا ينطبق هذا الاستثناء في حالة:-

أ/ ما توافق الشركة كتابة علي إعدام الحيوان/الحيوانات المؤمنة أو

ب/ أن يكون الحيوان / الحيوانات المؤمنة تعرضت لحادث أو أصيب بمرض قاس الألم وأن طبيباً بيطرياً تعينه الشركة قد شهد بأن معاناة الحيوان/الحيوانات موضوع التأمين من هذا المرض لا يمكن تخفيفها أوعلاج المرض المسبب لها وأن إعدام الحيوان/ الحيوانات المذكورة هو الخيار الوحيد رفقا ورحمة لها، أو

ج/ أن القرار في (ب) قد اتخذ بواسطة طبيب بيطري مؤهل ومعتمد لذلك العمل في حالة ما لم يكن متاحا الانتظار لحين أن تعين الشركة الطبيب البيطري لاتخاذ ذلك القرار.

وفي كل الأحوال (أ) و (ب) و(ج) أعلاه فأن للشركة الحق أن يقوم طبيبها البيطري بفحص جثة الحيوان و/ أو تشريحها متى ما اختارت ذلك .

2. لا يغطي هذا التأمين النفوق الذي يكون بسبب مباشر أو غير مباشر أو عائد إلى:-

أ/ أي عملية جراحية أجريت علي الحيوان/الحيوانات ، ما لم تكن بواسطة طبيب بيطري مرخص له بذلك وأنه يشهد بأن العملية التي أجريت كانت ضرورية بسبب حادث. أو مرض أو وباء بهدف إنقاذ الحيوان / الحيوانات.

ب/ المعالجة بأي عقار ما لم يكن قد وصف أو تم تحت إشراف طبيب بيطري مرخص له بذلك ويشهد أن ذلك العلاج كان وقائيا أو بسبب حادث أو مرض أو وباء (يشمل العلاج المعني هنا أي دواء ، أو وهرمون، أو فيتامين ، أو بروتين ، أو أي مادة أخرى غير الأكل والشرب المطلوب للغذاء).

ج/التســـمـــم.

د/الأذى المقصود أي كان سببه.

هـ/التفاعل أو الإشعاعات النووية أو التلوث الإشعاعي أو مواد الأسلحة النووية أو أية عملية ذاتية للانشطار النووي.

3. لا يغطي هذا التأمين نفوق الحيوانات الذي يحدث بسبب مباشر أو غير مباشر أو ناجم عن أو راجع إلى:

أ/ المصادرة أو التأميم أو الحجز بواسطة أي سلطة حكومية أو أي شخص أو جهة لها حق قانونى.

ب/الحرب، الغزو، أعمال عدو أجنبي، العدوان (سواء أن أعلنت الحرب أو لم تعلن) الشغب، الاضطرابات، أو الاضطرابات الشعبية.

في كل الأحوال الواردة في فقرات هذا الاستثناء جميعها، فإن عبء النقص لسببها في الخسارة أو النفوق يقع علي عاتق المؤمن له أن أدعى ذلك سواء أمام المحاكم أو مجالس التحكيم.

****الشـروط:-**

1- الشرط الأول:-
صحة الحيوان:-

أنه من المشروط والمتفق عليه أنه عند سريان هذه الوثيقة أن المؤمن له قد تأكد تماماً أن كل حيوان مغطي بموجب هذه الوثيقة هو في صحة تامة وغير مصاب بداء أو مرض أو به عرج، أو أذى

جسدي أو أي عاهة أو عجز آخر، وأن الشركة تكون معفاة عن المسئولية في حال الإخلال بهذه الشروط.

2- الشرط الثاني:-
امتلاك الحيوان:-

أن المؤمن له عند تاريخ سريان هذه الوثيقة هو المالك الحقيقي للحيوان موضوع هذا التأمين، وأن الشركة لن تكون مسئولة عن أي التزام بموجب هذه الوثيقة في حالة ما قام المؤمن له ببيع هذه الحيوانات المملوكة له أو تم فقدان الملكية أو المصلحة في ملكيتها بأي وجه آخر.

3- الشرط الثالث:-
عمليات الاستئصال:-

لا تسرى هذه التغطية في شأن أي حيوان تجري له عملية خصي أو استئصال للمبيض، وذلك اعتبارا من منتصف الليلة التي تسبق يوم العملية.

4- الشرط الرابع :-
تسويق الحيوان:-

أنه في حالة ما تم عرض أو ضم أي من الحيوانات المؤمنة بهذه الوثيقة ، في أي دلالة، أو مفاصلة للأسعار ، أو عرض في السوق فأن مسئولية الشركة ستقصر إلي أقل سعر يحصله الحيوان ويمكن للمؤمن له أن يعمل علي استرداد الاشتراك المدفوع – متى ما طلب ذلك في خلال ستين يوماً من هذا الحدث – بنسبة المدة المتبقية لفترة التأمين من تاريخ اعتماد مبلغ التأمين الجديد.

5- الشرط الخامس :-
منطقة تواجد الحيوان:-

أ/ أن الحيوان/الحيوانات المؤمنة بهذه الوثيقة سوف ينحصر تواجدها في نطاق المنطقة الجغرافية المبينة بجدول الوثيقة.

ب/ أن الحيوان/الحيوانات المؤمن عليها سوف لن تستعمل لأي غرض آخر غير ما هو منصوص عليه في جدول الوثيقة .

وسوف يؤدي الإخلال بهذا الشرط إلي أن تكون الشركة غير مسئولة عن أي التزام تجاه الحيوان/الحيوانات المؤمنة بموجب هذه الوثيقة .

6- الشرط السادس:-
الرقابة والعناية بالحيوان:-

أ/ أن المؤمن له سيقوم بتوفير الرقابة والعناية المطلوبة لكل حيوان مؤمن بموجب هذه الوثيقة.

ب/ (1) في حالة ما يصاب أي من الحيوانات المؤمنة بمرض أو داء ، أو عرج ، أو أذى، أو حادث أو أي عجز جسدي آخر، فأن المؤمن له سيقوم، وعلي نفقته الخاصة بطلب طبيب بيطري مرخص له لفحص الحيوان وعلاجه وكذلك نقله للعلاج في حالة ما طلبت منه الشركة ذلك.

(2) في حالة نفوق أي من الحيوانات المؤمنة، فأن المؤمن له سيقوم، وعلي نفقته الخاصة، بترتيب فحص سبب النفوق وتشريح الجسد بواسطة طبيب بيطري مرخص له.

وفي كلا الحالين ب (1) و ب (2) يتوجب علي المؤمن له إبلاغ الشركة بالهاتف ،أو البريد السريع أو الفاكس ، كما وأنه في حالة فشل أو تقاعس المؤمن له للتصرف وفق ما هو وارد بهذا الشرط فأن الشركة تخلي مسئوليتها تماماً عن التعويض الجائز دفعه بموجب هذه الوثيقة.

7- الشرط السابع:-
نفوق الحيوانات:-

أنه في حالة نفوق أي من الحيوانات المؤمنة بموجب هذه الوثيقة وكان هناك تأمين آخر ساري المفعول ، فأن الشركة تخلي مسئوليتها تماماً عن التعويض ما لم يكن التأمين الآخر مظهراً علي جدول هذه الوثيقة، وعندها ستكون الشركة مسئولة فقط عن المبلغ الذي يتجاوز مبلغ التأمين الوارد في ذلك التأمين المظهر علي جدول الوثيقة سواء كان من الممكن تحصيل التعويض من المؤمن الآخر أو لم يكن .

8- الشرط الثامن :-
حالات التعويض:-

أنه يجب علي المؤمن له ، قبل أو بعد حصوله علي التعويض بموجب هذه الوثيقة، أن يقوم ويسمح ويساهم علي نفقة الشركة بكل ما هو ضروري أو لما تطلبه الشركة في الحدود المعقولة من أجل استخدام أية حقوق وسائل شرعية لاسترداد حقه في الحصول علي إبراء الذمة أو التعويض من الأطراف الأخرى ويكون من حق الشركة أن تحل محل المؤمن له في المطالبة باستحقاقه.

9- الشرط التاسع:-
طلب إنـهاء التأمين:-

أنه من حق المؤمن له طلب إنهاء هذا التأمين بطلب مكتوب منه، وسوف تحتفظ الشركة في هذه الحالة بقسط يحسب طبقاً لنسب المدد القصيرة للفترة التي كان خلالها ساري المفعول وفقاً لنسب المدد القصيرة الموضحة أدناه، كما أنه يجوز للشركة إنهاء سريان هذا التأمين في أي وقت وذلك بإرسال أخطار للمؤمن له كتابة قبل خمسة أيام من بدء الإلغاء وللمؤمن له الحق في استرداد جزء من الاشتراك المدفوع يتناسب مع المدة المتبقية من فترة سريان الوثيقة ويكون ذلك وارداً في حالة ما لم يكن قد سبق أن قدمت مطالبة في خلال فترة سريان الوثيقة .

10-الشرط العاشر:-
سقوط حقوق المؤمن له:-

تسقط كافة حقوق المؤمن له في التعويض بموجب هذه الوثيقة إذا احتوت المطالبة علي الغش بأي نحو كان أو أذا قدمت أو استعملت بيانات مزورة تعزيزاً للمطالبة أو إذا أخفيت أي بيانات كان يجب تقديمها ، أو إذا سلك المؤمن له أو من ينوب عنه طرقاً أو أساليب احتيالية بغية الحصول علي أي منفعة بموجب هذه الوثيقة ، أو تعمد أو تواطأ في نفوق أي من الحيوانات موضوع

التأمين ، أو عمد علي تعويق إنقاذ أي حيوان من النفوق أو أذا تصالح مع الغير المتسبب بخطئه في نفوق أي حيوان مؤمن في هذه الوثيقة دون موافقة الشركة.

جدول فئات أسعار المدد القصيرة :

شهر واحد	= 20% من السعر السنوي
شهران	= 30% من السعر السنوي
ثلاثة أشهر	= 40% من السعر السنوي
أربعة أشهر	= 50 % من السعر السنوي
خمسة أشهر	= 60 % من السعر السنوي
ستة أشهر	= 70 % من السعر السنوي
سبعة أشهر	= 75 % من السعر السنوي
ثمانية أشهر	= 80 % من السعر السنوي
تسعة أشهر	= 85% من السعر السنوي
أكثر من تسعة أشهر	= 100% من السعر السنوي