Journal of Entrepreneurship & Project Management

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ISSN: 2616-8464

Stratford Peer Reviewed Journals and Book Publishing
Journal of Entrepreneurship and Project Management
Volume 7||Issue 14 ||Page 93-109||November|2023|
Email: info@stratfordjournals.org ISSN: 2616-8464

Community Agricultural Projects and Poverty Reduction; A Case Study of Community-Based Watershed Management Project in Kirehe District, Rwanda

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How to cite this article: **Majyambere, T., & Njenga, G. (2023). Community Agricultural Projects and Poverty Reduction; A Case Study of Community-Based Watershed Management Project in Kirehe District, Rwanda.** ***Journal of Entrepreneurship and Project Management. 7*****(14), 93-109. https://doi.org/10.53819/81018102t5281**

Abstract

The most important issue in the discussion of international development is still how to combat poverty. This study assessed the contribution of community agricultural projects to poverty reduction in Kirehe District, Rwanda. The study's objectives were to assess the effect of irrigation farmer's projects on poverty reduction in Kirehe District, Rwanda. Additionally, the study examined the effect of agribusiness projects on poverty reduction in Kirehe District, Rwanda. The study also determined the effect of self-employment in the agricultural sector on poverty reduction in Kirehe District, Rwanda. The literature review defined key concepts and developed a theoretical framework, empirical review, theoretical literature, and conceptual framework regarding the contribution of agricultural projects to poverty reduction in rural areas of Rwanda. Furthermore, it sought answers regarding whether the Kirehe Community-based Watershed Management Project (KWAMP) in Kirehe District, Rwanda, contributed to poverty reduction. The study shows that the KWAMP Project, through irrigation, agribusiness, and self-employment, contributes to increased agricultural productivity, income generation, job creation, and food security, leading to poverty reduction in the end. This study was based on 653 staff, stakeholders, and beneficiaries of the KWAMP Project in Rwanda, with a sample size of 248. Both primary and secondary data were collected to achieve research objectives, using a questionnaire as a data collection technique. Descriptive statistics were used for data analysis, with data analyzed and interpreted using frequencies, percentages, and correlation analysis with the help of SPSS. Furthermore, the study established that all three agricultural projects were statistically significant in explaining poverty reduction. The study showed that irrigation farmer's project contributes to poverty reduction with a Mean=4.475 and Std=0.58, agribusiness project contributes to poverty reduction with a Mean=4.442 and Std=0.540, and self-employment in the agriculture sector also contributes to poverty reduction with a Mean=4.253 and Std=0.694, followed by increased agricultural production, food security, off-farm employment opportunities, and improving the income of rural households, as indicated by a correlation coefficient of 0.889 at a significant level of 0.01. The study recommends that the government of Rwanda, non-governmental institutions, and all stakeholders increase the practice of irrigation and agribusiness, while also exploring additional opportunities to enhance production efficiently and effectively. The study concludes that agricultural projects contribute positively to poverty reduction.

Keywords: *Community Agricultural Projects, Poverty Reduction, Community-Based Watershed Management Project, Rwanda.*

Stratford Peer Reviewed Journals and Book Publishing
Journal of Entrepreneurship and Project Management
Volume 7||Issue 14 ||Page 93-109||November|2023|
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1.0 Introduction

In developing nations, over a billion people work in agriculture. In nations with low and intermediate incomes, the agriculture sector often provides the majority of jobs. Improvements in technology and the utilization of more productive inputs boost productivity in the agriculture industry. It can enhance farm workers' working conditions in addition to increasing agricultural yield. In general, increased agricultural productivity is thought to be a major factor in structural change and economic growth. Trade flows and trade policy can have a significant effect on agricultural productivity and employment. Trade has a variety of effects on the availability of agricultural products, whether they are produced domestically or overseas (David Cheong, Marion Jansen, and Ralf Peters, 2013). Asia, There were 16.6 million impoverished rural residents in 2018 a 753 million drop from 1978 and China has become the first developing country to meet the UN's Millennium Development Goal (MDG) for reducing poverty.

After 2020, China's goal to reduce poverty won a gradual success, and both extreme and general regional poverty were eliminated. China still has a long way to go in the fight against poverty, and sustainable poverty reduction in the country's rural areas still faces new obstacles and problems. China's production, which supports thousands of households, has not yet established a strong link with the dynamic market. One of China's ongoing challenges in reducing rural poverty and promoting rural revitalization is the absence of infrastructure to facilitate the movement of agricultural products (Liu & Zeng, 2022). Africa is expected to import USD 110 billion worth of food annually by 2025 (Owings, 2020; Plaizier, 2016). By 2050, the continent's population is expected to reach 2 billion people, and agriculture will be essential to feeding them all (Ouko et al., 2022). In Sub-Saharan Africa (SSA), agriculture is one of the most promising industries because it can lower poverty and create jobs for young people. Kenya's economy revolves around agriculture, which provides the majority of income for both impoverished and non-poor households in rural areas, where it accounts for about 31.4% of the country's reduction in poverty. About 40% of the population is employed in this sector, which generates 26% of the GDP and employs roughly 70% of rural residents (Ouko et al., 2022).

The Rwandan government is dedicated to reducing poverty, but doing so calls on public involvement. Since the people who live in the rural areas where these projects are implemented own the benefits, rural development projects have been viewed as a tool for promoting public participation. The policy for rural development serves as a tool for participatory development is feasible. Savings and credit availability are important factors to take into account when trying to reduce poverty because they allow people to start small businesses and make money. A recent survey of household living conditions in Rwanda shows that one million people have left poverty in the last five years, which is six times faster than the country did between 2000 and 2006. Of Rwanda's 10.7 million people, 45 per cent now live below the poverty line compared to 57 per cent five years ago. An increase in productive employment is the main transmission mechanism examining current trends in Rwanda's labor market is crucial because it establishes a link between economic growth and decreased poverty. Agricultural projects have been observed as one of the solutions how the welfare of the population can be improved especially in rural areas. Over the main transmission, Real GDP growth is projected to average 7.2%. Given the impact of Covid-19 on the global economy in general and the Rwandan economy in particular, growth projections in the main transmission are conservative. Agriculture sector is expected to perform well in food and

https://doi.org/10.53819/81018102t5281

export crops due to continuing investments to improve seeds and to scale irrigation (MINECOFIN, 2022).

In order to change Rwandan agriculture, the government of Rwanda created the Kirehe community-based watershed management project, which aims to boost productivity and commercialization on Rwandan territory. The project develops land irrigation for portions of each site and employs a modified watershed approach to introduce sustainable land husbandry practices for land agriculture on selected sites. As a result, it employs a variety of methods and tools in the planning, development, and maintenance of land, creating suitable land management strategies for both irrigated and rain-fed agriculture and offering cutting-edge farming methods to increase the yield of both annual and perennial crops. To ensure that people take part in their own transformation, the Project uses participatory approaches and extensive community sensitization. Communities are also assisted in establishing self-help groups, which pave the way for the formation of cooperatives. This research assessed the contribution of community agricultural projects and poverty reduction in Kirehe District, Rwanda.

1.1 Research Objectives

The study was guided by the following objectives;

i. To assess the effect of irrigation farmer's projects and poverty reduction in Kirehe District, Rwanda.
ii. To examine the effect of agribusiness projects and poverty reduction in Kirehe District, Rwanda.
iii. To determine the effect of self-employment in agricultural sector and poverty reduction in Kirehe, Rwanda.

2.0 Theoretical Literature

2.1Agricultural

Scholars have focused on Rwanda's agriculture because of the sector's enormous economic significance and the enormous potential for altering the rural economy's structure and enabling the sector to play a major role in the country's overall development. Therefore, the evaluation of agricultural performance has frequently involved a variety of approaches, such as government programs and policies, investments in agriculture, the viability and desirability of agricultural policies, government spending, the enhancement of rural livelihoods, and the degree of commercialization in agriculture (Olawale Emmanuel, 2013). According to Olomola et al. (2008), there are a few ways that agricultural productivity affects industrial development. Firstly, they stated that an increase in agriculture creates a need for industrial products like chemicals and fertilizer. Secondly, the inputs required by agro-based industries are sourced from agriculture. Thus, if all of the industrial output—such as fertilizer—is imported and the agricultural output that industries need for agriculture is exported rather than processed domestically, the connection between agriculture and industry will be weakened. Third, through demand, agriculture can affect the industrial sector's output. The rural areas of developing countries such as Rwanda have large populations, which can lead to substantial consumption. Fourth, increased agricultural output will result in more public investment and government savings.

2.2 Poverty Reduction

Researchers are finding that contrasting different theories for why people are impoverished is becoming more and more important because poverty is frequently concentrated in countries with weak or marginalized economies. Economic growth has been viewed as the primary driver for reducing poverty because it can create jobs for the unemployed, generate money for public services and infrastructure projects, and provide healthcare and education to areas affected by poverty. In addition to the top-down strategies typically employed by governments and non-governmental organizations, the significance of grassroots initiative, cooperation, and actions in eradicating poverty is also emphasized. The World Bank estimates that 38 countries had poverty rates exceeding 18% in 2020, while 14 countries had rates between 9% and 18%. In 2011, 433.39 million people in Sub-Saharan Africa were living on less than $1.90 per day, making it the least developed region in the world. In addition, weak institutions, armed conflicts, slower economic growth, and natural disasters have made the region more vulnerable to efforts to reduce poverty. (Li Yuheng, 2021).

2.3 Theoretical Framework

2.3.1 Theories of Agriculture

Enhancing people's material and social welfare is the primary goal of agricultural development. The idea that agriculture in traditional or pre-modern society is fundamentally static must be abandoned in order to adopt a meaningful perspective on the process of agricultural development, since agriculture is often seen as an integrated strategy for improving the environment and well-being of the community. Therefore, a theory of agricultural development should provide insights into the dynamics of agricultural growth or the shifting sources of growth in economies ranging from those in which output is growing at a rate of 1.0% or less to those in which agricultural output is growing at an annual rate of 4.0% or more. With the aforementioned in mind, the literature on agricultural development contains roughly five (5) general models: the diffusion model, the urban-industrial impact model, the frontier model, the conservation model, and the high-payoff input model (udemezue JC, 2018). His Majesty King Bhumibol Adulyadej made clear in 1994 how his principles ought to be implemented in agriculture. His plan was built around a self-sufficient family that gradually integrated with. This was quickly dubbed the "New Theory" by the media. The king's plan was seen as counter to the conventional pursuit of growth through increased investment and large-scale development, despite the name being somewhat misleading given the support given to similar schemes by NGOs, academics, and local wise men.

His Majesty felt that if farmers exercised due diligence and considered the past price fluctuations of agricultural commodities, they would realize how risky it is to invest all of one's resources in such commodities with the expectation of making large profits. Furthermore, if they embraced the idea of self-immunity, they would prioritize producing enough food for themselves before considering selling any excess, thus preparing for changes in market prices. In a more concrete sense, His Majesty created the New Theory as an integrated and sustainable agriculture system, incorporating his ideas and work in sustainable agriculture, self-sufficient community development, soil rehabilitation and conservation, and water resource development and conservation. Farmland optimization is the goal. His Majesty discovered that most farmers remained impoverished based on his frequent visits to rural communities across the nation.

Therefore, in order to create guidelines for appropriate land management, he collaborated with agricultural experts and carried out his own farming experiments. (The New Theory of Agricultural, 2019).

2.3.2 Theories of Poverty

Abdulai and Shamshiry (2014) claim that the concentration of poverty in specific areas, communities, and localities both within and between nations and regions of the world is a prerequisite for using geographical disparities in poverty analysis. Diffusion of innovation, density, accessibility to natural resources, disinvestment, and other factors are some of the theories offered to explain the causes of poverty. The conventional wisdom has long held that, even during times of overall economic expansion, affluent areas will continue to grow faster than underprivileged areas. The main causes of decline in depressed areas were the focus of solutions proposed to address poverty related to geographic disparities. Bradshaw (2006) identified three vantage points from which to view this theory. Economic agglomeration theory provides one theoretical perspective on spatial concentrations of poverty; central place theory provides another, and selective out-migration provides still another. According to the theory of economic agglomeration, a concentration of businesses that are similar to one another draws markets and services that in turn draw additional businesses. On the other hand, poverty breeds poverty in areas with poverty and poverty conditions. According to the central place theory, there will be a multiplier effect but not an equalizing one, despite the claims of classical economists, and privileged areas will typically grow faster than disadvantageous areas even during times of overall economic growth. Perspective on selective outmigration (Alex Addae-Korankye, 2019).

2.3.3 Theories of Rural Development Projects

A "poverty-oriented project" is characterized as a "rural development project" by the World Bank if "50% or more of the direct benefits accrue to the rural target group." The "Area Development" method was one of the traits of rural development initiatives. This strategy involves allocating significant funds to a particular region in order to build a social and economic infrastructure for the rural poor. Analysis of the relationship between agricultural performance, hunger and poverty reduction, and government efforts to support agriculture at scale is made possible by the wide variation in performance among nations in terms of agriculture, poverty reduction, and hunger reduction, as well as the wide variation in how governments treat agriculture sectors (Kevin, 2013).

According to a 2007 World Bank report, a significant amount of funding and legislative changes are needed for agricultural development to succeed. Improving farmers' and agro-industrialists' access to markets is the focus of the first set. This entails investments in government services and infrastructure, as well as policies from partner countries and an enabling government. Generally speaking, the investments and policies are made to foster an atmosphere that encourages private investment in marketing, the provision of agricultural inputs, agro processing, and, of course, farming. Both public and private investments are made; the latter are concentrated on rural infrastructure, education, information supply, regulation, and policy. Because smallholders have unique information, infrastructure, and support needs, the second set of measures must concentrate both internationally and locally on smallholder farming productivity, food production, reversing environmental degradation, and natural resource management. This calls for a number of

Stratford Peer Reviewed Journals and Book Publishing
Journal of Entrepreneurship and Project Management
Volume 7||Issue 14 ||Page 93-109||November|2023|
Email: info@stratfordjournals.org ISSN: 2616-8464

resources, including rural financial services, instruments to lower farmer risk, and research and development.

2.4 Conceptual Framework

The diagram appears to show the independent and dependent variables of this study. This conceptual framework addresses the important concepts utilized in this study and that need to be clarified.

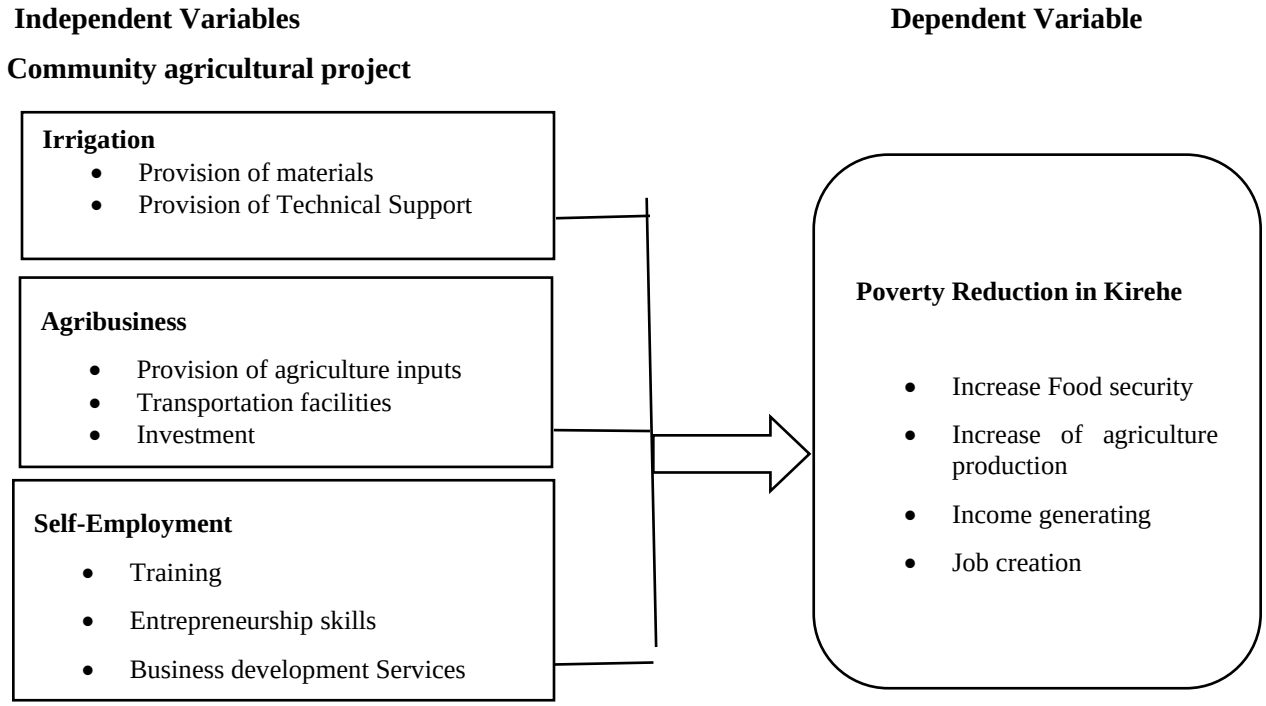

Figure 1: Conceptual Framework

3.0 Research methodology

The study employed a descriptive and analytical research design, utilizing both qualitative and quantitative research approaches to analyze the relationship between agricultural projects and poverty reduction. The research methodology was quantitative, using questionnaires for data collection. The target population for this study was the population of the three sectors in Kirehe District where the Kirehe Community-based Watershed Management Project (KWAMP) was operated. These sectors were Kigina, Kigarama, and Nyamugari. The total population of these sectors was 653 persons. The study focused on Kigina, Kigarama, and Nyamugari Sectors in Kirehe District and involved various stakeholders, including women leaders, project leaders, project representatives, project beneficiaries, social-economic agents, and those in charge of agriculture at the sector and district levels. Yamane's formula was used to determine the sample size, resulting in a sample of 248 participants. The sampling technique employed was simple random sampling, allowing for the generalization of results to the entire target population within statistical limits and confidence intervals. The study aimed to assess the contribution of the Kirehe

Community-based Watershed Management Project (KWAMP) and other agricultural projects to poverty reduction in the district.

4.0 Study Results

4.1 Response rate

Regression analysis and descriptive statistics were used in the analysis. 248 respondents made up the study's sample size, and after their questionnaires were returned, the results are shown in Table 1**.**

Table 1: Response Rate

	Responses
Questionnaire responded	220
Questionnaire not responded	28
Total questionnaires	**248**
Response rate	**88.7%**

Source: Researcher, 2023

Table 1 shows that 220 completed questionnaires and 28 returned questionnaires during data collection contributed to an 88.7% response rate. For the purposes of data analysis and statistical reporting, this response was appropriate, representative, and sufficient.

4.2 Demographics status of respondents

This part deals with the description of respondents by age, marital status and educational level. Demographic characteristics are most important in a survey because it enables to decide about the reliability of information provided by the respondents during interview. The established sample size for this study was 248 from the KWAMP Project stakeholder representatives, project staffs, Quality control officers and government's officers working in KWAMP Project currently implemented in three sectors namely: Kigarama, Kigina and Nyamugari. The goal of the study determined the respondents' greatest level of education.

Table 2: Respondent's Level of Education

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	No formal Education	10	4.0	4.5	4.5
	Primary	151	60.9	68.6	73.2
	Secondary	49	19.8	22.3	95.5
	University	10	4.0	4.5	100.0
	Total	220	88.7	100.0	
Missing	System	28	11.3		
Total		**248**	**100.0**		

Stratford Peer Reviewed Journals and Book Publishing
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Email: info@stratfordjournals.org ISSN: 2616-8464

Source: Researcher, 2023

Table 2 shows the study's findings, which include the following: 4% of people lack formal education, 60.9 have completed primary school, 19.8 hold an A2 certificate, and 4% have a bachelor's degree. The project aimed to empower more advantaged educated workers by enabling them to achieve decent livelihoods that would otherwise be unattainable for them due to their inadequate academic qualifications for formal jobs paying well.

4.3 Descriptive Statistics

The results of the respondents' responses are listed below. Each goal was explained in the sections that followed.

4.3.1 The effect of irrigation farmer's projects and poverty reduction in Eastern province Rwanda

The first objective was to evaluate the connection between the impact of irrigation farmer's projects and poverty reduction in Kirehe District, Rwanda. To assess the progress of the Kirehe Community-based Watershed Management (KWAMP) project in reducing poverty, the researcher asked the respondents to indicate their level of agreement with specific statements. The responses were rated on a five-point Likert scale, with 'strongly disagreeing' indicating the highest level of disagreement, followed by 'disagreement' (two), 'moderate agreement' (three), 'agreement' (four), and 'strong agreement' (five). The results are presented in Table 3.

Table 3: The effect of irrigation farmer's projects and poverty reduction in Kirehe District, Rwanda.

The effect of irrigation farmer's projects and poverty reduction in Kirehe District, Rwanda	N	Mean	Std. Deviation
KWAMP project as irrigation project was led to the Provision of materials for improving the land of rural households	220	4.38	.573
Irrigation project providing technical support in order to increase food security and contributes to agricultural productivity	220	4.49	.501
Irrigation project enhance agricultural trainings for technical efficiency of rain fed and irrigated crop production.	220	4.30	.805
Irrigation project contribute to increase crop production to meet the growing food demands	220	4.73	.444

Source: Field data, 2023

The majority of respondents concurred, according to the findings, that the irrigation farmer's project applied to poverty alleviation. More specifically, the KWAMP project, an irrigation project, led to the provision of materials for improving rural households' land (Mean=4.38); the irrigation project that provided technical support to increase food security and contribute to agricultural productivity; and the irrigation project that built mean cores. (Mean= 4.49); Irrigation

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project enhance agricultural trainings for technical efficiency of rain fed and irrigated crop production (Mean=4.30); Irrigation project contribute to increase crop production to meet the growing food demands (Mean=4.73) respectively. The study's findings demonstrated that irrigation projects acted as a catalyst for the reduction of poverty by increasing productivity levels and security, providing employment and income for farm laborers and irrigating households, linking and multiplying the effects of irrigation development (as part of larger agricultural growth) for the wider economy, increasing opportunities for diversifying rural livelihoods, and providing multiple uses for the water supplied by irrigation infrastructure. The findings are in agreement with (International Development,2002) The development of high-value cash crops also depends on irrigation, which boosts the agroindustry and generates a sizable amount of employment in rural areas by assisting in ensuring consistent output.

4.3.2 The effect of agribusiness projects and poverty reduction in Kirehe District of Rwanda.

The second objective was to analyze the impact of agribusiness projects on poverty reduction in the Eastern Province of Rwanda. Respondents were asked to indicate their level of agreement with statements regarding how agribusiness projects contribute to poverty reduction. A five-point Likert scale was used to rate the responses, with 1 denoting 'strongly disagree,' 2 for 'disagree,' 3 for 'neutral,' 4 for 'agree,' and 5 for 'strongly agree.' The results are presented in Table 4

Table 4: The effect of agribusiness projects and poverty reduction in Kirehe District, Rwanda.

The effect of agribusiness projects and poverty reduction in Kirehe District, Rwanda.	N	Mean	Std. Deviation
The agribusiness projects led to provide agricultural input like seeds, fertilizers and other agrochemicals	220	4.17	.379
Through financial support obtained Project helped beneficiaries to engage in investment and increase value of assets which include social asset and economic asset	220	4.43	.604
The agribusiness involved the distribution of farm commodities lead to transport facilities channel	220	4.53	.644
Project enhance the businesses that provide supplies and services to the producers by producing income generation and job opportunities	220	4.47	.500
Project led to the businesses that add value to agricultural products (processors), and those that facilitate the marketing of agricultural product	220	4.61	.575

Source: Field data, 2023

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Email: info@stratfordjournals.org ISSN: 2616-8464

From the findings, most of the respondents agreed that the effect of agribusiness project may contribute to poverty reduction. In particular, the respective means of agribusiness project on poverty reduction were as follows; The agribusiness projects led to provide agricultural input like seeds, fertilizers and other agrochemicals (Mean=4.17), Through financial support obtained Project helped beneficiaries to engage in investment and increase value of assets which include social asset and economic asset (Mean=4.43), The agribusiness involved the distribution of farm commodities lead to transport facilities channel (Mean=4.53), Project enhance the businesses that provide supplies and services to the producers by producing income generation and job opportunities (Mean=4.47), and Project led to the businesses that add value to agricultural products (processors), and those that facilitate the marketing of agricultural product (Mean=4.61). From the findings, it is evident that agribusiness project had a significant influence and strong relationship on the poverty reduction. By providing material inputs for food processing and value addition, agribusiness projects facilitate the necessary linkage between the agriculture and manufacturing sectors, which can then spur the growth of more expansive manufacturing industries. They also improve the income of rural households through wage employment and spillover effects that can increase on-farm agricultural productivity through greater liquidity to purchase inputs and increased capacity to adopt technologies. These benefits extend to women's empowerment and poverty reduction in rural areas where high-value agri-food exports are produced.

4.3.3 The Performance of agricultural project facilitate the effectiveness of self-employment in agricultural sector lead to poverty reduction

The third objective was to examine the performance of agricultural project influence the effectiveness of self-employment in agriculture sector lead to poverty reduction in Rwanda. The researcher asked the respondents to rate their agreement with statements regarding the impact of agricultural projects' presence and performance on self-employment's effectiveness in reducing poverty in Rwanda. The responses were rated on a five-point Likert scale, where 1 meant strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree. The results are shown in Table 5.

Table 5: The Performance of agricultural project facilitate the effectiveness of self-employment in agricultural sector lead to poverty reduction

The Performance of Agricultural Project Facilitate The Effectiveness Of Self-Employment In Agricultural Sector Lead To Poverty Reduction	N	Mean	Std. Deviation
Agricultural Training, incomes and employment	220	4.30	.696
Entrepreneurship skills	220	4.39	.489
Financial behavior, business activity, and household welfare	220	4.07	.899

Source: Field data, 2023

From the findings, most of the respondents agreed that Agricultural projects involved in self-employment as per the poverty reduction composite mean. In particular, the respective means of poverty reduction constructs were as follows; Agricultural Training, incomes and employment (Mean=4.30), some respondents moderately agreed that Entrepreneurship skills (Mean=4.39), Financial behavior, business activity, and household welfare (Mean=4.22) respectively. Increased productivity, even on very small plots, can produce a surplus that can be sold on the market,

according to Agricultural Training, incomes, and employment: the results demonstrated that there is a synergy between improving the productivity of small farms and the growth of non-farm household enterprises. But in addition to helping them increase the productivity of their land for small-scale subsistence, they also established a household business. learned how to grow crops that will sell for the most money, assisted in producing high-quality crops for the market, and acquired fundamental business Knowledge increases, it is inevitable that the poverty indicators will drop. The results of the study show that entrepreneurship abilities can contribute to the reduction of poverty by creating jobs through the establishment or expansion of new companies and by creating social wealth through the creation of new institutional forms, markets, industries, technology, and employment opportunities as well as net gains in real productivity, income, and population standards. In agricultural communities, entrepreneurship skills are defined as specialized knowledge that factors of production with the aim of developing new goods or services for both new and existing customers. Cultivating superior crops for the market and made gains.

Improved household financial literacy and achieving poverty alleviation are the results of a combination of economic decisions, according to Financial behavior, business activity, and household welfare: findings showed that financial literacy can alleviate relative poverty through promoting household participation in entrepreneurial activities. Financial literacy has been found to have a positive effect on reducing income poverty and asset poverty in rural households. Previous research has examined the enhancement of household financial literacy and absolute poverty alleviation from the perspective of household rationality.

4.4 Correlation Analysis

Correlation Analysis is statistical method that is used to discover if there is a relationship between two variables/datasets, and how strong that relationship may be and the results are presented in Table 6

Table 6: Correlation analysis

		Poverty Reduction	Irrigation Projects	Agribusiness projects	Self-Employment
Pearson Correlation	Poverty Reduction	1.000	.891	.834	.854
	Irrigation Projects	.881	1.000	.939	.804
	Agribusiness projects	.934	.939	1.000	.854
	Self –Employment	.854	.804	.954	1.000
Sig. (1-tailed)	Poverty Reduction	.	.000	.000	.000
	Irrigation Projects	.000	.000	.000	.000
	Agribusiness projects	.002	.000	.	.000
	Self –Employment	.000	.007	.000	.
N	Poverty Reduction	220	220	220	220
	Irrigation Projects	220	220	220	220

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Email: info@stratfordjournals.org ISSN: 2616-8464

Agribusiness projects	220	220	220	220
Self- Employment	220	220	220	220

Source: Researcher, 2023

Pearson Correlation: Indicating the numbers measure the strength and direction of the linear relationship between independent and dependent variables. From the findings the correlation coefficient for poverty reduction is +1 indicating a perfect positive correlation, for irrigation project correlation coefficient is +0.881 indicating positive correlation, agribusiness project correlation coefficient is + 0.934 indicating a positive correlation and Self-employment correlation coefficient is + 0.854 indicating a higher positive correlation. Therefore, the variables correlated with them were always have a correlation coefficient of 1 as shown by poverty reduction. The findings have shown that the correlation coefficient between agricultural projects were statistically significant at α=5% indicating strong positive relationship between agricultural projects and poverty reduction. When two variables have a positive correlation, they move in the same direction. A rise in one variable causes the other to rise as well, and vice versa. Sig. (1-tailed): This was the p-value associated with the correlation. The footnote under the correlation table explained what the single asterisks signify. Therefore, the findings have shown that poverty reduction, irrigation project, agribusiness project, and self-employment had p-value= 0.000 indicating that they were statistically significant and positively correlated each other. N: The number of cases utilized in the correlation was this. All correlations in this data set were based on all 220 cases because there are 28 missing data points. Nonetheless, the N's for the various correlations between the agribusiness, self-employment, irrigation, and poverty reduction projects would differ if some of the variables had missing values.

4.5 Regression Analysis

The study needed to confirm the relationship between independent and dependent variables and multiple regression analysis was used for this purpose. The findings for model summary illustrated in Table 7**.**

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.946[a]	.895	.894	.293

Source: Researcher, 2023

Table 7 shows that r=0.946 which implies that the three independent variables agricultural projects such as irrigation project. Agribusiness project and self-employment have a strong relationship with poverty reduction in Rwanda. The coefficient of determination given by R^2 is 0.895, indicating that the three independent variables explain 89.5% of the variations in the poverty reduction while other variables not covered in the study were represented by 10.5%. The ANOVA was utilized to check the argument that the independent variables (agricultural projects) and the

dependent variable (poverty reduction) are not significant. The results for ANOVA are illustrated in Table 8.

Table 8: ANOVA Results

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	28.277	5	6.759	47.998	.000[b]
	Residual	18.500	116	.0116		
	Total	**46.777**	**121**			

a. Dependent Variable: Poverty Reduction

b. Predictors: (Constant), Self-Employment, Irrigation Projects, Agribusiness projects

The model is statistically significant in predicting how the three agricultural projects influence the reduction of poverty because the p value is 0.000, which is not greater than p=0.05. At the 5% level of significance, the F critical (47.460) was higher than the calculated F (value = 2.476), and p<0.000<0.05. this demonstrates how well the overall model predicted the relationship between agricultural projects and the decrease of poverty. The regression model on which the study was based; $Y= \alpha + \beta 1\ X1 + \beta 2\ X2+ \beta 3\ X3 +\varepsilon$ was transformed into $Y=0.700+0.750\ (IP) + 0.976\ (AP) + 0.250\ (SE) + \epsilon$. The study Y is the dependent variable (Poverty reduction), α = Constant; $\beta 1$, $\beta 2$, $\beta 3$=Beta Coefficients; IP= Irrigation Project; AP= Agribusiness Project; and SE=Self-Employment. The regression coefficients are as presented in Table 9.

Table 9: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.700	.385		18.192	.000	6.242	7.758
	Irrigation Projects	.750	.027	.684	27.694	.000	.697	.803
	Agribusiness projects	.976	.048	.000	.000	1.000	-.095	.095
	Self -Employment	.250	.044	-.657	-28.627	.000	-1.336	-1.164

Source: Researcher, 2023

At a 5% level of significance, all three agricultural projects demonstrated statistical significance, with p-values falling within the recommended threshold of $p < 0.05$. The findings revealed a positive effect on poverty reduction for all three agricultural projects, namely the irrigation project, agribusiness project, and self-employment, with regression coefficient values of ß0 = -0.700, ß1 = 0.750, ß2 = 0.976, and ß3 = 0.250, respectively. Specifically, the irrigation project exhibited a ß1 = 0.750 and a p-value of 0.000, indicating a statistically significant positive correlation between agricultural projects and poverty reduction. The agribusiness project had a ß2 = 0.976 with a p-value of 0.000, suggesting a positive relationship between agricultural projects and poverty reduction. Similarly, self-employment had a ß3 = 0.250 with a p-value of 0.000, signifying a positive association between self-employment resulting from agricultural projects and poverty reduction."

5.0 Discussion of Findings

The agricultural initiatives were created as a post-crisis intervention to help smallholder farmers whose livelihoods had been undermined by extreme poverty. The project aimed to repair or construct necessary infrastructure to support food production, marketing, and processing activities, as well as to restore the productive assets of farmers and farmers' groups. In light of this, the study set out to ascertain how agricultural initiatives and the decline in poverty in Rwanda relate to each other. The research was guided by the following specific objectives: to assess the effect of irrigation farmers' projects on poverty reduction in Eastern province Rwanda, to examine the effect of agribusiness projects on poverty reduction in Eastern province Rwanda, and to determine the effect of self-employment in the agricultural sector on poverty reduction in Eastern province Rwanda. The descriptive research design was employed in this study. Primary data were collected through questionnaires, which served as the foundation for the study. Quantitative data were analyzed using descriptive statistics. To demonstrate the significance of each independent variable, multiple linear regressions were used.

Regarding poverty reduction, the study found that agricultural projects and poverty reduction are linked to increased agricultural production, the provision of food security, and job opportunities. The project beneficiaries and staff applied the agricultural project throughout its entire implementation cycle, which is why there was a significant reduction in poverty. The study sought to determine the influence of the irrigation project on poverty reduction in Rwanda. More specifically, the study determined that the irrigation project would lead to efficiency, catalyzing the reduction of poverty through improvements in levels and security of productivity, employment, and incomes for irrigating farm households and farm labor, as well as the linkage and multiplier effects of irrigation development for the wider economy. Similarly, the study sought to determine the influence of the agribusiness project on poverty reduction in Rwanda.

More precisely, the study found that agribusiness projects help forge the vital connection between the agricultural and manufacturing sectors by creating off-farm employment opportunities in agro-industrial companies located in rural areas, enhancing the income of rural households through wage employment, and having spillover effects that can increase on-farm agricultural productivity through increased capacity to adopt technologies and greater liquidity to purchase inputs. It was discovered that self-employment significantly contributed to Rwanda's decline in poverty. More specifically, the study found that agricultural projects have an impact on self-employment by facilitating off-farm wage employment and self-employment in rural non-farm enterprises, making

capital available to the poor at affordable rates, offering poor farmers more resources such as land, equipment, extension and outreach services, fertilizer, and other inputs, and creating off-farm employment opportunities for designing productive inputs (such as irrigation equipment) that can raise the productivity of the self-employed.

6.0 Conclusion

The study concludes that the most significant relationship between agricultural projects and poverty reduction in Rwanda was with the irrigation project, followed by the provision of materials and technical support. The study concludes that the irrigation project had a significant impact on poverty reduction in Rwanda. This conclusion is based on the discovery that the irrigation project improved the land of rural households and provided technical assistance to enhance agricultural productivity. This, in turn, led to improved agricultural training for technical efficiency in rain-fed and irrigated crop production, resulting in increased crop production to meet growing food demands. These factors were examined, and the direction of the irrigation project was adjusted to adapt to changing environmental conditions. This adjustment was supported by the finding that both the irrigation project itself and its design contributed to poverty reduction.

Furthermore, the study found a positive and significant relationship between the agribusiness project and the reduction of poverty in Rwanda's Eastern Province. Based on the finding that agribusiness project tools and techniques significantly contributed to poverty reduction, the study concluded that the agribusiness project had a positive effect on poverty reduction by creating off-farm employment opportunities in agro-industrial companies located in rural areas, improving the income of rural households through wage employment, and enhancing food security. The study also discovered that self-employment resulting from the performance of agricultural projects promoted social wealth by stimulating the development of new markets, industries, technologies, institutional forms, jobs, and net increases in real productivity. This, in turn, reduced poverty by generating jobs through new business ventures or the expansion of existing ones, ultimately raising income levels and improving the standard of living for the general public. In summary, the study found that agricultural-related initiatives had a positive impact on poverty reduction.

7.0 Recommendations

The study recommends that policymakers and stakeholders in Rwanda's agricultural sector prioritize and further invest in irrigation projects, recognizing their significant positive impact on poverty reduction. This should include continued efforts to improve the efficiency and technical support provided by irrigation initiatives to enhance agricultural productivity among rural households. Additionally, the study suggests the need for adaptive management strategies to ensure that irrigation projects can adapt to changing environmental conditions and evolving agricultural practices. Furthermore, the study encourages the continued support and expansion of agribusiness projects, as they have shown to create off-farm employment opportunities, increase rural household income through wage employment, and contribute to food security. Lastly, fostering self-employment through agricultural initiatives should remain a key focus, with an emphasis on facilitating access to resources and encouraging the development of new markets and industries to further boost social wealth and reduce poverty.

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