

Research Article

Assessing the Sustainability of Donated Livestock Projects by Operation Wealth Creation to Smallholder Farmers in Mitooma Sub-County Mitooma District

Tworekirwe Miriam^{*}, Rebecca Kalibwani, Gershom Nuwemuhwezi, Ferdinand Aine

Agriculture and Agribusiness, Bishop Stuart University, Mbarara, Uganda

Abstract

This research assessed the long-term sustainability of Operation Wealth Creation (OWC)'s donated livestock projects for smallholder farmers in Mitooma Sub-County, Uganda. The study uses a mixed-methods approach, incorporating quantitative surveys and qualitative interviews, with smallholder farmers selected through stratified random sampling. A study using structured questionnaires found that only 15% of households receiving donated livestock enterprises still own them, and 85% abandoned them within 9 years, indicating a lack of sustainability in these enterprises. The sustainability of donated livestock enterprises for small-scale farmers is influenced by family size, household income, food security, profitability, awareness of enterprise management practices, perception, culture, education, land tenure system, and age. Results also established that donated livestock enterprises significantly affected households to sell or trade the products (e.g., milk, meat, eggs) ($P=0.000$), households' ability to cope with economic shocks or emergencies ($P=0.001$) and improving access to credit or financial services ($P=0.013$) and least significant in providing household income ($P=0.668$). Furthermore, results established donated livestock enterprise were less significant in increasing food availability ($P=0.146$), improving access to nutritious food, generating income for food purchase ($P=0.913$), facilitating asset accumulation for food security ($P=0.116$) and providing alternative coping mechanisms during periods of food scarcity ($P=0.351$). The study suggests that donated livestock enterprises are not sustainable, as many smallholder farmers abandon them within five years, and recommends enabling input suppliers and providing subsidies for farmers.

Keywords

Assessing, Sustainability, Donated Livestock Projects, Operation Wealth Creation and Smallholder Farmers

1. Introduction

Sustainability of livestock enterprises (cattle, goat, poultry, piggery and apiary) provided by the government through Operation Wealth Creation to farmers is one of the challenges limiting the country to improve the standard of people since such enterprises are abandoned and poor management after

government ceases out from contributing some resources required in the management of such projects [1]. In all districts including Mitooma district government through operation wealth creation provided different enterprises including cattle enterprise (beef and dairy cattle, poultry (one day old

^{*}Corresponding author: mugumeabel9@gmail.com (Tworekirwe Miriam)

Received: 3 April 2024; **Accepted:** 23 April 2024; **Published:** 2 July 2024



Copyright: © The Author(s), 2024. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

chicks and vaccines), piggery enterprise (piglets), goat enterprise (improved goat breeds) and apiary (improved bee hives) and all the enterprises were supplemented with free extension services by the veterinary officer at the sub-county. These livestock enterprises are implemented across various districts of Uganda based on the specific agricultural needs and potential of each region. The OWC program works closely with local authorities, agricultural extension officers, and community-based organizations to ensure effective implementation and support to farmers. For example, in Mitooma district, Mitooma sub-county since 2015, 11 households received heifers, 26 households received piglets, 29 households received goats and 12 households received layer chicks (Mitooma District Production Report 2019). Therefore, this study was conducted to assess the factors influencing the sustainability of operation wealth creation livestock projects donated to smallholder farmers in Mitooma Sub-County, Mitooma District.

Operation Wealth Creation (OWC) is a government-led program in Uganda that aims to create wealth among the rural population by providing agricultural inputs, training, and technical support to smallholder farmers [2]. One of the key interventions of OWC is the donation of livestock to farmers, including cattle, goats, pigs, apiary and poultry. However, there are concerns about the sustainability of these donated livestock projects, as many smallholder farmers struggle to provide adequate care and management for the animals.

1.1. Background of Study

1.1.1. Historical Background

The word "sustain" means to keep in existence or maintain, implies long-term support or permanence [3]. As it pertains to agriculture, sustainable describes farming systems that are "capable of maintaining their productivity and usefulness to society indefinitely [4]. Such systems must be resource-conserving, socially supportive, commercially competitive, and environmentally sound [5]. Conventional farming systems vary from farm to farm and from country to country. However, they share many characteristics: rapid technological innovation; large capital investments in order to apply production and management technology; large-scale farms; single crops/row crops grown continuously over many seasons; uniform high-yield hybrid crops; extensive use of pesticides, fertilizers, and external energy inputs; high labor efficiency; and dependency on agribusiness [6].

1.1.2. Theoretical Background

The study was based on the Triple Bottom Line (TBL) approach evaluates sustainability based on three dimensions: economic, social, and environmental. In the context of donated livestock enterprises, this approach assesses whether the program contributes to economic development by increasing farmers' income, enhances social well-being by improving

food security and nutrition, and minimizes environmental impacts through sustainable farming practices [8].

Livestock donation programs initiated by governments are aimed at improving the livelihoods of farmers, especially in developing countries [16]. The sustainability of such programs is crucial to ensure long-term benefits for the recipients. Increasing incomes, changing diets, and population growth have led to increased demand and made the livestock sector one of the fastest growing agricultural sub-sectors in middle- and low-income countries. This represents a major opportunity for smallholders, agribusiness, and job creators throughout the livestock supply chain. However, if not properly managed, this growth risks accentuating sustainability issues that span equity, environmental impacts, and public health.

1.1.3. Contextual Background

Sustainability of livestock enterprises denoted by operation wealth creation involves arrange of activities focusing on sustaining farmers, resources and communities by promoting farming practices and methods that are profitable, environmentally sound and good for communities [7]. Sustainable agriculture fits into and complements modern agriculture. It rewards the true values of producers and their products. It draws and learns from organic farming. It works on farms and ranches large and small, harnessing new technologies and renewing the best practices of the past [10]. In the case of livestock, most production comes from confined, concentrated systems.

Sustainability is without doubt one of the most important challenges of our time and the immediate future. Over the past few decades, different governments and non-governmental organisations have offered a number of livestock enterprises that could raise the incomes and livelihoods of farmers [11]. The sustainability of our livestock industry is vitally important to all of us [12]. The concept of sustainability has grown in recognition and importance in most detonated livestock enterprises [13]. Livestock denoted enterprises can improve the levels of incomes and food security among smallholder farmers [16].

Despite the amounts of money spent on implementation of projects in distributing livestock enterprises by Operation Wealth Creation in Uganda, poor sustainability is depriving them from the returns expected of these investments. Several factors are responsible for poor project sustainability [15]. Successful case of sustainable agriculture tends to be more prevalent in the areas where the community is organized in groups. The community approach helps communities to mobilize their own resources and develop sanctions for other members who are unwilling to support the activities. It is also easy for external agents like donors or government to provide services or finances through such organizations [17]. The sustainability of livestock enterprises at the grassroots has been due to the strategies farmers normally adopt especially sustainable production of different feeds by farmers through

integration [18].

To achieve long term sustainability, the project should be respectful and considerate of the community's beliefs, norms, and religion [19]. Any project activity that undermines a community's socio-cultural orientation will be met with a lot of resistance and the chance of its sustainability is small [19]

1.2. Statement of Problem

Research has shown that projects implementation in sub-Saharan Africa often demonstrates low levels of sustainability [13]. It is estimated that impacts of many sustainability projects are not evident for 15–20 years, [14] The key causes for this include inappropriate policy or legislation; insufficient institutional support; unsustainable financing mechanisms; ineffective management systems; and lack of technical backstopping, [16]. Sustainability of technology supported livestock projects continues to be poor due to variation in objectives of different stakeholders such as researchers, funders, community members, and public and private sector organizations, [19] Stakeholders like local communities, public sector, private sector, nongovernmental and civil society organizations (NGOs and CSOs), development practitioners and researchers need to work together [20] For the last three decades, many livestock enterprises have been donated to farmers by both government and non-governmental organisation in which very huge sums of money are invested both from donors and from tax payers [9]. In Mitooma district, the operation wealth creation programmes have been receiving money to facilitate farmers in adopting different enterprises including livestock enterprise to enable them improve on their incomes and livelihoods (Mitooma District Production Report 2019). In Mitooma District, OWC has been donating livestock to smallholder farmers in Mitooma Sub-County as a way of improving their household incomes and food security. For example, in Mitooma district, Mitooma sub-county since 2015, 11 households received heifers, 26 households received piglets, 29 households received goats and 12 households received layer chicks (Mitooma District Production Report 2019). However, despite the good intentions of the program, there are concerns about the sustainability of the donated livestock projects. This research investigated the sustainability of donated livestock projects by OWC to smallholder farmers in Mitooma Sub-County.

1.3. Objectives of the Study

1.3.1. General Objective

To analyze the sustainability of donated livestock projects (cattle, pigs, goats and layers) by operation wealth creation to smallholder farmers in Mitooma Sub-County, Mitooma District.

1.3.2. Specific Objectives

- 1) To establish the level of sustainability of donated live-

stock enterprises that exists in among small scale farmers in Mitooma Sub-County, Mitooma District.

- 2) To analyze the factors that influence the sustainability of donated livestock enterprises by Operation Wealth Creation to small-scale farmers in Mitooma Sub-County, Mitooma District.
- 3) To establish the effect of the donated livestock projects on the income of smallholder farmers in Mitooma Sub-County.
- 4) To establish the effect of the donated livestock projects on household food security of smallholder farmers in Mitooma Sub-County.

1.4. Research Questions

- 1) What is the level of sustainability of donated livestock enterprises that exists in among small scale farmers in Mitooma Sub-County, Mitooma District?
- 2) What are the factors that influence the sustainability of donated livestock enterprises by Operation Wealth Creation to small-scale farmers in Mitooma Sub-County, Mitooma District?
- 3) What is effect of the donated livestock projects on the income of smallholder farmers in Mitooma Sub-County?
- 4) What is effect of the donated livestock projects on household food security of smallholder farmers in Mitooma Sub-County?

1.5. Scope of the Study

1.5.1. Geographical Scope

This location lies approximately 85 kilometres (53 mi), by road, west of Mbarara, the largest city in Ankole sub-region. The coordinates of the district are: 00 36S, 30 00E.

1.5.2. Content Scope

The study focused on analyzing the sustainability of donated livestock projects by operation wealth creation to smallholder farmers in Mitooma Sub-County, Mitooma District. It was limited to; establishing the level of sustainability of donated livestock enterprises that exists in among small scale farmers, analyzing the factors that influence the sustainability of donated livestock enterprises by Operation Wealth Creation to small-scale farmers, establishing the effects of donated livestock projects on the income of smallholder farmers and establishing the effects of donated livestock projects on household food security of smallholder farmers.

1.6. Significance of the Study

This study can be of great importance to farmers as it clearly outlines the determinants influencing of farmers on sustainability of livestock enterprises denoted by different organization in the district.

The study can also determine how farmers affect economic

growth and development and the impact of sustainability of livestock enterprise in economic development.

To the stakeholders, the study would be of importance since it can provide information that could be used to formulate policy.

To academicians and researchers, the study can be a source of reference material for future researchers on other related topics; it can also help other academicians who can undertake the same topic in their studies.

The study stands to be significant to the Ministry of Agriculture Animal industry and Fisheries to get more insight to the determinants influencing sustainability of livestock denoted enterprises by operation wealth creation thus enabling the Ministries to scale up their work.

The project beneficiaries benefited from the study by voicing the project challenges that could help shape future projects as well as the opportunity to receive more value in future projects.

The project donors/ sponsors can benefit by having access to the critical information on determinants of project performance for future projects.

The study is expected to identify the factors that influence the sustainability of donated livestock projects by OWC to smallholder farmers in Mitooma Sub-County.

The study would also assess how the implementation process of the donated livestock projects affects their sustainability and explore the challenges facing smallholder farmers in Mitooma Sub-County in sustaining the donated livestock projects.

The results of the study would provide insights into how to improve the sustainability of donated livestock projects in the area.

1.7. Definition of the Key Terms

Sustainability. It means the process of keeping in existence or maintain, implies long-term support or permanence [18] Operation wealth creation has been providing livestock enterprises from 2015 and the level at which such enterprises have multiplied in numbers, output in terms of incomes and infrastructures would probably show the sustainable part of it. In the context of study, sustainability will involve how smallholder farmers are managing resources such as land, water, and feed in a way that meets the needs of the animals without degrading the natural resources or compromising the welfare of future generations.

Smallholder farmer: A smallholder farmer, often referred to as a small-scale farmer, is an individual or household that engages in agricultural activities on a rela-

tively small plot of land, typically with limited resources and technology [19]

Operation wealth creation: Operation Wealth Creation" (OWC) refers to a government-led initiative or program that aims to promote economic growth, poverty reduction, and agricultural development, particularly in rural and agricultural sectors of a country [21]

2. Materials and Methods

2.1. Research Design

The study employed a cross-sectional design with both qualitative and quantitative methods of data collection. The researcher used a descriptive survey design which involved gathering data that describes events and then organizes them, tabulates, depicts and describes the data collected using visual aids such as graphs, charts and tables to help the reader in understanding data distribution [22]. This helped the researcher in establishing and clearly understanding the factors influencing the sustainability of donated livestock projects by operation wealth creation to smallholder farmers in Mitooma Sub-County, Mitooma District.

2.2. Area of the Study

The study was carried out in Mitooma sub-county, Mitooma district. Mitooma District is bordered by Bushenyi District to the north, Sheema District to the east, Ntungamo District to the south, and Rukungiri District to the west. Mitooma, where the district headquarters are located is located some 25 kilometres (16 mi), by road, southwest of Bushenyi, the nearest large town. This location lies approximately 85 kilometres (53 mi), by road, west of Mbarara, the largest city in Ankole sub-region. The coordinates of the district are: 00 36S, 30 00E.

2.3. Target Population

The target population for the study was small scale farmers in Mitooma Sub-County, Mitooma District who benefited in OWC by acquiring livestock inputs from 2015/16 financial year to 2021/2022. These included 80 farmers who benefited by acquiring livestock enterprises especially heifers, pigs, goats and layers as indicated in table 1 below.

Table 1. Target population.

Financial year	Household that received Heifers	Household that received pigs	Household that received goats	Household that received layers	Total
2015/2016	3	0	7	4	14
2016/2017	4	7	9	3	23
2017/2018	2	9	5	3	19
2018/2019	4	10	8	2	24
2019/2020	0	0	0	0	0
2020/2021	0	0	0	0	0
2021/2022	0	0	0	0	0
Grand total					80

Source: Mitooma District Production Report 2022

2.4. Sample Size

The sample size of the study was 87 respondents. These included 80 small holder farmers who acquired livestock enterprises and 7 key informants (sub-county agriculture extension officers, local leaders and district production officer).

2.5. Data Collection Methods

The study used two methods in collecting data from the field. These included questionnaire survey method and interview method.

2.5.1. Questionnaire Survey

This tool was used to collect data from farmers in Mitooma Sub-County, Mitooma district. It was preferred because a lot of information was collected from a large number of people in a short period of time and was relatively cost effective in the study and was used on farmers who were literate. The questions set were closed ended or open ended in order to obtain the required information.

2.5.2. Interview

This study used interviews which involved face to face communication between the interviewer and the respondents. This increased the likelihood of their participation, as many people prefer to communicate directly verbally and sharing information and insights with interviewers. This method was used to collect data from Operation Wealth Creation coordinators at the sub-county, agriculture extension workers, local leaders and farmers who were illiterate. It is one of the methods that were good for high response rates unlike other methods like administering questionnaires. Besides, they

were used to generate data from illiterate respondents who did not afford filling questionnaires. An interview guide was used to collect qualitative data about the phenomena.

2.6. Data Processing and Analysis

The Quantitative data from questionnaires was cleaned to eliminate errors, coded and entered into a computer. The coded data was entered and analyzed using the Statistical Package for Social Scientists (SPSS). After data processing, it was presented in tables for easy interpretation. The researcher then analyzed data using qualitative and quantitative methods where by frequencies and percentages were generated for easy data analysis. Qualitative data was obtained from interviews and organized into concepts and themes for in-depth understanding of the phenomena. This supplemented the data captured by questionnaires.

This research used a mixed-methods approach, involving both qualitative and quantitative methods. The study was conducted in Mitooma Sub-County, Mitooma District, Uganda. The sample consisted of smallholder farmers who had received donated livestock from OWC in the past three years. The sample size was determined using a purposive sampling technique. Data was collected using questionnaires, interviews, and focus group discussions. The collected data was analyzed using descriptive statistics and content analysis.

To study the level of sustainability of donated livestock enterprises that exists in among small scale farmers, descriptive analysis to summarize and understand the characteristics of the donated livestock enterprises and the farmers involved using the sustainability assessment framework developed to evaluate the level of sustainability of the donated livestock enterprises.

The study was based on sustainability assessment framework.



Source: Galván-Martínez et al. 2020

Figure 1. Sustainability assessment framework.

The donated livestock sustainability assessment framework is a structured approach used to evaluate the sustainability of livestock donations. This framework aims to assess the long-term impact of donated livestock on various aspects such as environmental, social, and economic sustainability. For this research the study considered majorly the economic sustainability of donated livestock by assessing factors such as income generation, market access, cost-benefit analysis, and long-term financial viability, social effect how donated livestock affect local communities, including aspects such as food security, livelihoods, gender equality, and cultural practices. In conclusion, the donated livestock sustainability assessment framework offers a systematic approach to evaluating the sustainability of livestock donations. By considering environmental, social, economic, and animal welfare aspects, this framework helps stakeholders make informed decisions and promote sustainable development practices in livestock donation programs.

To study objective two, regression analysis was conducted to identify the significant factors affecting sustainability of donated livestock enterprises specifically using survival analysis.

$$Y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \beta_6x_6 + \epsilon$$

where Y is the dependent variable; sustainability β_0 is the constant $\beta_1, \beta_2, \beta_3$, and β_4 are the regression coefficients for the variables under sustainability. X is the independent variable (for sustainability) $x_1, x_2, x_3, x_4, \dots$

To study the effect of the donated livestock projects on the income and food security of smallholder farmers in Mitooma Sub-County, descriptive analysis to summarize the data and understand the characteristics of the farmers and their households was used and qualitative methods to gather insights into the experiences and perceptions of smallholder farmers regarding the effect of the donated livestock projects.

2.7. Data Quality Control

To ensure high data quality, precautionary measures were taken at the various stages of the study.

2.7.1. Validity of Instruments

To test for the validity of the instruments, the researcher presented the instruments to her supervisors for guidance. The advice, suggestions and recommendations were incorporated in the final draft of the research instruments. Content validity was ensured by consultations with the research supervisors. This further improved the content and face validity of the instruments. The researcher proof read and requested friends to review the instruments to address aspects of validity including content construct and face validity. Content validity was established by seeking the expertise of the study supervisors. The supervisors ensured that correct variables relevant to the study were included in the questionnaire. The questionnaire was constructed and revised according to the instructions of the supervisor.

2.7.2. Reliability of Instruments

Reliability of this study's instruments was ascertained by pre-testing and re-testing the questionnaires and interview guide in the field. The researcher established the reliability of the questionnaire by using pre-testing. The researcher gave questionnaire to the same groups of respondents for re-testing and the errors were collected and a standard data collection tool was generated which helped the researcher to collect accurate data. Through piloting, inconsistencies were corrected and this enhanced the reliability of the research instrument.

2.8. Research Procedures

The concept was presented, and now the proposal will be presented and shared with the Research Ethics Committee (REC). The consent letter was included as part of the research's ethical considerations. After successfully presenting the proposal, the researcher obtained an introductory letter which was presented to the authorities of Mitooma District and the researcher embarked on data collection by hand delivering the questionnaires. On receiving permission from the relevant authorities, the researcher administered data collection tools and collected data from the respondents according to the agreed time schedule. In the administration of the questionnaire and interview schedules, the researcher created an understanding with the respondents, guarantee them of concealment and clarify to them the purpose of the study. This approach enabled the researcher to get extreme collaboration with her respondents.

3. Data Presentation, Interpretation and Analysis

This chapter presents the findings according to the data collected for the study which was carried out in Mitooma Sub-County, Mitooma District. The study was about the assessing factors influencing the sustainability of donated livestock projects by operation wealth creation to smallholder farmers in Mitooma Sub-County, Mitooma District. Data was collected from 80 respondents who were farmers who had benefited in operation wealth creation projects in the sub-county and the findings presented in the following tables.

3.1. Biographic Data of Respondents

Characteristics like age, gender, family size and education level of the household heads are important proxy indicators for individual behaviors and are commonly used as explanatory variables for adoption and enterprise sustainability decisions. This section deals with these variables.

Table 2. Biographic data of respondents.

Parameter	Category	Frequency of respondents	Percent
Gender	Male	59	73.8
	Female	21	26.2
	Total	80	100
Age (years)	25-35	7	8.8
	36-45	32	40.0
	46 years and above	41	51.2
	Total	80	100
	None	5	6.3
Education level	Primary	16	20.0
	Secondary	41	50.0
	Tertiary	12	15.0
	University	6	7.5
	Total	80	100
Marital status	Single	16	20.0
	Married	58	72.5
	Widowed	4	5.0
	Separated	2	2.5
	Total	80	100

Source: Authors' computation from field survey data 2023

Gender is very crucial in determining the different roles and responsibilities performed by different gender groups in the adoption and implementation of different activities in the enterprise. Results from [table 2](#) above established that 59 (73.8%) of the respondents were males compared to 21 (26.2%) who were females.

Age of the respondents is much necessary in determining if one could receive some products from Operation Wealth Creation. This is because to be liable for acquiring anything from Operation Wealth Creation one must have a National Identity Card as a clear manifestation that services are for those above 18 years. Results from [table 2](#) above indicate that 7 (8.8%) of the respondents were aged between 25-35 years, 32 (40.0%) were aged between 36-45 and 41 (51.2%) who were the majority were 46 years and above.

Marital status of respondents is very critical in decision making and adoption of some technologies and practices that would ensure that the enterprise is sustainable. The study findings established that 16 (20.0%) of the respondents were single, 58 (72.5%) were married, 4 (5.0%) were widowed and 2 (2.5%) had separated.

Education is very critical in adopting different technologies and practices that would enable livestock enterprises multiply and become sustainable. Education of the respondents can help them to quickly adopt such technologies and practices which Operation Wealth Creation is promoting like livestock housing and feeding that would ensure sustainability of livestock enterprises denoted by operation wealth creation. Results from [table 2](#) above indicate that 5 (6.3%) of the respondents had not attended school, 16 (20.0%) had completed primary, 41 (50.0%) had completed secondary, 12 (15.0%) mentioned tertiary and 6 (7.5%) had completed university.

3.2. The Level of Sustainability of Donated Livestock Enterprises That Exist Among Small Scale Farmers

The level of sustainability of donated livestock enterprises depends on access to different inputs and the level of management of the enterprise.

3.2.1. Services Provided by Operation Wealth Creation

Operation Wealth creation is mandated to provide different services to livestock farmers. Respondents were asked about the services provided by operation wealth creation and their responses were recorded as listed in [table 3](#) below.

Table 3. Services provided by Operation wealth creation.

Parameter	Category	Frequency of respondents	Percent
Services provided by operation wealth creation	Trainings	80	100
	Inputs like feeds	-	-
	Total	80	100
Source of trainings	Government agencies	29	36.2
	Private sectors	43	53.8
	NGOs	8	9.9
	Total	80	100
Status of farmers ownership of donated livestock in 2023	Received/distributed (2015 – 2022)		Households still owning the enterprise.
	Cattle	13	5
	Pigs	26	0
	Goats	29	7
	Layers	12	0
	Total	80	12

Source: Authors' computation from field survey data 2023

Results from [table 3](#) above indicate that operation wealth creation was providing trainings to farmers as revealed by all the respondents 80 (100%). The farmers were receiving such trainings from different sources and the majority 43 (53.8%) were trained by private sectors especially agro-input dealers, 29 (36.2%) mentioned government agencies like sub-county veterinary and agriculture extension workers and 8 (10%). The study findings established that only 12 (15%) of households that received the donated livestock enterprise were still owning the enterprises (cattle and goats) and 68 (85%) had abandoned the enterprises.

3.2.2. Activities Implemented by Operation Wealth Creation

Operation wealth creation was initiated to provide different activities like trainings about livestock management, provision of inputs like feeds, vaccines and drugs to farmers so that the farmers shift from conventional and subsistence farming to commercial farming in order to increase their incomes and food security. Respondents were asked about the different activities/services that were implemented by operation wealth creation in the area and their responses were recorded in [table 4](#) below;

Table 4. Model Summary of activities/services implemented by operation wealth creation.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.668 ^a	.446	.424	.41428

a. Predictors: (Constant), Raising the productivity of Ugandan farmers, Provision of advisory services to farmers, Expansion of farmer institutions

The value of R square was 0.446 and this implies that 44.6% of the livestock enterprises detonated by operation wealth creation to smallholder farmers would be sustainable when

different activities/services like inputs, trainings (information about management practices) were provided and accessed by farmers.

Table 5. ANOVA table showing the activities implemented by operation wealth creation.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	10.506	3	3.502	20.406	.000 ^b
	Residual	13.044	76	.172		
	Total	23.550	79			

a. Dependent Variable: How many years have you been managing the donated livestock

b. Predictors: (Constant), Provision of advisory services to farmers, Expansion of farmer institutions

The p-value of less than 0.05 was obtained (0.000). This shows that providing different activities like advisory services and expansion of farmers institutions were statistically sig-

nificant in ensuring the sustainability of donated livestock enterprises to smallholder farmers by Operation Wealth Creation.

Table 6. Shows Coefficients activities implemented by operation wealth creation.

Activities implemented by operation wealth creation	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	2.390	.192			12.463	.000
1 Provision of advisory services to farmers	.584	.110	.537		5.294	.000
Expansion of farmer institutions	.191	.112	.171		1.705	.092
Raising the productivity of Ugandan farmers	.106	.129	.074		.821	.414

a. Dependent Variable: How many years have you been managing the donated livestock

Results from table 6 above indicates that provision of advisory services was more significant activity since p-value was less than 0.05 ($P=0.000$), expansion and establishment of farmer institutions (farmer groups) slightly significant since p-value was greater than 0.05 but less than 1 ($P=0.092$) and raising the productivity of farmers ($P=0.414$).

3.2.3. Sustainability Indicators of Donated Livestock Enterprise

Respondents were asked about the different indicators to measure the sustainability of donated livestock enterprises and their responses were recorded in table 7 below.

Table 7. Sustainability indicators of donated livestock enterprise.

Sustainability indicators of donated livestock enterprise	Frequency		Percent	
	Yes	No	Yes	No
Ability of the farmers to provide enough food and water	34	46	42.5	57.5
Ability to meet the feed and nutritional needs of livestock	13	67	16.3	83.7
Accessing regularly trainings on management of livestock enterprise	22	58	27.5	72.5
Implementing measures to improve sustainability of the enterprises	47	33	58.8	41.2

Source: Authors' computation from field survey data 2023

Results from [table 7](#) above indicate that 34 (42.5%) of the respondents agreed that they were able to provide enough food and water to their animals, 13 (16.3%) revealed that they able to meet feed and nutritional needs of livestock, 22 (27.5%) mentioned accessing regularly trainings on the management of livestock enterprises and 47 (58.8%) revealed implementing measures to improve sustainability of the enterprises like pasture establishment and preservation.

3.3. The Factors That Influence the Sustainability of Donated Livestock Enterprises by Operation Wealth Creation to Small-Scale Farmers

The sustainability of livestock enterprises by the Operation Wealth creation depended on different factors and these factors can be categorized as social, economic and political.

Table 8. Model Summary of the factors that influence the sustainability of donated livestock enterprises by operation wealth creation to small-scale farmers.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.725 ^a	.525	.456	.40255

a. Predictors: (Constant), income and food security, Farmers awareness of enterprise management practices, Education level of the farmers, Farmers perception, Profitability of the enterprise, Farmers culture and beliefs, Family size, Land Tenure System, Household size, age

The calculated R square was 0.525 and this implies that 52.5 % of the livestock enterprises donated by operation wealth creation to smallholder farmers would be sustainable when different factors like income and food security, farmers

awareness of enterprise management practices, education level of the farmers, farmers perception, profitability of the enterprise, farmers culture and beliefs, family size, land tenure system, household size and age are considered.

Table 9. ANOVA showing of the factors that influence the sustainability of donated livestock enterprises by operation wealth creation to small-scale farmers.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	12.369	10	1.237	7.633	.000 ^b
	Residual	11.181	69	.162		
	Total	23.550	79			

a. Dependent Variable: How many years have you been managing the donated livestock

b. Predictors: (Constant), income and food security, farmers awareness of enterprise management practices, Education level of the farmers, farmers perception, profitability of the enterprise, farmers culture and beliefs, family size, land tenure system, household size, age.

The p-value of less than 0.05 was obtained (0.000). This shows when all these factors (income and food security, farmers awareness of enterprise management practices, education level of the farmers, farmers perception, profitability of the enterprise, farmers culture and beliefs, family size, land

tenure system, household size, age) are favourable the donated livestock enterprises would be sustainable.

Dependent Variable: How many years have you been managing the donated livestock

Table 10. The factors that influence the sustainability of donated livestock enterprises by operation wealth creation to small-scale farmers.

Factors that influence the sustainability of donated livestock enterprises by operation wealth creation to small-scale farmers	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	2.644	.272			9.719	.000
Profitability of the enterprise	-.146	.156	-.220		-.934	.354
Farmers awareness of enterprise management practices	-.214	.161	-.385		-1.328	.189
Farmers perception	-.052	.041	-.129		-1.256	.213
1 Farmers culture and beliefs	.048	.206	.089		.234	.815
Education level of the farmers	-.003	.014	-.020		-.216	.829
Family size	.778	.129	1.313		6.024	.000
Land Tenure System	.055	.174	.086		.314	.755
Age	-.286	.215	-.526		-1.328	.189
Income and food security	.388	.107	.356		3.628	.001

Results from table 10 above shows that family size and Income and food security were the most significant factor factors that influence the sustainability of donated livestock enterprises by operation wealth creation to small-scale farmers since their p-value was less than 0.05 ($p=0.000$ and $p=0.001$) respectively and all other factors like profitability of the enterprise ($p=0.354$), farmers awareness of enterprise management practices ($P=0.189$), farmers perception ($P=0.213$), farmers culture and beliefs ($P=0.815$), education level of the farmers ($P=0.829$), land tenure system ($P=0.755$) and age ($P=0.189$) were less significant

since p-value was greater than 0.05 but less than 1.

3.4. The Effect of the Donated Livestock Projects on the Income of Smallholder Farmers

Regression was performed to determine the effect of donated livestock enterprise on the income and food security of smallholder farmers and the results are indicated in table 11 below.

Table 11. The effect of the donated livestock projects on the income of smallholder farmers.

The effect of the donated livestock projects on the income of smallholder farmers	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	3.680	.509			7.227	.000
The donated livestock projects have enabled households to sell or trade the products (e.g., milk, meat, eggs)	.492	.075	.593		6.532	.000
1 The donated livestock projects have improved access to credit or financial services.	-.226	.089	-.229		-2.544	.013
The donated livestock project influenced households' ability to cope with economic shocks or emergencies	-.419	.127	-.310		-3.301	.001
The donated livestock projects have farmers to increase on household income	-.069	.160	-.063		-.430	.668

a. Dependent Variable: How many years have you been managing the donated livestock

Results from [table 11](#) indicates that donated livestock enterprises were significant in enabling households to sell or trade the products (e.g., milk, meat, eggs) ($P=0.000$), influencing households' ability to cope with economic shocks or emergencies ($P=0.001$), improving access to credit or financial services ($P=0.013$) since the p-values are less than 0.05 whereas increasing on household incomes ($P=0.668$) was less significant since their p-value are greater than 0.05 but less

than one.

3.5. Effect of Donated Livestock Projects on Food Security

Regression was performed to determine the effect of donated livestock enterprise on food security of smallholder farmers and the results are indicated in [table 12](#) below.

Table 12. Effect of donated livestock projects on food security.

Effect of donated livestock projects on food security	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	3.641	1.121			3.249	.002
Increased food availability	-.326	.162	-.183		-2.015	.146
Improved Access to Nutritious Food	.203	.410	.044		.495	.622
Generated Income for Food Purchases	-.033	.303	-.010		-.110	.913
Facilitated asset accumulation for food security	-.330	.119	-.296		-2.782	.116
Provided alternative coping mechanisms during periods of food scarcity	-.110	.118	-.102		-.936	.351

a. Dependent Variable: How many years have you been managing the donated livestock

Results from [table 12](#) indicates that donated livestock enterprises were less significant in increasing food availability ($P=0.146$), improving access to nutritious food, generating income for food purchase ($P=0.913$), facilitating asset accumulation for food security ($P=0.116$) and providing alternative coping mechanisms during periods of food scarcity ($P=0.351$).

4. Discussion of the Findings, Conclusions and Recommendations

4.1. Discussion of the Findings

Discussion of results was presented here basing on the objectives.

4.1.1. The Level of Sustainability of Donated Livestock Enterprises that Exist Among Small Scale Farmers

The study findings established that only 12 (15%) of households that received the donated livestock enterprise were still owning the enterprises (cattle and goats) and 68 (85%) had abandoned the enterprises after 9 years after receiving them. This is because smallholder farmers lacked the

financial resources to purchase high-quality feed or invest in advanced feeding technologies since such technologies are feeds are expensive. Also limited land for grazing or cultivating forage can constrain the availability of nutritious feed for livestock. Similarly, smallholder farmers lack access to adequate information on the nutritional needs of different livestock species, leading to suboptimal feeding practices. This is because in most rural villages in Mitooma sub-county, it is difficult to access veterinary personnel since the available ones are located in big towns hence limiting farmers to access them and get information on applicable management practices that would enable farmers learn and apply such management practices especially disease and parasite control.

This is in agreement with [24] who pointed out that the ways to improve the sustainability of donated livestock enterprises is by providing training and support to farmers on goat management, providing feed supplements and veterinary services which improve the survival rates and productivity of donated goats.

4.1.2. The Factors That Influence the Sustainability of Donated Livestock Enterprises by Operation Wealth Creation to Small-Scale Farmers

Results established that family size was among the signif-

icant factors that influence the sustainability of donated livestock enterprises by Operation Wealth Creation to small-scale farmers since the p-value was less than 0.05 ($P=0.000$). This is because larger families often have more labor resources available. Livestock farming requires a significant amount of daily care, including feeding, cleaning, and health monitoring. With a larger family, there are more hands available to handle these tasks, increasing the chances of success. Similarly, in families with more members, there is a greater potential for the transfer of skills and knowledge related to livestock management. This knowledge transfer is essential for the sustainable care and breeding of livestock. During an interview one of the local leaders had this to say;

“Larger families may be better equipped to allocate resources, both financial and material, for the well-being of the livestock. This includes investments in infrastructure, veterinary care, and improved feeding practices”

This is in agreement with [18] who pointed out that in families with more members, there is a higher likelihood of having younger individuals interested in agriculture who can take over the management of the livestock enterprise. This helps in succession planning and ensures the continuity of the farming activities.

Results also established income and household food security among the significant factors that influence the sustainability of donated livestock enterprises by Operation Wealth Creation to small-scale farmers since the p-value was less than 0.05 ($P=0.001$). The level of income can significantly influence the sustainability of donated livestock, as it affects the ability of recipients to invest in and maintain their livestock enterprises. This can be achieved by using the income to purchase different inputs like feeds, drugs and vaccines, purchasing land and acquiring labour to use in the performing different management practices. During an interview one of the Agriculture Extension workers had this to say;

“Farmers with some income or different sources of incomes are able to sustain their livestock enterprise denoted by operation wealth creation. This is because farmers would use such income in acquiring different inputs especially feeds and other breeding equipments hence ensuring sustainability”

This is in line with [25] who pointed out that the level of income can significantly influence the sustainability of donated livestock, as it affects the ability of recipients to invest in and maintain their livestock enterprises. In many cases, donated livestock may be an important source of income for recipients, but their ability to sustain the enterprise may be limited by factors such as access to resources, markets, and extension services. This implies that recipients of donated livestock often face significant challenges in sustaining their enterprises, particularly in low-income settings.

The study findings also established that profitability of the enterprise among the less significant factors that influence the sustainability of donated livestock enterprises by Operation Wealth Creation to small-scale farmers since the p-value was

greater than 0.05 but less than 1 ($P=0.354$). This is because donated livestock are often provided at subsidized or no cost to the farmers. As a result, the initial investment for the farmers is lower, and the expectation for immediate profitability may be reduced. The emphasis may be more on the long-term benefits and sustainability of the livelihoods. During an interview one of the local leaders had this to say;

“Donated livestock programs may prioritize long-term sustainability over immediate profitability. Investments in animal health, breeding programs, and improved management practices may take time to yield financial returns but contribute to the overall sustainability of the enterprise”

This can be compared to [19] who pointed out that the sustainability of donated livestock enterprises may be viewed in the context of broader development objectives, such as poverty reduction, rural development, and community empowerment. Profitability is just one aspect of the multifaceted goals of such programs.

The study findings also established that farmers awareness of enterprise management practices among the less significant factors that influence the sustainability of donated livestock enterprises by Operation Wealth Creation to small-scale farmers since the p-value was greater than 0.05 but less than 1 ($P=0.189$). Awareness entails knowing this potential production changing practices and whether they apply them or not is another issue. Farmer's awareness about the management of the enterprise would reduce on the risks involved in management of such enterprise hence its sustainability. During an interview one of the local leaders had this to say;

“Awareness on the management of enterprise is required since it reduces on the risks constraining the expansion of the enterprise and reduces on the operational costs. This increases the incomes received from the enterprise hence improved standards of living”

This can be compared with [26] who pointed out that farmer awareness is promoted by presence of extension officers in Kenya. Livestock producers aim to increase productivity at the lowest possible cost. Farmers seek to ensure that the safety and quality of their raw milk will satisfy the highest expectations of the food industry and consumers. In addition, on-farm practices should ensure that milk/meat and other products is produced by healthy animal under sustainable economic, social and environmental conditions. This can be achieved by observing the best practices in the industry.

Results established farmers perception among the less significant factors that influence the sustainability of donated livestock enterprises by Operation Wealth Creation to small-scale farmers since the p-value was greater than 0.05 but less than 1 ($P=0.213$). This is because farmers' perceptions are often shaped by their level of information and education. In regions where access to information is limited or educational resources are scarce, farmers may form perceptions based on incomplete or inaccurate information, potentially affecting the perceived significance of the donated livestock

initiative. During an interview one of the local leaders had this to say;

“Poor perception of a farmer about the livestock enterprise provided limits the time taken and the resources devoted in the management of the enterprise and this increases the risks constraining the growth and performance of the enterprise hence affecting the sustainability of the project negatively”

This can be compared with [27] who revealed that effective communication between program organizers and farmers is crucial for shaping positive perceptions. If there are communication gaps or if the messaging is not culturally sensitive, farmers may develop negative perceptions that can impact their engagement with and commitment to the donated livestock enterprise.

The study findings also established farmers culture and beliefs among the less significant factors that influence the sustainability of donated livestock enterprises by Operation Wealth Creation to small-scale farmers since the p-value was greater than 0.05 but less than 1 ($P=0.815$). Cultural preferences for certain types of livestock can influence the sustainability of donated enterprises. If the donated livestock align with local preferences for specific breeds or species, farmers are more likely to embrace and sustain the program. This is because cultural beliefs often shape traditional farming practices. If donated livestock and management practices conflict with established cultural norms, farmers may be resistant to adopting new methods, impacting the sustainability of the initiative. During an interview one of the local leaders had this to say;

“Cultural beliefs about the purpose and use of animals can impact the sustainability of donated livestock enterprises. For example, if animals are traditionally used for rituals or ceremonies, farmers may be hesitant to adopt practices that deviate from these cultural norms”.

This can be compared with [24] who pointed out that cultural belief about ownership and stewardship of land and animals can influence how farmers care for and manage donated livestock. If farmers view themselves as stewards of the land and animals, they may be more committed to sustainable practices.

Results established education level of the farmers among the less significant factors that influence the sustainability of donated livestock enterprises by Operation Wealth Creation to small-scale farmers since the p-value was greater than 0.05 but less than 1 ($P=0.829$). Farmers with lower formal education levels may possess extensive traditional knowledge and hands-on experience in agriculture and livestock management. In contexts where traditional practices are highly effective and sustainable, formal education may be less critical. During an interview one of the agriculture extension workers had this to say;

“In some communities, knowledge about farming practices is passed down through generations, and farmers learn through community-based learning systems. While formal

education can enhance skills, community-based knowledge sharing might be equally or more influential in specific contexts”

This is in line with [28] who pointed out that sustainable livestock management often involves the adaptation of technologies to local conditions. Farmers with lower formal education may still successfully adopt and adapt technologies if they are designed to be user-friendly and align with local knowledge.

Results established land tenure system among the less significant factors that influence the sustainability of donated livestock enterprises by Operation Wealth Creation to small-scale farmers since the p-value was greater than 0.05 but less than 1 ($P=0.755$). Farmers with secure land tenure are more likely to have access to grazing land, which is crucial for the sustainability of livestock enterprises. Clear land tenure arrangements can reduce conflicts over grazing rights and contribute to effective land use planning for livestock. During an interview one of the local leaders had this to say;

“Secure land tenure allows farmers to plan for the long term, fostering the implementation of sustainable livestock management practices. Farmers with stable land tenure are more likely to adopt conservation measures and rotational grazing, contributing to ecological sustainability”

This can be compared with Barasa (2018) who pointed out that the quality of land can also have a significant impact on the sustainability of donated livestock enterprises. Poor quality land can limit the availability and quality of animal feed, which can affect the health and productivity of the animals.

4.1.3. The Effects of the Donated Livestock Projects on the Income of Smallholder Farmers

Results established that the donated livestock enterprises significantly enabled households to sell or trade the products (e.g., milk, meat, eggs) since the p-value was less than 0.05 ($P=0.000$). Smallholder farmers would sell different products depending on the enterprises owned in their local markets. The regular production and sale of livestock products contributed to sustainable source of income, helping households lift themselves out of poverty. However, such benefits would not be sustainable especially when farmers lack capital to purchase feeds. During an interview one of the poultry farmers confirmed this when she said;

“I used to sell eggs to different groups of buyers in the neighboring trading centers and earn some incomes which helped me to pay part of the school fees for my children at the university”

This is in line [29] who pointed out that donated livestock can also contribute to the development of local markets and value chains. The introduction of dairy goats in Uganda led to the development of new dairy products, including cheese and yogurt, which provided new income opportunities for smallholder farmers. For example, the introduction of improved breeds of goats in Kenya led to the development of new markets for goat meat and milk, which provided new income

opportunities for smallholder farmers.

The study findings also established that donated livestock enterprises were significant in influencing households' ability to cope with economic shocks or emergencies since the p-value was less than 0.05 ($P=0.001$). This is because donated livestock enterprises play a multifaceted role in enhancing households' ability to cope with economic shocks or emergencies. They provide a resilient and sustainable source of income, food security, and social stability, contributing to the overall well-being and resilience of communities. During an interview, one of the local leaders had this to say;

“Engaging in livestock management can empower households with new skills and knowledge. This diversification of skills enhances the household's capacity to adapt to changing economic conditions”.

This is in line with [30] who asserted that managing livestock requires labor, and the establishment of a livestock enterprise can create employment opportunities within the household. This not only generates income but also provides a sense of economic stability.

Results also established that donated livestock enterprises have significantly improved access to credit or financial services to smallholder farmers since the p-value was less than 0.05 ($P=0.013$). This is because Livestock can serve as valuable collateral for obtaining loans. When farmers have livestock as assets, financial institutions may be more willing to extend credit, as the animals represent a tangible and tradable form of security. During an interview one of the local leaders had this to say;

“Possessing livestock can enhance the creditworthiness of smallholder farmers. Financial institutions may view farmers with diversified assets, including livestock, as more reliable borrowers, increasing their chances of securing loans”

This is in line with [31] who pointed out that livestock enterprises provide a continuous source of income through the sale of products like meat, milk, and other by-products. The steady income generated from livestock activities can enhance the farmers' ability to repay loans on time, making them more attractive to lenders.

Results also established that increasing household income from donated livestock enterprises was less significant since the p-value was greater than 0.05 but less than 1 ($P=0.668$). This is because most of the donated livestock are and were not of high productivity in terms of reproduction rates, growth, or output of valuable products (e.g., milk and meat) and some of the animals were not well-suited to the local environment and lack desirable traits and their ability to generate income is limited. During an interview one of the local leaders confirmed this when he revealed this;

“The quantity of donated livestock might not be sufficient to create a substantial income stream. In many cases, a small number of animals may not provide enough products or offspring to significantly impact household income”

This can be compared with [32] who pointed out that

managing and maintaining livestock can incur significant operational costs, including feed, veterinary care, and infrastructure. If the costs associated with livestock management are high, they may offset the income generated from selling products.

4.1.4. Effects of Donated Livestock Enterprises to Food Security

The study findings also established that the provision of additional nutritional benefits for household members by donated livestock enterprises was less significant since the p-value was greater than 0.05 but less than one ($P=0.913$). This is because some households may prefer to sell livestock products for cash rather than consume them directly. This preference may be driven by immediate economic needs or the desire to invest in other income-generating activities. Similarly, Donated livestock may be limited in quantity and diversity. If the donated animals are not sufficient or if they lack diversity (e.g., providing only meat without dairy products), the overall nutritional impact may be constrained. During an interview, one of the agriculture extension workers confirmed this when he said that;

“Livestock, especially in the early stages, may take time to grow and reproduce. If the donated animals are not at a reproductive age or if their growth rates are slow, the household may not experience immediate and substantial nutritional benefits”

This can be compared with [33] who pointed out that livestock products may be sold in the market for income rather than being consumed within the household. Economic considerations might drive households to prioritize selling livestock products over using them for household consumption.

Results from table 12 also indicates that donated livestock enterprises were less significant in increasing food availability since the p-value was greater than 0.05 ($P=0.146$). This is because Donated livestock are not always well-suited to local environments or farming practices, leading to challenges in their long-term sustainability. For example, If the animals require specific care, feed, or management practices that are not readily available or feasible for smallholder farmers, their potential contribution to food availability may be limited. During an interview one of the local leaders had this to say;

“Smallholder farmers in Uganda often lack access to extension services and technical support for livestock farming. Without adequate training and guidance on animal husbandry, nutrition, and healthcare, the potential of donated livestock to increase food availability may remain unrealized”

This can be compared with [34] who pointed out that In Uganda, agriculture is primarily focused on crop production, with staple crops like maize, cassava, and bananas being the main sources of food. Donated livestock enterprises may not receive the same level of attention or investment as crop agriculture, leading to fewer resources and support for smallholder farmers engaged in animal husbandry.

Results also indicates that donated livestock enterprises were less significant in generating income for food purchases since the p-value was greater than 0.05 ($P=0.622$). Although some of the farmers acquire income from the sale of different products produced by donated livestock like milk, eggs and meat, the acquired income is low since the level of productivity from such livestock is also low due to poor breeds supplied by operation wealth creation. During an interview one of the local leaders had this to say;

“Donated livestock may not always come with the necessary support for sustainable management, such as veterinary care, feed, and infrastructure. Without ongoing support, the livestock may not thrive or reproduce effectively, limiting their income-generating potential in the long term”

This is in disagreement with [35] who asserted that livestock ownership generates income for smallholder farmers, which can be used to purchase food items that are not locally available or to meet additional dietary needs. Income from livestock sales provides households with greater purchasing power, enabling them to access a wider range of food items and improve overall dietary quality.

Results also indicates that donated livestock enterprises were less significant in facilitating asset accumulation for food security since the p-value was greater than 0.05 ($P=0.116$). Donated livestock programs often provide animals to individual households or communities on a small scale. While these donations can have immediate benefits, they may not lead to significant asset accumulation over time, especially if the number of animals donated is insufficient to make a substantial impact on household income and assets. Relying solely on donated livestock for asset accumulation may limit households' ability to diversify their income sources. Diversification is crucial for resilience against shocks and fluctuations in livestock markets, weather patterns, and other factors that affect livestock production. During an interview one of the local leaders confirmed this when he said this,

“Even if households receive donated livestock, they may lack access to resources such as land, water, feed, and veterinary services needed to support sustainable livestock production. Without these resources, the donated animals may not reach their full potential in terms of asset accumulation and food security”

This is in disagreement with [26] who pointed out that donated livestock projects contribute to asset accumulation among smallholder farmers, which can serve as a buffer against food insecurity during lean seasons or in times of crisis. Livestock assets can be liquidated or used as collateral to access credit, allowing farmers to invest in agricultural inputs, education, healthcare, and other necessities to enhance food security.

Results also indicates that donated livestock enterprises were less significant in providing alternative coping mechanisms during periods of food scarcity since the p-value was greater than 0.05 ($P=0.351$). Livestock, especially if donated as young animals, typically take time to mature and become

productive. During periods of immediate food scarcity, such as drought or crop failure, the time it takes for donated livestock to reach maturity and produce food products may not align with the urgent need for food. Rearing livestock requires resources such as land, water, feed, and veterinary care. In situations of food scarcity, households may lack the resources necessary to support the additional burden of livestock management, particularly if these resources are already stretched thin due to other competing needs. During an interview one of the local leaders had this to say;

“Relying solely on livestock as a coping mechanism may lack the diversity needed to effectively mitigate food scarcity risks. Diversified coping strategies, including savings, social support networks, alternative income sources, and access to food aid programs, can provide more robust resilience against food shortages”

This is in disagreement with [30] who pointed out that livestock ownership provides households with alternative coping mechanisms during periods of food scarcity or economic hardship. Income generated from livestock-related activities helps households cope with shocks and stresses, thereby enhancing resilience and reducing vulnerability to food insecurity.

4.2. Summary of the Findings

Summary of the findings were dealt with basing on the objectives

4.2.1. The Level of Sustainability of Donated Livestock Enterprises That Exist Among Small Scale Farmers

The study found that most donated livestock enterprises are not sustainable due to financial constraints, limited land, and lack of access to information on nutritional needs. 83.7% of respondents struggled to meet feed and nutritional needs, while 72.5% did not receive regular training on livestock management. Access to veterinary personnel and disease and parasite control management practices is also limited in rural villages.

4.2.2. The Factors That Influence the Sustainability of Donated Livestock Enterprises by Operation Wealth Creation to Small-Scale Farmers

Results established the most significant factors that influence the sustainability of donated livestock enterprises by operation wealth creation to small-scale farmers as Family size ($P=0.000$) and the level household income and food security ($P=0.001$) and the least significant factors as profitability of the enterprise ($P=0.354$), farmers awareness of enterprise management practices ($P=0.189$), farmers perception ($P=0.213$), farmers culture and beliefs ($P=0.815$), education level of the farmer ($P=0.829$), land tenure system ($P=0.755$)

and age ($P=0.189$).

4.2.3. The Effect of the Donated Livestock Projects on the Income of Smallholder Farmers

Results established that donated livestock enterprises significantly affected households to sell or trade the products (e.g., milk, meat, eggs) ($P=0.000$), households' ability to cope with economic shocks or emergencies ($P=0.001$) and improving access to credit or financial services ($P=0.013$) and least significantly in providing household income ($P=0.668$).

4.2.4. The Effect of the Donated Livestock Projects on Food Security of Smallholder Farmers

Results established that were less significant in increasing food availability ($P=0.146$), improving access to nutritious food, generating income for food purchase ($P=0.913$), facilitating asset accumulation for food security ($P=0.116$) and providing alternative coping mechanisms during periods of food scarcity ($P=0.351$).

4.3. Conclusion

The study findings established that only 12 (15%) of households that received the donated livestock enterprise were still owning the enterprises (cattle and goats) and 68 (85%) had abandoned the enterprises after 9 years after receiving them. This shows a critical gap in the sustainability of such enterprises and the declining the objectives of operation wealth creation.

Family size, household income, and food security emerged as the most significant factors influencing the sustainability of donated livestock enterprises. This suggests that the success and longevity of these donated livestock enterprises are closely tied to the demographic composition of the household and its economic well-being.

While donated livestock enterprises exhibit significant positive impacts on economic activities, coping mechanisms, and financial access, further attention is needed to address aspects related to food security, nutritional benefits, and the translation of livestock assets into household income.

The study findings found that donated livestock enterprise were less significant in ensuring household food security hence smallholder farmers required a diversified approach especially integration of both crop and livestock enterprise so as to sustain their food security situations.

4.4. Recommendations

An enabling business environment needs to be in place to assist input suppliers that are required for livestock enterprises. Inputs for livestock enterprises are feeds, medicines, and equipment for slaughtering and processing.

Public investments in livestock market development as well as the promotion of private investments of small-scale

farmers must be based on sound knowledge of the actual and potential contribution of this sector to the livelihoods of farmers and overall rural development.

Provision of credit and inputs to farmers on subsidy to enable farmers use such credit to acquire the required inputs like feeds.

4.5. Area for Further Research

Further research can be done on the role of extension service providers on improving the performance of livestock enterprises denoted by operation wealth creation.

Abbreviations

%	Percentage
e.g.	Forexample
TBL	Triple Bottom Line

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Mottet, A., & Tempio, G. (2017). Global poultry production: current state and future outlook and challenges. *World's poultry science journal*, 73(2), 245-256.
- [2] Gyawali, S., Tiwari, S. R., Bajracharya, S. B., & Skotte, H. N. (2020). Promoting sustainable livelihoods: An approach to postdisaster reconstruction. *Sustainable Development*, 28(4), 626-633.
- [3] Natarajan, N., Newsham, A., Rigg, J., & Suhardiman, D. (2022). A sustainable livelihoods framework for the 21st century. *World Development*, 155, 105898.
- [4] Frison, E. A., Cherfas, J., & Hodgkin, T. (2011). Agricultural biodiversity is essential for a sustainable improvement in food and nutrition security. *Sustainability*, 3(1), 238-253.
- [5] Kereszturi, K. (2018). Factor Structure of the Empowerment Scale in Military Families. *Illinois Institute of Technology*.
- [6] Kimiti, K. S., Western, D., Mbau, J. S., & Wasonga, O. V. (2018). Impacts of long-term land-use changes on herd size and mobility among pastoral households in Amboseli ecosystem, Kenya. *Ecological Processes*, 7, 1-9.
- [7] Mair-Bauernfeind, C., Zimek, M., Asada, R., Bauernfeind, D., Baumgartner, R. J., & Stern, T. (2020). Prospective sustainability assessment: the case of wood in automotive applications. *The International Journal of Life Cycle Assessment*, 25, 2027-2049.
- [8] Makoni, F. S., Gaidzanwa, M., & Masanganise, P. (2021). Impacts of smallholder livestock farming on soil degradation in Zimbabwe. *Journal of Sustainable Development*, 14(1), 133-144.

- [9] Martens, M. L. and de Carvalho, M. M., 2013. An exploratory study of sustainability evaluation in project management. *Product: Management and Development*, 11(2), pp. 111-117.
- [10] Mekonnen, H., Gurmu, F., & Gebreegziabher, Z. (2019). The impact of dairy cow donation on food security and income of smallholder farmers in selected districts of Ethiopia. *Journal of Agricultural Extension and Rural Development*, 11(5), 94-105.
- [11] Miki, A. W., Kagiri, A., & Nganga, K. (2017). Factors influencing sustainability of international livestock research institute technology supported livestock projects in Kisumu County. *International Academic Journal of Information Sciences and Project Management*, 2(1), 66-85.
- [12] Tanzania. *Agronomy for Sustainable Development*, 42(4), 56.
- [13] Silvius, G. (2018). Integrating sustainability into project risk management. In *Global Business Expansion: Concepts, Methodologies, Tools, and Applications* (pp. 330-352). IGI Global.
- [14] Silvius, G., SchIPPER, R. O. N. and Planko, J., 2012. *Sustainability in project management*. Gower Publishing, Ltd..
- [15] Tate, G., Mbzibain, A., & Ali, S. (2012). A comparison of the drivers influencing farmers' adoption of enterprises associated with renewable energy. *Energy Policy*, 49, 400-409.
- [16] Kurttila, S. (2021). *Process development in a social enterprise: case study: Egg Production Uganda Ltd.*
- [17] Leon-Himmelstine, C., & Phiona, S. (2021). *Young women in the agricultural sector in Uganda.*
- [18] Ark, E. R. (2023). *The Influence of Community Participation on Sustainability of Livelihood Projects: a Case of the Third Northern Uganda Social Action Fund (Nusaf 3) Livelihood Investment Support (Lis) in Adjumani District, Uganda (Doctoral dissertation, University of Nairobi).*
- [19] Mbae, R., Kimoro, B., Kibor, B. T., Wilkes, A., Odhong, C., Dijk, S. V.,... & Khobondo, J. O. (2020). *The Livestock Sub-sector in Kenya's NDC: a scoping of gaps and priorities.*
- [20] Namugenyi, I. (2023). *Market development for a sustainable transition to bioenergy in Uganda.*
- [21] Omona, J. (2021). *Poverty eradication and wealth creation: The role and challenges of savings and credit cooperatives (SACCOs) in Uganda. African Journal of Business Management*, 15(8), 198-210.
- [22] Galvan, J. D. (2023). *A Qualitative Phenomenological Study of Toxic Leadership in the Military (Doctoral dissertation, Northcentral University).*
- [23] Galván-Martínez, D., Espejel, I., Arredondo-García, M. C., Delgado-Ramírez, C., Vázquez-León, C., Hernández, A., & Gutiérrez, C. (2020). Sustainability assessment in indigenous communities: A tool for future participatory decision making. *Stewardship of Future Drylands and Climate Change in the Global South: Challenges and Opportunities for the Agenda 2030*, 197-214.
- [24] Mekonnen, K. (2021). *Africa Research in Sustainable Intensification for the Next Generation Ethiopian Highlands project, technical report, 1 October 2020–31 March 2021.*
- [25] Kandulu, J. M., Zuo, A., Wheeler, S., Dusingizimana, T., & Chagunda, M. G. (2024). Influence of climate-smart technologies on the success of livestock donation programs for smallholder farmers in Rwanda. *Mitigation and Adaptation Strategies for Global Change*, 29(3), 24.
- [26] Nyairo, N. M. (2020). *Attitudes and perceptions of smallholder farmers towards agricultural technologies in western Kenya (Doctoral dissertation, Purdue University).*
- [27] do Livramento Gonçalves, G., Castro, B. C. G., & de Andrade Guerra, J. B. S. O. (2021). Grassroots women and sustainable development. In *Gender Equality* (pp. 746-759). Cham: Springer International Publishing.
- [28] Elum, Z. A. (2021). Gender and poverty: its influence on household food security in Africa. *Gender Equality*, 399-411.
- [29] Stone, M., Lenao, M., & Moswete, N. (2020). *Natural resources, tourism and community livelihoods in southern Africa. London: Routledge.*
- [30] Silvius, G., SchIPPER, R. O. N., & Planko, J. (2012). *Sustainability in project management*. Gower Publishing, Ltd
- [31] Owens, T., Hoddinott, J., & Kinsey, B. (2020). Exploring gender differences in livestock ownership and decision-making in rural Malawi. *Journal of Gender, Agriculture and Food Security*, 5(2), 57-75.
- [32] Muhumuza, M., Mugizi, D. R., Omoding, A., & Kugonza, D. R. (2019). The impact of dairy goat production on rural household income and food security in Uganda. *Journal of Agriculture and Rural Development in the Tropics and Subtropics (JARTS)*, 120(1), 115-127.
- [33] Moyo, S., Mano, R., & Mvumi, B. (2019). Women's empowerment and household livelihoods: Evidence from livestock donation in rural Zimbabwe. *Development Policy Review*, 37(4), 559-575.
- [34] Makoni, F. S., Gaidzanwa, M., & Masanganise, P. (2021). Impacts of smallholder livestock farming on soil degradation in Zimbabwe. *Journal of Sustainable Development*, 14(1), 133-144.
- [35] Ibeagha-Awemu, E. M., Peters, S. O., Bemji, M. N., Adeleke, M. A. and Do, D. N., 2019. Leveraging available resources and stakeholder involvement for improved productivity of African livestock in the era of genomic breeding. *Frontiers in genetics*, 10, p. 357.