

Contribution of Agricultural Cooperatives to Rural Development, Among Rice-Growers: Case of Coderika, Ruhango District, Rwanda

Dr. LUBWAMA Joseph Ntege (PhD) and Mr. NIYOYIREMERA Theogene

Master in Development Studies
Kigali Independent University (ULK), Rwanda.



Abstract – The study examined the contribution of agricultural cooperatives on rural development among Rice-growers in Rwanda and CODERIKA located in Ruhango district, Southern province of Rwanda was chosen as a case of study. The objectives of the study were to examine the contribution of agricultural cooperative societies in the improvement of the social status of members, to assess the contribution of these agricultural cooperative societies in the increase of earnings of members, to determine the contribution of these societies in the increase of rice production and to evaluate the contribution of agricultural cooperative societies in the improvement on the investment and savings of members. The reviewed literature discussed the theoretical perspectives and the contribution of agricultural cooperatives on rural development among Rice-growers and was guided by the said above objectives. The research used a descriptive design based on both qualitative and quantitative approaches. The total population was 120 members that included: 5 local leaders, 2 employees and 92 members of CODERIKA all chosen randomly however the 5 local leaders and the two employees of CODERIKA were selected purposively. Data collection tools were questionnaires and interviews. The collected data was presented using tables, percentages and frequencies. Analysis was done using SPSS (Statistical Package for the Social Sciences) and interpretation was based on Pearson's correlation coefficient.

It was generally concluded that there is a significant contribution of agricultural cooperatives to rural development among rice-growers in Rwanda. It was established that agricultural cooperative societies helped the members to increase the rice production where the rice productivity increased from 3 tons per hectare (3t/ha) before joining CODERIKA to 6 tons of rice per hectare (6t/ha) after joining. This increment was caused by the use of fertilizers, pesticides and coaching in good agricultural Practices which was done by the agronomist of CODERIKA. The increase in productivity contributed to the increase in earnings and this helped the members of the agricultural cooperative societies to comfortably assess the basic needs like food, payment for their health insurances, school fees, accessing mobile phones, buying transport means like motorcycles and bicycles and not only to improve on but to construct new houses for living in. The incomes from rice production helped some members to create small business which raised their incomes to cease depending on agricultural production for survival. Based on findings, the researchers concluded that there is a positive relationship between agricultural cooperative societies and improvement of the social status of members. It was concluded that there is a positive relationship between agricultural cooperative societies and increase in earnings of members. The researchers also concluded that there is a positive relationship between agricultural cooperative societies and increase in rice production and finally it was also established that there is a positive relationship between agricultural cooperative societies and improvement in investment and savings of members. The researchers recommended that the government of Rwanda should promote agricultural cooperative societies to step up and also improve on agriculture to create occupations and earnings for people in rural areas in order to reduce poverty and to increase food for consumption.

Key words – Agricultural Cooperatives, Rural Development, Rice-Growers.

I. INTRODUCTION

A cooperative is defined as an autonomous association of people united voluntarily to meet their common economic, social and cultural needs and aspirations

through jointly-owned and democratically-controlled enterprises (ILO, 2002). According to the International Cooperative Alliance (ICA, 2013), agricultural cooperative societies are user-owned and user controlled businesses

from which benefits are derived and distributed equally among the members. Agricultural cooperative societies enable producers to be assured of markets and supplies, achieve economies of scale, and gain market power through jointly marketing, bargaining, processing and purchasing supplies and services. CODERIKA is a French derived name Cooperative de Developement Rizicole de Kanyegeyege. It is a cooperative society in charge of rice development at Kanyegeyege, a place in Ruhango district of Rwanda.

Since 1960, the world population has more than doubled, from approximately 2.9 billion in 1960 to more than 7 billion today and world population is projected to grow to between 9 and 10 billion people by 2050 (FAO, 2006). This is interpreted to mean that more food will be needed by then. Globally, the demands placed on agricultural production are consequently arising into population outbursts and the need for income growth. The good news so far is that the various Global agricultural programs have been successful in meeting this increase wherever it has surfaced, (FAO, 2006).

The Sub-Saharan Africa region remains the only area in which per capita agricultural output has not seen a sustained increase over the last four decades. Although, people in this region heavily depend on agriculture for their survival, governments have not paid adequate attention that would see people prospering yet one way of developing agriculture is by organising and facilitating agricultural cooperative societies (BAD, 2015).

All available records show that agriculture is the main activity in Rwanda with 70% of the population engaged in the sector and it is considered by the government as the backbone of rural development. However, this sector is still facing many challenges like high cost of investment/finance, inadequate physical infrastructure to support the sector, poor farming techniques, limited access to quality farm inputs, too much relying on rain, lack of marketing data and information, inadequate production and post-harvest technologies. Further to this, there are also challenges like inadequate disease control facilities, lack of awareness by farmers on better farming methods, low incomes of farmers to purchase the necessary farm inputs, limited funding by government and the private sector to agriculture. Other challenges include the low production resulting in low revenue, the low value addition to agricultural produce, limited market access due to inadequate marketing and agro processing facilities, weak implementation of agricultural laws and policies, limited

public agricultural institutions, inadequate storage and high post-harvest losses together with land limitation in many parts of the country due to the country's size and the available productive areas. Effective management of agricultural cooperative societies could be proposed as a solution to the above highlighted challenges (BAD, 2015).

The Agricultural Change theory that encourages the farmers to have the mindset change in whatever is done was adapted in this study because it reminds the farmers to analyze the difference between the past and present productions. The theory in the same way encourages the farmers to find solutions to challenges they get to analyze for better production. Some of the changes; come from attempts to position the sector to respond more effectively to changes in population, industrial needs and livelihood support to people engaged in it. These changes, as positive as they may look are still far from the target expected to fully deliver the desired impact on the populations and the economies of many African countries, as such, African agriculture still remains the lowest in production in the world (Adekunle, 2014). This theory that was used in Ghana and Nigeria resulting in improving Cocoa production, was also used here to encourage the people of Rwanda to have their agricultural mindset changed in order to raise the contribution of agriculture to high production to bail the Rwandans out of poverty and famine.

Similarly, the study used the Economic Development theory because it encourages farmers to analyze fundamental challenges and develop solutions for economic recovery. The theory of Economic Development proposed by Copestake (1999) used in India, China and Pakistan since the 1980s so far concentrates on how predominantly low and middle income countries can transform themselves so as to raise resource production and hence economic growth rates (Copestake, 1999). As a result of the application of this theory India, Pakistan and China have transformed themselves into World giants economically especially based on food production.

Although, most African populations live in poverty and hunger, it is necessary that each family in Africa should have sufficient food and its people living above the poverty line. There is relative poverty in Rwanda because agriculture which is the main source of income for people in rural areas is not yet well managed and it is still done for home consumption (World Bank, 2011). It should be yet also remembered that it is a requirement by the Sustainable Development Goals that every Rwandan family engages in agriculture for food and economic sustainability (FAO,

2012).

Contextually, Poverty being a rural phenomenon, yet the majority of the people in most developing countries live in rural areas, the mechanisms to be used should target the most applicable poverty alleviation means. One of these means which is used widely today is to organize people in form of associations or cooperative societies (Adebayo, 2010). Globally, it is evidently clear that Agricultural cooperative societies have played an important role in rural development through the improvement of agriculture. The agricultural cooperative societies are considered to be the most important organizations that pay attention and try to support rural development in general and agricultural development in special through the activities and services achieved by the farmers (Mohamed, 2004, FAO, 2012).

The Government of Rwanda having recognized the central role of the agriculture sector both in terms of economic growth and poverty reduction because agriculture accounts for more than 34% of the gross domestic product (GDP), provides 70% of exports, and employs 80% of the workforce, provides raw materials to industries and a market for manufactured goods that's why agricultural cooperatives are seen as an important vehicle to achieve this (MINAGRI, 2017).

In response to this growing trend, Government of Rwanda has identified rice as a priority crop since 2002. The total rice production has increased from 11,949 tons in 2000 to 108,958 tons in 2017. This increase is mainly due to expanding the rice growing areas. Due to rising incomes and changing lifestyles of the rice growing population and the demand for rice consumption, the production of rice has grown up sharply and analysts have put this local expansion of rice production on agricultural cooperative societies that are seen as the backbone in increasing the production in order to satisfy the Rwandan market (NISR, 2019).

So far around 9,000 cooperative societies are contributing to the improvement of the wellbeing of more than 3.6 million people in Rwanda, not only in the agriculture sector, but also in other sectors (RCA, 2018). Agricultural cooperative societies have been encouraged in Ruhango district to target rice growing. Rice-growing has been encouraged in Ruhango district for both food and for commercial purposes because Ruhango district has a favorable environment for rice production (MINAGRI, 2012). The many past studies conducted on agriculture in Rwanda have only reported the existence of rice growing

cooperatives but not the Contribution of agricultural cooperatives on rural development among rice growers in the country. It is against this background that the researchers carried out this study to examine the Contribution of agricultural cooperatives on rural development among rice-growers in Rwanda and CODERIKA located in Kinazi sector, Ruhango district which is involved in Rice growing was taken as a case of study.

II. STATEMENT OF THE PROBLEM

Agricultural cooperative societies play an important role in agricultural development. They contribute to the food security, earnings as they are a source of income and backbone of rural development worldwide. However, in sub-Saharan African countries that include Rwanda; for now, although agricultural cooperatives have been on the ground, agriculture has not developed at a pace expectedly desired because the farmers still do things in their traditional ways and they continue to miss opportunities of enhancing the social and economic status (World Bank, 2011).

Globally, Rice is one of the crops that were recently given special attention as it has been characterized by low production and low incomes yet it is the primary food grain consumed by almost half of the world's population (Dowling, 1998). In response to the growing trend, Government of Rwanda has identified rice as a priority crop since 2002 and it has been encouraged particularly in Ruhango district for both food and for commercial purposes because Ruhango district has a favorable environment for rice production (MINAGRI, 2012).

Although since 1994, the Government of Rwanda has recorded significant achievement in poverty reduction, gender equality, environmental sustainability, food production, education and public health,

38.2 % of the population continues to live below the poverty line. Despite Rwanda's fertile ecosystem, food production often does not keep pace with demand, requiring food imports. So far almost 19% of households in Rwanda is food insecure. Levels of stunting among young children remain very high at 35

%. Poor rainfall, drought, floods and the limited amount of land that is suitable for agriculture, alongside pests and diseases, continue to pose risks to food security and this mainly affects the development of people living in rural areas (WFP, 2019). Past studies in agriculture conducted in Rwanda have only reported the existence of

rice growing cooperative societies but not the Contribution of agricultural cooperatives on rural development especially among rice-growers. It is against this background that the researchers carried out this study.

Purpose

The purpose of this study was to examine the Contribution of Agricultural Cooperatives on Rural Development among Rice-growers in Rwanda.

Specific objectives

The activities of the study were:

- i. To examine the Contribution of Agricultural Cooperatives on Rural Development among Rice-growers in Rwanda.
- ii. To assess the contribution of Agricultural Cooperatives in the increase of earnings of members in the Rice-growing Ruhango District.
- iii. To determine the contribution of Agricultural Cooperatives in increasing rice production in Ruhango District.
- iv. To evaluate the contribution of Agricultural Cooperatives in the improvement of investment and saving of members in Ruhango District.

Research Hypotheses

- i) There is a significant positive relationship between agricultural cooperative societies and rural development among rice-growers in Rwanda.
- ii) There is a significant positive relationship between agricultural cooperative societies and increase in earnings of rice-growers in Rwanda.
- iii) There is a significant positive relationship between agricultural cooperative societies and increase in rice production
- iv) There is a significant positive relationship between agricultural cooperative societies and the increment of production and savings among rice-growers in Rwanda.

Research Questions

These research Questions were used to collect qualitative data

- i) Explain the status quo related to the contribution of agricultural societies and development in rural areas
- ii) Give a comparison between the development in rural areas before agricultural societies came up and the

existing situation

- iii) What is the relationship between agricultural cooperative societies and rural development among rice-growers in Ruhango district and Rwanda in general?
- ii) What is the relationship between agricultural cooperative societies and increase in earnings of rice-growers in Rwanda?
- iii) What is the relationship between agricultural cooperative societies and increase in rice production?
- iv) What is the relationship between agricultural cooperative societies and the increment of production and savings among rice-growers in Rwanda?

III. LITERATURE REVIEW

A. Literature review focused both the Theoretical perspectives and the related reviews as here presented.

1. Theoretical Review

This study focused on two theories namely the Agricultural Change theory and the Economic Development theory.

a. The Agricultural Change theory

According to Adkunle (2014), theory of Change is the process of describing all the building blocks required to bring about a long-term goal. It describes the process of social change by making explicit the perception of the current situation; its underlying causes, the long term change desired and the things that need adjustment for the change to happen. Clear expression of the theory of change for agricultural research and development concepts and initiatives is important because it reveals the thinking that guides the intervention and action as well as the trajectory of change within the system.

African agriculture has witnessed a series of positive changes in the last four decades. Some of the changes; come from attempts to position the sector to respond more effectively to changes in population, industrial needs and livelihood support to people engaged in it. These changes, as positive as they may look are still far from the target expected to fully deliver the desired impact on the populations and the economies of African countries. The Agricultural Change theory that encourages the farmers to have the mindset change in whatever is done was adapted in this study because it reminds the farmers to analyze the difference between the past and present productions. The theory in the same way encourages the farmers to find solutions to challenges they get to analyze for better

production. This theory was used successfully in Ghana and Nigeria resulting in improving Cocoa production. If applied here in Rwanda it will encourage people to have their agricultural mindset changed in order to raise the contribution of agriculture to high productivity to bail the Rwandans out of poverty and famine.

b. Theory of Economic Development

According to Copestake (1999), the theory of Economic Development addresses itself to two types of questions. It asks what are the fundamental causes or conditions of economic development and it asks what path development will take, in other words it asks why development takes place and how it happens. The theory of Economic Development proposed by Copestake (1999) was successfully used in India, China and Pakistan since the 1980s. It mainly concentrates on how predominantly low and middle income countries can transform themselves so as to raise resource production and hence economic growth rates (Copestake, 1999). As a result of the application of this theory India, Pakistan and China have transformed themselves into World giants economically especially based on food production.

2. Related literature

The scholars' views were discussed under each of the research objectives.

2.1 Contribution of Agricultural Cooperatives in the improvement of the Social Status of members

Collective action is the core resource of agricultural cooperatives. Cooperatives create social relations that enable individuals to achieve goals that they may not otherwise be able to achieve by themselves. Agricultural cooperatives play a great role in economic development and improvements in health, education, drinking water, energy supply, sanitation and housing coupled with attitudinal changes to facilitate their social development (World Bank, 2011).

In addition to job creation, cooperatives have helped to improve the living conditions of their members. Success stories on how members have used their cooperatives to buy cars, build and improve on houses, pay school fees for their children, produce food for the family and to sell and improve their clothing are indicators of such changes. Women in different districts reported how their husbands were proud of their contributions to meeting family needs (MINECOFIN, 2013).

Cooperative societies are instruments used to alleviate

poverty and to accelerate agricultural production in Rwanda. Similarly, cooperatives contributed to the achievement of the Millennium Development Goals, Vision 2020 and the Economic Development and Poverty Reduction Strategy (EDPRS) program that focuses on rural economic transformation, human resource development, development and promotion of the private enterprises and poverty alleviation (MINICOM, 2013).

Cooperatives play a crucial role in reducing poverty, improving food security and generating employment opportunities. The United Nations declared 2012 the International Year of Cooperatives (IYC) to raise awareness of cooperatives' important contribution to global socio-economic development and to promote the growth and strengthening of cooperatives all over the world (ILO, 2013).

Producer cooperatives offer men and women smallholders market opportunities, and provide them with services such as better training in natural resource management, and better access to information, technologies, innovations and extension services (ILO, 2002).

For small land-holding, developing and agricultural based economic countries like Ethiopia, cooperative type of business is recommended as a solution to promote income distribution, reduce poverty and vulnerability, and improve the quality of life and social welfare (Nuredin, 2015).

Agricultural cooperative societies help the members to increase the agricultural production, by increasing the production, the income also is increased with the market factor remaining constant. This can help the farmer to reduce the poverty rate and to change the social status because the member is able to pay for the health insurance, school fees, water and electricity bill, buying a mobile phone, TV, radio etc.

2.2 Contribution of Agricultural Cooperatives in the increase of earnings of members in the Rice-growing Ruhango District.

Agricultural cooperative societies aim to increase member's production and incomes by providing better link them and finance, agricultural inputs, information, and output markets. The cooperative enterprise model exists in many sectors, including agriculture, consumer issues, marketing and financial services, and housing. Cooperatives provide millions of jobs worldwide and count more than 1 billion members (ILO, 2001).

The agricultural sector is at the heart of the economies of many countries worldwide. This sector contributes to the food security, export earnings, source of income and backbone of rural development. It accounts for a large share of the gross domestic product (GDP) (ranging from 30% to 60%), employs a large proportion of the labor force (from 40% to as much as 90% in most cases) and represents a major source of foreign exchange (from 25% to as much as 95% in three quarters of all countries). The first role of the agricultural cooperative is to help the members to increase the yield, once the yield is increased; the incomes of farmers also increase (FAO, 2002).

2.3 Contribution of Agricultural Cooperatives in the increase of Agricultural production of members

Agricultural cooperatives, including farming, forestry, fisheries and livestock, is the main source of employment and income in rural areas, where the majority of the world's poor and hungry people live. Agricultural cooperatives play an important role in supporting men and women small agricultural producers and marginalized groups by creating sustainable rural employment and

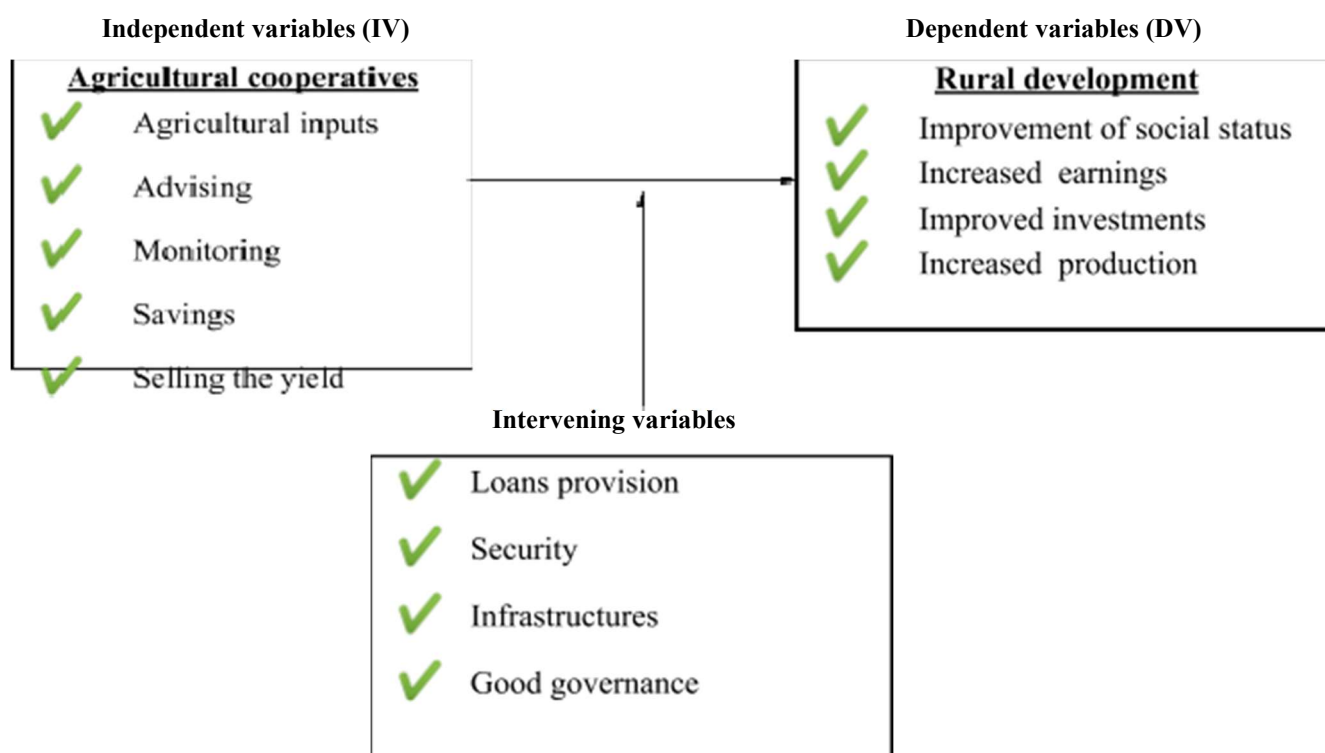
improvement of small businesses and savings. (FAO, 2011)

Agriculture contributes immensely to the African economy in various ways; namely, in the provision of food; supply of adequate raw materials to a growing industrial sector; a major source of employment; generation of foreign exchange earnings; and, provision of a market for the products of the industrial sector among others (World Bank, 2011)

The Government of Rwanda views cooperatives as a potential vehicle through which the cooperative society members could create employment and expand access to income-generating activities, develop their business potential, including entrepreneurial and managerial capacities through education and training; increase savings and investment (GoR, 2004).

2.4 Contribution of Agricultural Cooperatives in the improvement of investment and saving of members

3. Conceptual Framework



Source: (Researcher, 2019)

IV. RESEARCH METHODOLOGY

The study used a descriptive research design based using both qualitative and quantitative approaches. A

descriptive research design was used because the study involved gathering data that described events and then organized, tabulated, depicted, described and analysed the data concerning the contribution of agricultural

cooperatives on rural development in Ruhango District. The quantitative approach was used to collect quantitative data like frequencies and percentages while the qualitative approach was used to complete where the quantitative approach did not give enough information on the study.

The study used a sample size of 120 randomly selected participants from the total population of 150 CODERIKA farmers, cooperative members of CODERIKA and 5 local leaders and 2 employee staff members of CODERIKA that were selected purposively. In making the sample size, the researchers used the Raosoft formula:

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

Where n is the sample size, N is the population and e is the sampling error (0.05). The researchers collected primary data using questionnaires and a face-to-face oral interview. The researchers ensured that the research instruments used were reliable, consistent and free from any bias. Questionnaires were used for CODERIKA members and the interview guide was used for local leaders and Staff of CODERIKA. Questionnaires contained clear, specific and accurate questions that were intended to find the contribution of agricultural cooperatives on rural development among rice-growers in Rwanda. Questionnaires used were open-ended in order to tap all the ideas they had on the subject under study. The interviews used open-ended questions in line with the study objectives. The pretesting of research instruments was done on 10 farmers from CODERIKA. The

respondents were assured that the information they provided would be kept confidential and the results of the study would be only used for the purposes of the study. They were assured that the results of the study would not put them at risk at District level, Sector level, and cooperative level or in their respective families or communities. The responses were coded instead of reflecting names.

The collected data was presented using tables and figures while interpretation and analysis was done based on percentages and frequencies of respondents' views. The

analysis of data was done using SPSS where tables, percentages and frequencies were presented. The research objectives were put into consideration when making analysis and interpretation of the findings.

Data analysis and interpretation

Data analysis is the process of developing answers to questions through the examination and interpretation of data. The collected data was presented using tables, percentages and frequencies while analysis was done using SPSS (Statistical Package for Social Sciences) and interpretation was done based on Pearson's correlation coefficient. The research objectives were put into consideration when making analysis and interpretation of the findings.

Pearson's correlation coefficient

Pearson correlation coefficient measures the extent to which as one variable increases, the other variable tends to increase, without requiring that increase to be represented by a linear relationship.

If, as one variable increases, the other decreases, the rank correlation coefficient will be negative. The table below shows the intervals of correlation between variables.

Table: Interpretation of Pearson correlation coefficient

Correlation coefficient (positive)	Label: positive
$r=1$	Perfect linear correlation
$0.9 < r < 1$	Positive strong correlation
$0.7 < r < 0.9$	Positive high correlation
$0.5 < r < 0.7$	Positive moderate correlation
$0 < r < 0.5$	Weak correlation
$r=0$	No, relationship

Source: (Agresti, 2009)

V. PRESENTATION AND ANALYSIS OF RESEARCH FINDINGS

1. Contribution of Agricultural Cooperative Societies in the improvement of the Social Status of the members

Table 1: Correlation between Agricultural Societies and Improvement of social status of members

	Independent variable (IV)	Dependent variable (DV)
IV		
Pearson Correlation	1	.952**
Sig. (2-tailed)		.000
N	92	92
DV		
Pearson Correlation	.952**	1
Sig. (2-tailed)	.000	
N	92	92

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

Source: (Primary data, 2019)

In Pearson's correlation coefficient between the performance of members of CODERIKA and improvement of their social status, the population (N) is 92 and the significant level is 0.01, the statistical evidence shows that there is a significant contribution of CODERIKA in the improvement of the social status of members, which is 0.952** (positive strong correlation), the P value is 0.000 which is less than 0.01, when the p-value is less than the significant level, it means that the variables are correlated. Based on the findings, the significant level equals to 0.000 and it is less than 0.05. So the null hypothesis was rejected. Therefore, alternative hypothesis is accepted, meaning that there is a positive strong correlation between CODERIKA and the improvement of social status of members.

From the oral interviews held it was reported that agricultural societies contribute to rural development if the Agricultural Change theory that encourages the farmers to have the mindset change in whatever is done is adapted. If the farmers can analyze the difference between the past and present productions they will be able to find solutions to challenges they get for better production. According to ILO (2013), cooperatives play a crucial role in reducing poverty, improving food security and generating

employment opportunities. In this direction, as the United Nations declared 2012 the International Year of Cooperatives (IYC) it was to raise awareness of cooperatives' important contribution to global socio-economic development and to promote the growth and strengthening of cooperatives all over the world, (ILO, 2013). The findings from the oral interviews revealed further in support of quantitatively generated findings that producer cooperatives offer men and women smallholders market opportunities, and provide them with services such as better training in natural resource management, and better access to information, technologies, innovations and extension services (ILO, 2002). All this is geared towards improving the social status of people in rural areas.

Finally, respondents in the oral interviews reported that they had improved a lot their social status because as they had increased their agricultural production and by increasing the production, their incomes also were increased. This has helped them to reduce their poverty rates and to change the social status because they are able to pay for their health insurance, school fees, water and electricity bills, buying a mobile phone, TV, radio etc.

2. Contribution of Agricultural Societies in the increase of earnings of members

Table 2: Correlation between agricultural cooperative societies (IV) and increase of earnings of members (DV)

		Independent Variable (IV)	Dependent Variable (DV)
IV	Pearson Correlation	1	.979**
	Sig. (2-tailed)		.000
	N	92	92
DV	Pearson Correlation	.979**	1
	Sig. (2-tailed)	.000	
	N	92	92

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

Source: (Primary data, 2019)

In the Pearson's correlation coefficient between the performance of members of CODERIKA and the increase of earnings of members, the population (N) is 92 and the significant level is 0.01, the statistical evidence depicts that there is a significant relationship between CODERIKA and the increase of earnings of these members,, which is 0.979** (positive strong correlation), the P value is 0.000 which is less than

0.01. When the p-value is less than the significant level, it means that the variables are correlated. Based on the findings, the significant level equals to 0.000 and it is less than 0.05. So the null hypothesis was rejected. Therefore, alternative hypothesis is accepted, meaning that there is a positive strong correlation between CODERIKA and the increase of earnings of the members.

In the view of the oral interview respondents, it was

established that since the agricultural sector is at the heart of the economies of many countries worldwide, this sector contributes to the food security, export earnings and it is a source of income and the backbone of rural development. Respondents unanimously agreed that this accounts for a large share of the gross domestic product (GDP) (ranging from 30% to 60%), employs a large proportion of the labour force (from 40% to as much as 90% in most cases) and represents a major source of foreign exchange (from 25% to as much as 95% in three quarters of all countries). Further to this, FAO (2002), the first role of the agricultural cooperative is to help the members to increase the yield, once the yield is increased; the incomes of farmers also increase.

3. Contribution of Agricultural Societies in the increase of rice production

Table 3: Correlation between Agricultural cooperative Societies (IV) and the increase of rice production (DV)

		Independent Variable (IV)	Dependent Variable (DV)
IV	Pearson Correlation	1	.954**
	Sig. (2-tailed)		.000
	N	92	92
DV	Pearson Correlation	.954**	1
	Sig. (2-tailed)	.000	
	N	92	92

** . Correlation is significant at the 0.01 level (2-tailed). Source: (Primary data, 2019)

In the Pearson's correlation coefficient between the performance of members of CODERIKA and the increase of rice production, the population (N) is 92 and the significant level is 0.01, the statistical evidence depicts that there is a significant relationship between CODERIKA and the increase of rice production by members, which is 0.954^{**} (positive strong correlation), the P value is 0.000 which is less than 0.01. When the p-value is less than the significant level, it means that the variables are correlated.

Based on the findings it is visible that the significant level equals to 0.000 and it is less than 0.05. So the null hypothesis was rejected. Therefore, alternative hypothesis is accepted, meaning that there is a positive correlation between CODERIKA and the increase of rice production. Similarly, according to Adkunle (2014), if the theory of Change is applied then the production of rice will be stepped up. According to Adkunle (2014) as the theory describes, the process of social change will take place by making explicit the perception of the current situation; its underlying causes, the long term change desired and the things that need adjustment for the change to happen. The researchers in the same way believe that the theory of change is important because it reveals the thinking that guides the intervention and action as well as the trajectory of change within the system.

Respondents from the oral interviews supported the quantitatively generated findings when they said that agricultural cooperative societies aim to increase member's production. This is so because agricultural cooperatives have played an important role in rural development through the development of agriculture.

They unanimously said that agricultural cooperatives are considered to be the most important organizations that pay attention and try to support the rural development in

general and the agricultural development in special through the activities and services achieved for the sake of farmers (Mohamed, 2004).

Further, respondents in oral interviews revealed that to date cooperatives have played a major role in the agricultural industries in Rwanda because Poverty has reduced considerably from 60.4% in 2000 to 38.1% in 2018 and extreme poverty reduced from 40% to 16.3% over the same period. Over the last decade, significant growth in agricultural productivity has been one of the main drivers of growth and poverty reduction. The sector continues to remain the backbone of the Rwandan economy in terms of employment and income generation for the vast majority of the population (NISR, 2018). The respondents asserted that due to increased rice production, the celebrated high incomes are realised (FAO, 2011).

In support of the quantitatively generated findings, oral interview respondents agreed that rural development in Rwanda is focused on ensuring that poverty is reduced to below 20% by 2020. This will be achieved through a focus on increased productivity of agriculture which engages the vast majority of the population and agricultural cooperatives are engines to achieve these goals (GoR, 2000).

Finally, the oral interview respondents concluded that agricultural cooperatives have the obligation to help the members to use technology, to use improved inputs, to have access to loans and coach them in the good agricultural Practices and this is done in order to help them to increase the agricultural production.

4. Contribution of Agricultural Cooperative Societies in the improvement of investments and saving of members

Table 4: Correlation between CODERIKA (IV) and improvement of investments and saving of member (DV)

		Independent Variable (IV)	Dependent Variable (DV)
IV	Pearson Correlation	1	.976 ^{**}
	Sig. (2-tailed)		.000
	N	92	92
DV	Pearson Correlation	.976 ^{**}	1
	Sig. (2-tailed)	.000	

N

92

92

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

Source: (Primary data, 2019)

In the Pearson's correlation coefficient between the performance of CODERIKA and improvement of investment of members, the population (N) is 92 and the significant level is 0.01, the statistical evidence shows that there is a significant relationship between CODERIKA and improvement of investment of members, which is 0.976^{**} (positive strong correlation), the P value is 0.000 which is less than 0.01. When the p-value is less than the significant level, it means that the variables are correlated.

Based on the findings, the significant level equals to 0.000 and it is less than 0.05. So the null hypothesis was rejected. Therefore, alternative hypothesis is accepted, meaning that there is a positive correlation between CODERIKA and the improvement of investment and savings of members.

Oral interview respondents agreed that since agriculture contributes immensely to the African economy in various ways; namely, in the provision of food; supply of adequate raw materials to a growing industrial sector like one of Rwanda; it is a major source of employment; generation of foreign exchange earnings; and, provision of a market for the products of the industrial sector among others (World Bank, 2011). Further, oral interview respondents agreed that agricultural societies that promote rice growing in Ruhango were doing a lot in the increase of rice production which translated into high sales and finally enabling them to find money to save and to invest in other small scale businesses that provided them aside income.

Finally, oral interview respondents reported that as the Government of Rwanda views cooperatives as a potential vehicle through which the cooperative society members could create employment and expand access to income-generating activities, develop their business potential, including entrepreneurial and managerial capacities through education and training; this enabled an increase in savings and investment (GoR, 2004). They all unanimously agreed that all this has come from increased rice production.

VI. SUMMARY OF RESULTS, CONCLUSION AND RECOMMENDATIONS

The first objective of the research study was to examine

the Contribution of agricultural cooperative societies in the improvement of the social status of members. Findings revealed that the null hypothesis was rejected. Therefore, it means that there is a positive relationship between agricultural cooperative societies and the improvement of the social status of members. It means that agricultural cooperative societies help the members to access the basic needs like the improvement on their existing houses and to construct new houses. It was also established that farmers are able to pay school fees, to purchase new land and for expansion also, animals for rearing, clothing family members, paying for their family members' health insurances, buying electronic communication gadgets (mobile phones, TV, Radio) and to buy transport means like motorcycles and bicycles.

Since the findings revealed that there is a significant contribution of agricultural cooperative societies in the improvement of their social status, it is recommended to agricultural cooperative societies that members should use improved seeds. This will help them to increase the rice production, once the production increases, the income also will be increased, hence the improvement of living standards of the agricultural cooperative societies members.

The second objective of the study was to assess the contribution of the agricultural cooperative societies in increasing the earnings of the members. The null hypothesis was rejected. It means that there is a positive relationship between the agricultural cooperative societies and the increase in earnings of members. It is interpreted to mean that as the rice production increases there is also an increase in the incomes of the members as compared to the situation before and after joining agricultural cooperative societies. Since the findings revealed that there is a significant contribution of agricultural cooperative societies in the increase of earnings of members, it is recommended that agricultural cooperative society's members should use good and up-to-date agricultural Practices. This will help them to increase their rice production, hence the increase of income

The third objective of the research was to determine the contribution of agricultural cooperative societies in the increase of rice production. The null hypothesis was

rejected. Therefore, it means that there is a positive relationship between Contributions of agricultural cooperatives in increasing rice production by the members. This calls on the agricultural cooperative societies to help members to find and use fertilizers, improved seeds, agro-chemicals and coaching in the application of good agricultural practices. This, it was established contributes to the increase of rice production. Since the findings revealed that there is a significant contribution of agricultural cooperative societies in the increase of rice production, it was learnt from the respondents and here recommended that agricultural cooperative society's members buy irrigation equipment, use improved seeds and use good agricultural practices as this will help them to increase their rice production.

The fourth objective of the study was to evaluate the contribution of the agricultural cooperative societies in the improvement of investment and savings of members. The null hypothesis was rejected. It means that there is a positive relationship between the agricultural cooperative societies and the improvement of investments and savings of members. This means that the incomes and savings made from the rice production will help members to create new businesses and to improve on the existing ones. Since the findings revealed that there is a significant contribution of the agricultural cooperative societies in improving the Investment and savings of the members, it is recommended that agricultural cooperative society members should have the saving habit to aid the members in the creation of new small businesses and where the habit is absent trainings be carried out on the subject. This will create a side income for them without depending only on earnings from agriculture.

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