Impact of Risk Management on Success of Livestock Production Project: A Case Study of the Kageno Rwanda Project

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ABSTRACT

The purpose of the study was to assess impact of risk management on the success of livestock production project with a case study of Kageno Rwanda Project. The specific objective of the study was Assessing the Risk Management Process for Livestock Production in the KAGENO Rwanda Project. Risk Management Theory guided this research. This study employed descriptive research design The data was collected by using questionnaires, interview and documentation techniques with a sample size of 500 which stratifies into 15 Staffs of Kageno Rwanda Project, 480 Farmers and 5 Veterinaries Doctors for interview. The findings showed that identifying risk is the first stage in risk management (Mean=4.13 and std.=0.96). The second process of risk management within Kageno Rwanda Project is risk assessment which confirmed by (mean=3.94 and std=1.09), the third process of risk management is risk mitigation which presented by (mean=2.26 and SD=1.58). The study concluded that the bulk of the low-income farmers in the Kageno Rwanda Project reside in a region where crop diseases, floods, sickness among family members, and crime are common. The researchers recommend that the government has to be aware that risk management techniques are a flexible project tool, particularly for livestock and agricultural projects. The farmers should improve the living condition of livestock employees in order to overcome labour shortage and the farmers should try to eliminate all risk by insuring their livestock.

Keywords: Livestock, Project Success, Risk Management

I. INTRODUCTION

Every commercial company has risks, and the agriculture industry is no different. Farmers confront a variety of risks and uncertainties, including those related to production, marketing, finances, and institutions, among others (Anderson, 2003). If these risks are not appropriately controlled, farmers may experience greater losses in their producing operations. Numerous studies have discussed productivity losses brought on by illnesses, pests, and unfavorable weather conditions (Alessandri, 2019) as well as the substantial costs that farmers bear while trying to prevent situations that endanger their ability to make a living from farming.

For the majority of the main grain-producing regions in China, the likelihood of a 10% loss in grain output as a result of flood calamity is assessed to be above 90%. For instance, controlling herbicide-resistant wild oats with an alternative herbicide is thought to cost grain producers in Saskatchewan and Manitoba more than $4 million yearly. Farm owners must deal with erratic weather patterns, fluctuating input and product price variations, and necessary technological improvements entailed in the farming industry. Farm profitability varies from season to season and year to year as a result of this instability and drastic changes (Pinto, 2012).

The methods used for raising cattle, a region's climate, supportive governmental regulations, and the sorts of farms all affect the sources of risk and the intensity to which they are present. This implies that perceptions of farmers' importance in terms of risk kind and degree differ depending on location. Since they lack complete information to predict events like input prices, output prices, and weather conditions that may impact the profitability of the farm company, livestock farmers are particularly concerned about risk.

Farmers, according to Hillson (2002), are subject to a particular set of production and economic risks, including drought, excessive moisture, frost, hail, pests, and disease, as well as rising operating costs, low profit margins, and high fixed costs. These risks cause fluctuations in farm income and endanger the viability of the agricultural sector. Grain and oilseed are two important products that Saskatchewan produces, and the majority of these products are exported

As a result of the dangers they confront, farmers employ numerous risk management techniques. In reality, a number of studies have looked at the methods farmers use to control risk. These studies have discovered that among the techniques used by farmers to manage and lower risks include crop insurance, futures contracts, vertical integration, spreading of sales, diversification, off-farm investments, producing at low cost, and preserving financial reserves (Turner, 2018). The majority of risk analysts, as stated by Shepherd (2009), assume a connection between the kind of risk and the management plan that should afterwards be employed to handle such risk.

Parker (2016) noted that although the different risk management techniques are logically tenable, it is up to farmers to choose the precise set of risk management techniques that best fits the unique traits of their farm. Farmers' understanding of the risk involved, their capacity for managing risk, and their level of risk aversion all influence the range of management techniques they use. Focusing only on one strategy or class of methods, as the authors noted, misses the "whole farm context in which farmers manage risk." As a result, it may be difficult to grasp how farmers could respond to shifting risk scenarios and to provide an accurate picture of the risk environment they face. As a result of the aforementioned arguments, farmers' risk management techniques may not always be uniform (Shepherd, 2009).

Shrnhur (2017) asserted that the risks that farmers specifically confront vary from nation to country and from area to region, and the risk management solutions employed to control hazards are not fundamentally the same. Farmers across the world encounter a variety of risks in productive agriculture. Depending on a farm's and a farmer's characteristics, risk management solutions within the same industry may vary. When it comes to risk, farmers may perceive it differently depending on their experiences, marketing circumstances, weather, or even the institutional system in which they operate (Shrnhur, 2017).

According to Shenhar (2018) the ability of farm managers to distinguish which of these risks can be controlled internally from those that are outside their internal control is a key component of whether or not the transfer of risk through strategic partnerships throughout the supply chain will prove to be an effective strategy. In order to better inform farm advisors and provide the necessary information to guide policy directions, it is important to look into the perceived sources of risks faced by grain and livestock farmers as well as the types of risk management strategies that farmers believe are crucial in controlling risk.

Financial, safety, communication, and decision-making efficiency are other advantages of risk management. By 2035, Rwanda wants to move from its current agricultural growth rate of 5% to an annual growth rate of 10%. While not yet accomplished Approximately 1,371,828 cattle heads, 2,387,898 goats, 541,416 sheep, 1,385,769 pigs, 5306,524 chickens, and 688,788 rabbits are present in Rwanda, according to the Ministry of Agriculture and Animal Resources' 2019 report (MINAGRI, 2019 to potentially contribute to agriculture-led growth and the socioeconomic transformation of the population) (Turner, 2018).

In order to increase productivity, some projects, like the KAGENO Rwanda Project, participate in livestock production by distributing cattle to disadvantaged communities. The researcher evaluated the role of risk management to the Kageno Rwanda Project's success in cattle production in order to define success.

1.1 Statement of the Problem

To reduce the length of the shock-recovery-shock cycle, controlling agricultural risk is more important in light of long-term developments like globalization and climate change. Globalization is uniting the world like never before through commerce, financial markets, and politics, while climate change is making people more vulnerable and causing protracted crises. According to some observers, the fundamentals of supply and demand for agricultural commodities have changed, creating weak commodity markets that are inherently more susceptible to unfavorable occurrences (Hillson, 2019).

The Kageno Rwanda Project's agricultural sector relies heavily on rain-fed agriculture and raising cattle in the wild, hence its economic performance is typically unpredictable due to its biological makeup. Because of the unpredictable nature of rainfall, animal mortality from livestock diseases, and changes in output prices, this type of production is inherently risky. However, farmers who have adopted the practices of zero grazing will perceive the risk of a labor shortage as being less than other farmers, highlighting the potential of this method.

According to Alessandri (2019) the majority of environmental features in low-income nations include crime, floods, family member illness, and crop illnesses. They all result in uncertainty. In low-income countries like Kenya, a number of individuals experience food insecurity and poverty due to a confluence of several factors. They are exposed to a range of dangers and uncertainties due to the ecological, economic, and sociopolitical environments. Food shortages, a deterioration in nutritional health, and poverty can occur as a result of these risks and unknowns very fast.

1.2 Research Objectives

Assessing the Risk Management Process for Livestock Production in the KAGENO Rwanda Project

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Risk Management Theory

This theory was postulated by Markowitz in 1952. It provided a foundational basis on portfolio selection and risk mitigation. This theory was first established within financial investment settings. Markowitz's theory points out the benefits of diversification and strategic risk minimization with an aim of enhancing project outcomes (Markowitz, 1952). It posits that optimal management of risks enables a business project to preserve its key goals by eliminating adverse effects while maximizing opportunities. In livestock production settings, where projects are prone to shifting market conditions, disease outbreaks, and environmental constraints, adopting risk management theory can offer a structured technique to identify, evaluate, and prioritize these risks, hence boosting sustainable success.

Regarding the situation at Kageno Rwanda Project, applying this theory lies in its emphasis on proactive risk evaluation and the establishment of a balanced "risk portfolio." Through handling risks, the project can point out particular hindrances e.g. livestock diseases or resource shortages and establish mitigation tactics. This includes diversifying livestock breeds or initiating emergency response mechanisms. Effective and sustainable risk management, as opined by Markowitz's model, does not eliminate risks in totality, rather equips project managers with instruments to adapt and be resilient, ascertaining continuity in production and realizing long-term objectives in the wake of uncertainties.

2.2 Empirical Review

A research by Silva (2016) investigated practices in risk management in livestock production in the Netherlands. Research focused on how Dutch farmers managed risks linked to climatic changes, disease outbreaks and economic fluctuations. Outcomes of research alluded that risk management practices for instance enforcing insurance policies, expanding income streams from farm projects as well as adopting current health protocols, considerably boosted stability and revenue from livestock production projects. The study highlighted the value of government support and advancements in technology in fostering resilience and curbing risks.

In Ethiopia, a study conducted by Gilligan (2017) evaluated risk management techniques particularly in livestock production. The country confronts challenges like water scarcity and extreme temperatures. The investigation illustrated how Ethiopian livestock producers incorporated technological solutions, for example up-to-date cooling and hydration systems, to curb environmental stresses. At the same time, collaborating with local state agencies in risk-related financial support and subsidies proved vital in fostering livestock production. The research findings indicated that enforcing tailored environmental risk strategies was instrumental in preserving livestock health and boosting productivity in arid conditions.

In Botswana, research by Shrnhur (2017) assessed how local livestock producers controlled risks arising from extreme droughts and decreasing grazing fields, which consistently risked survival and productivity of beef cattle. Farmers adopted different risk management strategies, e.g. investing in drought-resistant cattle. Another tactic employed is practising rotational grazing to curb land degradation. In the same vein, collective action through farmer cooperatives enabled pooled resources and sharing of knowledge. This enhanced resilience against environmental risks and uncertainities in the market. This collaborative methodology underpinned the efficacy of community-based risk management in bolstering livestock production.

A research performed in Kajiado County by Galvin (2016) focused on the risks linked to disease outbreaks and market shifts in livestock production projects. Research outcomes hinted that Nigerian farmers often lacked consistent risk mitigation resources. However, they embraced strategies such as informal savings groups and community health initiatives to cope with disease risks. Procedures in disease management e.g. vaccination initiatives enabled by regional veterinary services are critical in decreasing mortality rates of livestock. Findings from the research also stressed need for bolstered government involvement and formal training in risk management. This is because they were found to be paramount for long-term growth and viability in livestock sector projects

III. METHODOLOGY

3.1 Research Design

This study employed descriptive research design encompassing quantitative and qualitative methods to address the research topic. A quantitative approach is used to gather data and analyze it. This can be done by questionnaires or statistical representation, and the results are numerical. The respondents are picked for this approach from the study's field. In contrast, the information gathered utilizing a qualitative approach—often through concentrated group or individual interviews—is not measurable (Baikey, 2000).

In this inquiry, both primary and secondary data were employed. A variety of data collecting techniques, including surveys, interviews, and documentation, was used to directly gather primary data from the livestock projects in the Nyamasheke District. Secondary data was gathered from a variety of sources, including textbooks, publications, and the internet, in order to offer enough and trustworthy information on the impact of risk management to the performance of the livestock production project.

3.2 Target Population

Research should be done on the target population because it is an optimum research approach to collect data from the whole population since this would provide the group under investigation the broadest possible coverage (Barnett, 2008). All Nyamasheke District residents, including farmers who participate in the Kageno Rwanda initiative's local livestock initiative and veterinarians who operate in the Rangiro Sector, will make up the research population for this study. In this way, the target population was 500 persons.

Table 1

Classification of Population

Classifications of elements of Sample size	**Total elements**
Staff of Kageno Rwanda Project	15
Farmers	480
Veterinaries Doctors	5
Total	**500**

3.3. Sampling Procedure

Sampling methodology is the process a researcher uses to choose a sample from the entire population. The sample method adopted in this research was purposive sampling. This is a sampling strategy whereby the researcher utilizes his/her judgment to select respondents who most closely match the study's objectives. As such, the investigation solely focused on the staff farmers working on projects in Nyamasheke District.

For accurate information on how risk management affects the success of cattle production projects, staff farmers were involved in the research. The Farmers of Kageno Rwanda Project in the Rangiro Sector of the Nyamasheke region were chosen as the representative sample using the Yamane's algorithm from the entire population of 495.

The following formula determine the sample:

$$n = \frac{N}{1+N(e)^2} = \frac{495}{1+495(10\%)^2}$$

$$n = \frac{495}{1+495\ (0.1)^2} = 83$$

n = Sample size = 83

N= Population = 495

$(e)^2$= Sampling error = 10%

3.4 Data Collection Techniques and Tools

The followings are the instruments used in data collection:

3.4.1 Questionnaire

A questionnaire as a set of inquiries designed to elicit information from the respondents. It can also refer to a set of questions that you administer to yourself. Both closed-ended and open-ended questions were included in the questionnaire for this study to allow respondents to express their general ideas as well as their specific responses to the questions (Grawitz, 1995). All participants in the Kageno Rwanda Project were given a series of questions to answer as part of this study.

3.4.2 Interview

The purpose of an interview is to collect information from a respondent through a face-to-face conversation (Williams, 1998). The researcher asks questions verbally during interviews, which can be performed in-person or over the phone. Interviews were carried out with the intention of obtaining information on the contribution of risk management to the project's success in livestock production. The local leaders and veterinarians of the Rangiro Sector in the Nyamasheke district were interviewed.

3.4.3 Documentation

In order to gather background knowledge and learn about other studies on the same topic, (Cooksey, 2008) state that reading books and other resources including text books, the internet, reports, and brochures is one of the data collection approaches. The pertinent literature was reviewed for the sake of this investigation. This was done in order to find out more details on the issue.

In order to get secondary data that aided in the accomplishment of the study's goals, the researcher utilized documentation to examine the influence of risk management on the success of the livestock production project. Using this approach, the research began by asking questions based on investigations, analyses, and illustrations of existing written materials, electronic resources, and particularly the records and yearly reports of the Kageno Rwanda Project.

3.5 Validity and Reliability Tests

The degree to which an instrument measures what it claims to measure is known as validity.

3.5.1 Validity Tests

The extent to which a research tool measures what it was designed to assess is what is meant by validity (Rongere, 1999). In this study, content validity was used to evaluate validity, and expert judgment was enhanced. The questionnaire was subsequently modified, with bias removed and the proper items added. This was accomplished through reconstruction in order to meet the goals of the study.

3.5.2 Reliability Tests

The degree to which a research tool can produce consistent results after several tests is known as its reliability. The questionnaire underwent pretesting before the actual research. The reliability of the questionnaires and internal consistency of the data collecting tools were then evaluated using Cronbach's alpha. According to Margret (2007), a score above 0.7 was regarded to be acceptable.

The following Table 3.2 lists the reliability findings:

Table 2

Reliability Results

Variable	No of Items	Cronbach's Alpha	Remarks
Risk Identification	6	0.865	Reliable
Risk measurement	5	0.704	Variable
Risk mitigation	6	0.728	Variable
Risk implementation and monitoring	2	0.722	Variable

Risk Identification had a Cronbach alpha of 0.865, Risk measurement 0.704, Risk mitigation 0.728 and Risk implementation and monitoring 0.722. All the variables had a Cronbach alpha of greater than 0.7 and thus they were measured in a reliable way.

3.6 Data processing

3.6.1 Editing

Editing is the process of finding and correcting errors in questionnaires and interview schedules that have been completed. To make the data complete, accurate, consistent, and intelligible, the researcher updated it.

3.6.2 Coding

Coding is the process of grouping replies into meaningful categories to expose their essential patterns (Cooksey, 2008). The data that was easy to understand was coded by the researcher. According to the provided questions, code frames was created. It was possible to generate coding frames by using the coding patterns that are produced as a consequence of logging the responses to the specified queries. Once the coding frames had been created, frequency counts were done to facilitate tabulation.

3.6.3 Tabulation

Tabulation is the process of organizing data into statistical tables, such as the percentage and frequency of answers to particular inquiries (Grawitz, 1995). The tabulation process involved putting data into statistical tables, computing the frequency answers for each variable, and displaying the number of right answers to common questions and their projected percentages. The updated and processed data was then be added to tables for statistical analysis. These tables, frequencies, and statistics were produced using Excel 2013 and SPSS 22.0 software.

3.7 Methods of Data Analysis

The variables that will be included will be those that are most crucial to achieving the study's objective. After being edited and tabulated, the data are gathered in various table formats and may also be used in other formats for statistical analysis. The qualitative analysis was applied in this investigation. Making observations on the respondents' perspectives on certain occurrences was necessary for this.

3.7.1 Mean

By dividing the total number of all recognized trial outcomes by the total number of occurrences, the mean is determined. The formula for calculating the mean was as follows: (x) indicates the mean and x represents the trial's observed outcomes. According to Pinto (2012), $\bar{x}=\frac{1}{n}\sum_{i=1}^{n} xini$

Table 3

Evaluation of Mean

Mean	Interpretation
1.00-1.49	Strongly disagree
1.50-2.49	Disagree
2.50-3.49	Neutral
3.50-4.49	Agree
4.5-5.500	Strongly agree

3.7.2 Standard Deviations (σ)

The standard deviation is a statistical number utilized to know the quality of the data that are distributed to the average. By formula, the standard deviation is computed as follows:

$$\sigma = \sum_{i=1}^{n} \sqrt{\frac{1}{N}(\mathrm{x}-\mu)^2}$$

Table 4

Evaluation of Standard Deviation

Standard deviation	Quality of data
Standard deviation <0.5	Low dispersion of data (homogeneity)
Standard deviation >0.5	Big dispersion of data (heterogeneity)

3.7.3 Correlation

In this study, correlation was employed to demonstrate the statistical association between two variables. As a result, we were able to determine how risk management and the project's success for livestock production in the Nyamasheke region are related. The statistical rules on which the correlation coefficient is displayed are as follows.

Table 5

Evaluation of Correlation

Correlation coefficient	Interpretation
r=1	Perfect linear correlation
0.9<r<1	Strong linear correlation
0.7<r<0.9	High correlation
0.5<r<0.6	Moderate correlation
0<r<0.5	Weak correlation
r=0	No correlation

Source: (Rongere, 1999)

Apart from the methods stated above the following methods were also used in data analysis and interpretation;

3.7.4 Regression Analysis Description

In this investigation, a multiple regression model was used:

$$Y = \alpha+\beta1X1+\beta2X2+\beta3X3+\beta4X4+ €$$

Project success = Dependent Variable - Constant €=Error = Beta Coefficient: This determines how many standard deviations shifted for a dependent variable for each extra standard deviation of the independent variable.

X1: Risk Identification
X2: Risk Assessment
X3: Risk Mitigation
X4: Risk Management Implementation and Monitoring
Where Y: is Success as determined by Quality, Time, Budget and Client satisfaction

3.7.5 Analytical Method

This is a technique set of concentrated actions carried out in order to achieve one or more objectives (Williams, 1998). They are a set of guiding principles for any structured research and will aid in the interpretation of the data gathered. The researchers utilized this technique to conduct a more thorough examination of any data pertaining to the impact of risk management on the accomplishment of the Kageno Rwanda Project's livestock project.

3.7.6 Statistical Method

A set of mathematical techniques known as statistics may be used to create probabilistic models from the gathering and analysis of actual data. The statistical technique provides the possibility to assess and quantify the outcomes of study by permitting predictions (Grawitz, 1995). Data is integrated in some form of tables, bar graphs, and pie charts for statistical analysis using SPSS version 20.0 after it has been modified and coded. The study's findings will be counted and quantified using this technique. This approach uses a formula for adding together frequencies and percentages to evaluate quantitative data and show it in tables.

IV. FINDINGS & DISCUSSION

4.1 Identification of Responders

Investigating the socio-demographic details of survey respondents is important. They discuss the respondents' ages, marital statuses, levels of education, and jobs held by the respondents.

4.1.1 Respondents' Age

When a researcher examines the responses of the respondents, this variable is crucial. This variable enabled him to understand how a phenomena under investigation is experienced by various age groups, and this table provides extra information.

Table 6

Age of Respondents

	Frequency	Percent
Less than 25 years	5	6.0
25 – 30 years	10	12.0
31 – 40 years	25	30.1
41 – 50 years	20	24.1
Over 50 years	23	27.8
Total	83	100.0

The majority of respondents said that the ages of the Farmers was less than 25 years with indications of 6% of respondents, the second range was between 25 – 30 years old with an indication of 12% of respondents above of 50 years old. This showed that the farmers of Kageno Rwanda Project were classified into different ages.

4.1.2 Respondents' Gender

In order to know how many men and women made up the sample size and to get their opinions on the research subject, the sex of the respondents was classified. As a result, the responders were listed according to sex as follows:

Table 7

Gender Distribution of Respondents

Gender	Frequency	Percent
Male	63	75.9
Female	20	24.1
Total	83	100.0

The table above shows that 75.9% of respondents were male and 24.1% of respondents were female. This table above shows that male respondents constituted a big part of the farmers of Kageno Rwanda Project which is represented by 75.9% while the male respondents were 24.1%. This shows that all gender participated in livestock project of Kageno Rwanda Project.

4.1.3 Level of Education of the Respondents

This part identifies the different categories of respondents who know well the livestock within Kageno Rwanda Project's activities. The following table provides a detailed explanation of how the respondents' education level affected the impartiality and accuracy of the information they supply.

Table 8

Level of Education

Level	Frequency	Percent
Primary	15	18.1
O level	20	24.1
College	25	30.1
University	18	21.7
Post University	5	5.0
Total	**83**	**100.0**

The table above shows that 18.1% of livestock project of Kageno Rwanda Project attended primary school, 24.1% of livestock project of Kageno Rwanda Project attended ordinary level, 30.1% of livestock project of Kageno Rwanda Project attended secondary education, 21.7% of livestock project of Kageno Rwanda Project while 6% of livestock project of Kageno Rwanda Project. This shows that the most farmers are educated.

Table 9

Length of Working with the Project

Length	Frequency	Percent
Less than 3 years	12	14.5
3 – 5 years	28	33.7
6 – 10 years	30	36.1
Over 10 years	13	15.7
Total	**83**	**100.0**

The above table presents that 14.5% of respondents works livestock project less than 3 years especially in Kageno Rwanda Project, 33.7% of respondents works livestock project for 3-5 years in Kageno Rwanda Project, 36.1% of respondents works livestock project for 6-10 years in Kageno Rwanda Project while 15.7% of respondents works livestock project over 10 years within Kageno Rwanda Project. This shows that farmers are experienced within the livestock project.

4.2. Assessment of the Risks Management Process to Livestock Production in KAGENO Rwanda Project

The research also requested information on the different risk management techniques used by the livestock project in the Nyamasheke District. In order to determine the extent to which risk management strategies were adopted by the Livestock project in the Nyamasheke District, the respondents were required to indicate their level of agreement with statements demonstrating the extent to which various risk management techniques were applied in their respective businesses.

Table 10

Risk Management Process of Kageno Rwanda Project

Indicators	Mean	Std. D.
Risk Identification	4.13	0.96
Risk Assessment	3.94	1.09
Risk Mitigation	2.26	1.58
Risk Management Implementation and Monitoring	2.82	1.10

Table 4.5 shows that the respondents agreed that identifying risk is the first stage in risk management (Mean=4.13 and std.=0.96). The second process of risk management within Kageno Rwanda Project is risk assessment which confirmed by (mean=3.94 and std=1.09), the third process of risk management is risk mitigation which presented by (mean=2.26 and SD=1.58), finally the Risk Management Implementation and Monitoring is considered as process of risk management within Kageno Rwanda Project which confirmed by (mean=2.82 and std=1.10). One the respondents said that

> *"Farmers must master risk management skills and take precautions to protect themselves against decisions that are made today without taking the future into account. To reduce the possibility of "bad" outcomes, risk management techniques are used. A separate set of practices should be used by farmers who want to reduce risk. They need to identify possible risk factors, foresee prospective outcomes, make decisions from a range of options, evaluate the impacts of each potential outcome, and weigh trade-offs between potential benefits and potential costs of risk".*

This shows that farmers were willing to accept, manage and monitoring the risk. Outcomes align with research by Silva (2016) investigated practices in risk management in livestock production in the Netherlands. Research focused on how Dutch farmers managed risks linked to climatic changes, disease outbreaks and economic fluctuations. Outcomes of research alluded that risk management practices for instance enforcing insurance policies, expanding income streams from farm projects as well as adopting current health protocols, considerably boosted stability and revenue from livestock production projects. The study highlighted the value of government support and advancements in technology in fostering resilience and curbing risks (Silva, 2016).

4.3 Types of Risk which Affect Livestock Project

The following table presents the different types of risk management.

Table 11

Types of Risk Affect Livestock Production Project

Risk	Mean	Std. D.
Production risk	3.06	1.265
Price risk	2.43	1.061
Financial risk	2.86	1.323
Technological risk	2.61	1.288
Human risk	2.98	1.164

The table above revealed that (mean=3.06 and SD=1.265) of respondents confirmed that the risk that affect livestock project is Production risk where one of the respondents said that "

> *"Biological processes that are impacted by the environment, including the weather, pests, and disease, determine how well crops and cattle function. Low yields may result from drought or inadequate rainfall. Crops may be harmed or destroyed by hail or severe rain. Significant production losses in crops and animals can also be brought on by pest or disease outbreaks. Farmers fertilize their soil with seeds without knowing how much rain will fall or if a hailstorm would develop. They are unsure of whether pests or infections will be a problem. However, they still have to decide between rearing cattle and farming crops. The expenses related to starting, cultivating, and fertilizing their crops as well as caring for their livestock could not be recoverable. There is a risk as a result. Farmers plant without having complete knowledge of what would happen to their crop. Equipment is a further source of production risk. During the growing season, a farmer's tractor may break down, delaying the harvest and reducing production.*

The (mean=2.43 and SD=1.061) of respondents said that the risk that affect livestock project is marketing risk for prices and costs of milk and meat (beef, pork or poultry) where

> *"The price of agricultural goods is influenced by a variety of factors, including the cost of production, the availability of a commodity, and consumer demand. Price changes may follow cyclical or seasonal patterns that are predictable. Supply and demand, however, have the potential to change swiftly and impact market pricing. Farmers have no notion what prices they will receive for their products whether they raise crops or buy animals. Typically, low rainfall leads to decreased agricultural output and higher commodity prices.* One of respondents confirmed.

The mean which is equal 2.43 and standard deviation 1.061 confirmed that the financial risk which occurs when money is borrowed to finance the farm business. One of respondents said that;

> "*This risk may result from future interest rates, the lender's willingness and capacity to continue making loans when necessary, and the farmer's capacity to provide the revenue required for loan payback. Smallholder farmers who borrow money at high interest rates may find it particularly difficult to pay back the debt. If yields are poor and prices are lower than planned, it can be necessary to sell the farm".*

The (mean=2.61 and Sd=1.288 of respondents revealed that Risk which affect livestock production project is technological risk for that sometimes the risk may be very great and the farmer will need to give it careful consideration. For example, being the first farmer to adopt a new seed or livestock variety may create a wide range of risks, each of which could potentially bring about losses or gains.

One of the respondents said that

> *"The farmer should take the time to learn about the hazards and how much risk is involved before determining whether to employ the new technology. Decisions are generally simpler when there is little to no danger involved. Making an educated decision is more difficult the bigger and more complex the risk is. It's crucial to keep in mind that farmers don't always choose to take preventative measures. Refusing to choose or make a decision is a choice in and of itself, with consequences. Thus, it is essential that the farmer understand risk and how it applies to his farming business. With increased control over the variables influencing the family, agricultural, and subsistence systems, the farmer benefits"*

Human risk was identified as the risk that has the greatest impact on cattle production projects (mean=2.98 and std=1.164).

> *"Human risk" refers to both the family's personal circumstances and the hazards that illness or death pose to the agricultural business. Farm operations may be impacted by incidents such as death, disease, and accidents. The emigration of employees from rural regions is a typical phenomenon in many nations. Farms could lack laborers due to migration. Social and political instability may have an effect on the job market. In some places, the spread of HIV/AIDS has had a considerable negative impact on productivity and labor availability. When farmers invest in rearing livestock or planting their crops, they cannot be sure that they will have enough workers to run the agricultural activities".* One of the respondents confirmed.

These findings agree with Risk Management Theory in that it provided a foundational basis on portfolio selection and risk mitigation. Markowitz's theory points out the benefits of diversification and strategic risk minimization with an aim of enhancing project outcomes (Markowitz, 1952)... It posits that optimal management of risks enables a business project to preserve its key goals by eliminating adverse effects while maximizing opportunities. In livestock production settings, where projects are prone to shifting market conditions, disease outbreaks, and environmental constraints, adopting risk management theory can offer a structured technique to identify, evaluate, and prioritize these risks, hence boosting sustainable success.

4.4. Source of Risk that Affect Success of Livestock Production within Kageno Protect Rwanda

The following table presents the different problems that influence the success of livestock production problems.

Table 12

Source of Risk

Source	Mean	Std. D.
Poor feeding storage	3.89	0.91
Lack of Drinking Water	3.95	1.105
Low production	3.22	1.215
Low use veterinary drugs	3.70	1.150
Diseases for livestock	3.94	0.974
Low qualified veterinarians	3.85	1.363

The table above presented that shortage of feeding are source of risk which affect success of livestock production with confirmation of the (Mean=3.89 and Std=0.91), the source of risk is drinking water is a source of risk which affect success of livestock project with confirmation of (Mean=3.95 and Std=1.105), the problem of Low production is a source of risk which affect success of livestock project with confirmation of (Mean=3.22and Std=1.215), the problem of Low use veterinary drugs is a source of risk which affect success of livestock project with confirmation of (Mean=3.70 and Std=1.150), the problem of Diseases for livestock is a source of risk which affect success of livestock project with confirmation of (Mean=3.85 and Std=1.363).

One of the respondents said that

"Buying medicines from wholesalers without any input from manufacturers is the biggest source of danger. The majority of medication classes are available in the agro-veterinary stores, including vaccines, agro-chemicals such fertilizers, antibiotics, and acaricides. The pharmacy carried mostly antibiotics and acaricides as veterinary medications. The majority of anthelminthic, including Iodine solution and iodine ointment, Hydrogen Peroxide solution, antibiotic intra-mammary tubes, injectable Tetracycline or Penicillin solution, sulphonamide powder for oral administration, crushed charcoal, drug against ticks (Acaricide), and many others, were readily available in all of the stores we visited with the exception of the pharmacies. The majority of respondents stated that their primary sources of information on veterinary pharmaceuticals were veterinarians and animal health workers. According to respondents at the agro-veterinary store, the biggest obstacle to selling veterinary pharmaceuticals was a lack of understanding about the proper dosage and distribution of medications based on needed body weight. There have also been allegations of the funding of drug retail businesses and the abuse of pricey pharmaceuticals bought by livestock producers that are beyond their financial means.

Study results concur with Gilligan (2017) who evaluated origin of risks particularly in livestock production. He observed that issues like water scarcity and extreme temperatures were the main sources of risks. The investigation illustrated how Ethiopian livestock producers incorporated technological solutions, for example up-to-date cooling and hydration systems, to curb environmental risks. At the same time, collaborating with local state agencies in risk-related financial support and subsidies proved vital in fostering livestock production. The research findings indicated that enforcing tailored environmental risk strategies was instrumental in preserving livestock health and boosting productivity in arid conditions.

4.6 To Identify the Relation between Risk Management and Success of KAGENO Rwanda Project

Correlation is a statistical term describing the degree to which two variables move in coordination with one another. If the two variables move in the same direction, then those variables are said to have a positive correlation. Findings in Table below shows the correlation coefficients between risk management and success of KAGENO Rwanda Project;

Table 13

Correlations Analysis

		RI	RA	RM	RMIM	S
RI	Pearson Correlation	1	.789	.654*	.805	.889**
	Sig. (2-tailed)		0.000	0.00	0.000	0.000
	N		83	83	83	83
RA	Pearson Correlation		1	.861**	.713**	. 884**
	Sig. (2-tailed)			0.000	0.000	0.000
	N			83	83	83
RM	Pearson Correlation			1	.490**	. 734**
	Sig. (2-tailed)				0.000	0.000
	N				83	83
RMIM	Pearson Correlation				1	. 807**
	Sig. (2-tailed)					0.000
	N					**83**
S	Pearson Correlation					1

Key

RI: Risk Identification
RA: Risk Assessment
RM: Risk Mitigation
RMIM: Risk Management Implementation and Monitoring
S: Success

The correlation table shows a significant correlation between RI and success, with a Pearson correlation of 0.889 between the two variables. You can see that it is significantly below the thresholds of 0.05 and 0.01. This demonstrates that, out of the criteria taken into account, only the Livestock Production Project as measured by RI have a substantial impact on its success.

The correlation table's findings demonstrate a strong 0.884 link between Risk Assessment and success. It is evident that it is significantly below the thresholds of 0.05 and 0.01. According to this analysis, the only factor that significantly correlates with success is a Livestock Production Project's size as determined by Risk Assessment.

The data of the survey reveal a total p-value of 0.000, which is much lower than the 0.05 level of statistical significance because only 83 respondents participated.

It was found that the Risk Mitigation of a few particular livestock production project in Rwanda affected how well they were successful. The Pearson Correlation value of 0.743 was found to be the most significant, and it indicated that some Rwandan Livestock Production Project' Risk Mitigation and success were moderately positively correlated.

Risk Management Implementation and Monitoring and success are strongly correlated, with a Pearson correlation coefficient of 0.807, according to the correlation table. It is notable that it is significantly below the thresholds of 0.05 and 0.01.

V. CONCLUSION & RECOMMENDATIONS

5.1. Conclusion

Farms that have embraced the techniques of zero grazing will view a labor shortage as less of a concern than other farms, indicating the potential for this strategy to reduce risk. Because of the unpredictable nature of rainfall, the death rate of animals from livestock illnesses, and changes in output prices, this sort of farming is inherently dangerous. The bulk of the low-income farmers in the Kageno Rwanda Project reside in a region where crop diseases, floods, sickness among family members, and crime are common.

Many farmers in the Nyamasheke District, particularly in Kageno, have lost a lot of cattle as a result of lethal attacks by the RVF, a viral illness spread by mosquitoes that may infect both humans and animals. It causes a serious disease in animals that is characterized by fever, weakness, abortions (loss of pregnancy), and a high rate of severe illness and death, especially in young animals, so we advise the livestock farmers from the Kageno Rwanda Project to vaccinate and insure them against such risks. The insurance company compensated them for the loss.

5.2 Recommendations

The government has to be aware that risk management techniques are a flexible project tool, particularly for livestock and agricultural projects

Farmers should apply the new technology in order to minimize the risks to increase the livestock production. They should improve the living condition of livestock employees in order to overcome labour shortage and try to eliminate all risk by insuring their livestock. The study recommends farming companies to adopt appropriate product pricing in line with estimated risk which will eventually increase project success. The report advises livestock projects to use caution while reducing risks by assigning them to insurance providers. The report advises livestock projects to collaborate with veterinarians in order to reduce animal mortality brought on by livestock illnesses.

REFERENCES

Alessandri, M. R. (2019). In difficult capital projects, risk and uncertainty management: *The Quarterly Review of Economics and Finance, 5*(4), 23-26.

Anderson, J. (2003). *Risk in rural development: Difficulties for managers and policymakers: Farming Systems.* Kambala: N. Kampala.

Baikey, K. B. (2000). *Personnel Management.* London: Mc Grew Hill Book Company Ltd.

Barnett, B. (2008). *Poverty traps and products for transferring risk based on indices*. Paris: World Development.

Cooksey, T. (2008). *Technique to the communication on the banks.* New York.: Hills News.

Galvin, T. (2016). *Coping with Risk in Agriculture." "Mitigating the effects of group ranch subdivision on agro-pastoral households in Kajiado, Kenya*. UOK: CABI Publishing.

Gilligan H. F. (2017). The Impact of Ethiopia's Productive Safety Net Program and its Linkages". Ethiopia: *The Journal of Development Studies, 4*(11), 56-61.

Grawitz., D. (1995). *Introduction to scientific research* . Paris: Prince House.

Hillson. D. (2019). Extending the risk management process to opportunities. *Project Management International Journal, 7*(3), 78-82.

Hillson, D. (2002). *Learn about your risks by using a risk breakdown structure (RBS). Paper delivered at PMI Annual Seminars & Symposium in San Antonio, Texas. Pennsylvania:* Project Management Institute, Newtown Square.

Margret, R. G. (2007). *Research in social work.* USA: A primier, peacock Publishers, Inc., Hasca.
Markowitz, H. M. (1952). Portfolio Selection. *The Journal of Finance,7*(1), 77–91.
Parker, M. A. (2016). *The value of risk assessment in project execution.* Paris: Work Study.
Pinto, J. A. (2012). *Critical Success Factors in Effective Project Implementation.* Project Management Handbook.
Rongere. H. (1999). *Methods of social Research*. New York: Prentice Hall.
Shenhar. P. (2018). The management of risk in Tigray, Northern Ethiopia, small-scale dairy production. Ethopia: *Third Issue of the Journal of Risk Research 4*(3), 67-71.
Shepherd, D. (2009). Negative emotional responses to project failure and the ability to be compassionate with oneself in order to grow from the experience. (Vol. 4). Texas: *Journal of Management Studies, 4*(23), 56-62.
Shrnhur, A. (2017). The measurement of project success's many facets. *Project Management Journal, 5*(7), 89-92.
Silva, A. (2016). En route to the Success of Construction Projects: Critical Success Factors. *International Journal of Business and Social Science, 6*(2), 56-62.
Turner, J. (2018). the author wrote an article titled "On the Nature of the Project as a Temporary Organization." I*nternational Journal of Project Management, 4*(6), 79-81.
Williams, G. (1998). *Research collected of data on computer*. N.Y.: Paris.