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THE CONTRIBUTION OF FARMERS SELF HELP GROUPS IN ENHANCING THE SMALLHOLDER MAIZE FARMERS INCOME IN SOUTHERN RWANDA

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ABSTRACT: *Farmers' Self Help Groups are inclusive of the poor and are charged with the purpose of becoming a market outlet for smallholder farmers in Rwanda. Improving farmers' income earning capability and agricultural productivity has been an important strategy of Rwanda's agriculture development policy. However, despite their growing importance, empirical studies on how farmers' organizations have impacted their members' income are limited in Rwanda. This study investigates the economic role played by farmers SHGs to their members, the maize production before and after joining the SHG, the income of these smallholder farmers, the saving effects on farm income, and the living standards situation before and after SHGs participation using the sample of 75 smallholder maize producers in Southern Rwanda. The t paired test was used to analyze the situation before and after joining the SHG in terms of Savings, Production and monthly expenses and the Chi Square test was used to test the significance of time of joining the SHG and the opening the bank accounts for savings and accessing to loans. The results revealed that the savings, the production and the monthly expenses increased after joining the farmers SHGs and the time opening of bank accounts for saving, access to loans and other banking activities are significant to time of joining the SHG. Since farmers are resource poor and that farmer Self Help Groups are constrained by various institutional, technical and investment constraints despite their potential, it is recommended that favorable policies should be geared toward smallholder agriculture in Rwanda in order to ensure the success of farmer Self Help Groups. The results show that farmer groups can be an important institution for the transformation of smallholder farming, increase productivity and incomes thereby reducing poverty. Agricultural policies in Rwanda should therefore focus more on the intensification of agriculture and farmers' Self Help Groups and increase the market orientation of the smallholder farm sector.*

KEYWORDS: Farmers, Self Help Group, Smallholder Farmer's Income

INTRODUCTION

Rwanda is a small, landlocked, resource-poor country with a population of more than 10.5 million. The population density has more than doubled since 1978 from 183 inhabitants per square kilometer (km2) to 415 inhabitants /km^2 in 2012. Population density in the country is the highest in Africa. The annual demographic growth rate is 2.6 per cent and the population is expected to increase to about 14.6 million by 2025. From a tragically low starting point in 1994 following the genocide against Tutsi, in two decades Rwanda has achieved impressive economic results. Gross domestic product (GDP) has rebounded with an average annual growth of 7 to 8 per cent in the past ten years while inflation has been reduced to single digits. This successful performance was driven by stable macro-economic and market-oriented policies (IFAD, 2012).

According to MNAGRI (2010), Rwanda is a hilly country where most of the cultivation area is on hillside with an incline of more than 60% slope. Currently, agriculture is growing at 5.8

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per cent per year and employs 80 per cent of Rwandans of the population and contributes 33% of GDP and 70% of export revenues.

Maize is the main food crop, and also doubles as a cash crop. Therefore, it has been a government policy to promote maize production as an effort towards food self-sufficiency (MINAGRI, 2008).

Smallholder agriculture is argued to remain important for economic development and poverty reduction in developing countries, but its development is challenged by the need for institutional innovations to overcome market failures (World Bank, 2008). There is a renewed interest from donors, governments and researchers in cooperative producer organizations as an institutional vehicle to improve smallholder agricultural performance, particularly through improved market participation (Bernard, 2009).

In order to remain competitive, farmers need to engage in a process of ongoing adaptation, ensuring that their use of technologies and practices maximizes both efficiency and profitability, while at the same time ensuring long-term economic, social, and environmental sustainability (Robinson 2003).

The debate on the role of agriculture in development was initiated by the classical theorists, led by Arthur Lewis (1954), who viewed economic development as a growth process of relocating productive factors away from agriculture towards a modern industrial sector (Byerlee, et al., 2009). Beginning in the 1960's, Johnston and Mellor (1961) with their seminal work, argued that agriculture was essential for growth especially in the early stages of industrialization.

Following the Green Revolution in Asia, where the positive impact of agricultural growth on rural development was found to be the strongest in countries with agriculture sectors dominated by smallholder farmers, a renewed emphasis was placed on broad-based agricultural growth and productivity increases in rural economies (Diao, 2010). To date, the agriculture sector continues to be viewed as a vehicle through which economic growth and development can be achieved, particularly for developing economies where the agricultural sector is dominated by largely informal, small-scale producers (Machethe, 2004).

The agriculture sector emerges as a key tool in achieving economic growth and poverty reduction and its potential to meet the increasing demand for food, depends largely on the productivity and market access of small farms.

However, smallholder farmers in Rwanda are predominantly resource-poor and live in a mixture world; their participation in commercialized production is generally limited by various institutional, technical and investment constraints. With the increase lack of agricultural production resources, smallholder farmers try to find the means to simultaneously guarantee household food security and maximize income from agriculture. Thus, in pursuing strategies of survival and in seeking prosperity, small farmers gather resources from wherever available, whether through formal or informal systems. In the midst of these, farmers have resulted in a number of options to enhance their farm production and improve their well-being. One of these options includes pooling their resources and working together as members of SHGs.

The justification arises from their potential in realizing pro-poor economic growth and sustainably empowering small scale farmers. Fischer (2012)) indicates that organization among smallholder farmers has proved to be one of the means for smallholder farmers to overcome

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market imperfections. Strong and vibrant farmers' organizations can provide opportunities to farmers to effectively play a role in the market economy and benefit from it (Millie et al., 2006).

In Rwanda, most of the people lives in the rural areas are below the poverty line and finance to these smallholder farmers is considered as important issues for the Government of Rwanda. The financial requirement is one of the basic needs of the poorer section of the society for socioeconomic development (World Bank, 2009).

To achieve poverty eradication, special focus is needed on strengthening the resilience of rural households and their livelihoods to shocks. Given the predominance of agricultural livelihoods among poor rural households, this agenda will often have a strong agricultural orientation, with a focus on improving sustainability and resilience in agricultural practices; however, the agenda also needs to be relevant to different types of livelihoods that sometimes exist within a single household (MINAGRI, 2011).

Economic benefits mainly income, is the primary motivation for producers to join these farmers' groups; failing to get the desired benefit could threaten their participation in such entities. While aiming at increasing farmers income by providing services at lower costs and better prices for their produce, the expected role of farmer organizations could be challenged by various problems such as poor infrastructures, lack of investment, inadequate service provision, poor extension services, competition with local traders, etc. To our knowledge, not much research has been done on farmers' organizations in Rwanda and empirical studies on their socioeconomic impacts are limited. Therefore, in light of the above mentioned and given the assumed role of farmers' organizations in Rwanda, the present study seeks to contribute to the existing body of literature and research on farmer organizations in Rwanda.

Coleman (1999) in his study on Self help groups showed that SHGs have appeared as popular method of working in the company of people in recent years. This movement comes from the people's desires to meet their needs and determine their own destinies through the principle 'by the people, for the people and of the people'. Self help groups are voluntary gatherings of persons who share needs or problems that are not being addressed by existing organizations, institutions, or other types of groups. The major goal of a self help group is to bring about personal and social economic change for its members and society. All of those groups emphasis face to face interaction among members and stress a set of values or ideology that enhances a member's personal sense of identity.

According to Coleman (1999) in a study considered the impact of group lending programs in North East Thailand, his survey had shown that the impact of village banks that provide group-loans in villages is insignificant on physical assets, savings, productions, and productive expenditures and on other variables. However, it has positive impact on beneficiaries' high interest debt because a number of members had fallen into vicious circle of debt from moneylenders in order to repay their loans on village banks. It has positive significant impact on poors lending out with interest because some members engaged in arbitrage, borrowing from village bank at low interest and then lending out money at mark up.

Land in Rwanda is the most valuable, productive and contested asset. Proper management of land is therefore a must. However, most of the laws governing land administration and management in the country had been formulated by the colonialist and have remained the same till 90's. Several reforms and policies are under implementation in Rwanda, among these, the Land Use Consolidation policy is a key for agricultural transformation. The overarching

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strategies of economic development and poverty reduction in Rwanda that envisions social transformation through agriculture require shifting from such subsistence farming to commercial oriented agriculture (IFAD, 2012). The described SHG is an informal organization of persons from the homogeneous poor section of the society and it is controlled and managed by the members itself. It is an association of 15 to 20 local individual members who have neighboring plots and from the same socio-economic backgrounds. These groups start with farming, saving and not with credit; the group then uses its savings to give loans to members to meet their emergency and other needs (MINAGRI, 2010).

Statement of Problem

The government of Rwanda believes that land fragmentation is a major threat to efficient crop production in the country due to the fact that continuous subdivision of farms has led to small sized land holdings that may be hard to economically operate (MINAGRI, 2010).

Over 80% of the population live in rural areas and subsist on smallholder farming (NISR, 2013).Empirical studies suggest that most under developed and developing countries are still facing the problem of high poverty levels. In addition to poverty, Rwanda's population growth rate is at 2.751%, very high; yet agricultural resources are limited, e.g. arable land. This calls for improving yields of major staples, such as maize for better food security & livelihoods of rural households.

Concerns about land fragmentation in Rwanda, the fact that the cultivators' land is distributed among many parcels or fragments, often of very small size, as a constraint to agricultural productivity have long been prominent in the policy debate, especially in land-scarce environments(Ayalew,2011). The smallholder farmers are facing the problems like poverty, land fragmentation, shortage of land, subsistence agriculture practices, non use of adequate fertilizers and improved seeds, lack of market information, marketing and price analysis, low access to credits and loans, low knowledge on saving and entrepreneurship, low knowledge on risk mitigation, low productivity, poor mindset, poor planning and resistance to change and family conflicts (MINAGRI, 2010).The lack of Agriculture information has been attributed to inability of smallholder farmers to transition from subsistence to commercial agriculture (IFAD, 2012). Smallholder farmers in Rwanda are facing challenges of limited access to markets, inputs and credit as well as constrained property rights and relatively high transaction costs (MINAGRI, 2009).

In Rwanda, maize is the most important cereal crop, so the Rwandan government adopted different agricultural program and policies aimed at raising productivity and efficiency of agricultural sector. These programs and policies placed the smallholder farmers in central focus. This was due to the fact that the nation's agriculture has always been dominated by the smallholder farmers. In view of this production efficiency of smallholder farms has important implication for the development strategies adopted in many developing countries where the primary sector is still dominant.

The acquisition of agricultural resources becomes different and the supply of market services also becomes limited for smallholder farmers. Lack of assets, information and access to services hinders smallholder participation in potentially lucrative markets. High transaction cost is also one of the major factors constraining growth of smallholder farmers and this is largely attributed to poor infrastructure and skills (Aaron, 2012).

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The present study is launched to understand, support innovative and economic role of SHGs, using a bottom-up approach building upon existing Smallholder farmers groups. The groups not only provide credit but also insurance through risk pooling services (Adams and Graham, 1984). As we will show, the groups can play an important role in agricultural production in Rwanda. Formal financial systems should be encouraged to collaborate with smallholder farmers through their informal groups, to increase sustainable productivity.

In view of the fact that the SHG is a new in Rwandan Agriculture, the purpose of this study is to assess its contribution on Rwandan Agricultural productivity in smallholder farmers. In the process of assessing the impact of SHG, seeking answer to the research questions "Has participation in the SHG enhance the Agricultural Productivity of smallholder farmers; and thereby contribute to the national poverty alleviation.

Objectives of the Study

The general objective of this study is to analyze the contribution of farmers Self Help Groups in enhancing the smallholder maize farmer's income.

Specific objectives of the Study

i. To highlight the economic role of Self Help Groups in smallholder maize crop production.

ii. To study the relationship between Savings and production among smallholder maize producers members of SHGs.

iii. To compare the maize production before and after the SHGs participation.

iv. To compare the living standards of Self Help Groups families before and after the SHGs.

Hypothesis

H_o: There is significant contribution of farmers SHGs in enhancing the smallholder maize farmer's income.

H_1: There is no significant contribution of farmers SHGs in enhancing the smallholder maize farmer's income.

RESEARCH METHODOLOGY

Research Design

Research can be defined as a scientific and systematic search for pertinent information on specific topic. In order to have a holistic view about this topic, the study employed two different methods to extract the required information which are the quantitative and the qualitative. The quantitative and the qualitative methods represent different research strategies, and they are clearly separated in their views of the role of the theory and which scientific approach to use (Bryman, 2004). Even so, they can of course be combined, for example doing qualitative interviews for specific views on a subject, and combining this with a broader, more general statistically quantifiable survey.

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A cross-sectional research design were used and combined with descriptive research design and Correlation studies to establish the relationship between the independent variable (Farmers SHGs Activities) and the dependent variable (increase of income of smallholder maize farmers).

Target population

The population is the total number of elements covered by the research questions. It also covers all the events, things or individuals that are objects of the investigation. However, the populations from which the primary data were collected comprise 336 smallholder maize farmers (130 males and 206 females) SHGs members.

Sampling size and technique

By the time this study was conducted, there was a total of 21 SHGs at Cyili site of RSSP with 336 smallholder maize farmers (130 males and 206 females).

For determining the sample size we have used the formula of Dr. Alain Bouchard saying that for the population under 1,000,000 individuals, the sample can be 96 with assumed error of 10% and 90% of precision. This can be elaborated in the following figures:

N: Population size equals 336 smallholder maize farmers grouped in 21 SHGs in Cyili site.

No: Sample size when the population size goes towards infinite is 96

Nc: Corrected sample size

Nc= $\frac{(N * No)}{(N + No)} = \frac{(336*96)}{(336+96)} = \frac{(32256)}{(432)}$ = 75. Thus, the sample size is 75 beneficiaries

75 respondents among 336 were randomly selected and studied. To collect quantitative and qualitative data, semi-structured questionnaires were administered to Seventy Five (75) randomly selected SHG members.

Sampling techniques

The objectives stated earlier were examined through an exploratory study of the functioning of selected SHGs in LWH/RSSP Projects. The project is purposively chosen considering that Huye is among of the districts in the country where the problems of low agricultural productivity, Living standards and economic issues that affect the well-being of the poor community, particularly those of the smallholder farmers, are believed to be rampant. Moreover, as the project under the study is believed to be one of the first in Rwanda, it is hoped that this study promoted the concept of Farmers SHGs in Rwanda.

Data Collection Instruments

In order to collect their written reflections on the contribution of SHGs in enhancing the smallholder maize farmer's income, a semi-structured questionnaire was developed and distributed to the respondents. Broadly the questionnaire covers various aspects such as extent of Assets acquisition, savings, level of income generation, living standards, expenses, trainings, SHGs membership, households farming and agricultural productivity (inputs and outputs analysis) and Bank services.

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Data collection procedure

The methods used to collect the data included the use of semi-structured questionnaire. To further ascertain data collected through primary data collection methods, various SHG documents were analyzed and pertinent data regarding group meeting attendance, individual savings and loan, and the general performance of the SHGs were gathered. All categories of primary data collection have been conducted in Kinyarwanda after translating the questions from English to Kinyarwanda. Then again the kinyarwanda version responses were translated into English for analysis.

Data Processing and analysis

The primary step in analyzing quantitative data was checking the questionnaire for consistency and errors. Accordingly, data that contained incomplete information were excluded. As earlier on mentioned qualitative and quantitative data collection methods were used to get people's views on the topic under study. As a result the concepts, themes and theories or explanations that emerge from the interviews were coded and patterns identified upon which a decision is made on which areas need detailed examination. The quantitative data collected in this way were tabulated according to their frequency and percentage and then analyzed accordingly. The cumulative combination of all these methods is believed to be helpful to understand and do a clear analysis of the farmers SHGs in enhancing the smallholder maize farmer's income.

The information collected were tabulated, coded, edited and analyzed by using the statistical techniques live averages, percentages, standard deviations, standard errors, t sampled test, correlation and regression.

The primary data were collected from smallholder maize farmers will be entered in Statistical Package for Social Science (SPSS) to be analyzed. Also, the quantitative data which are in various formats were converted into formats that facilitate the analysis like Excel sheets. Data collected from respondents were analyzed using descriptive statistics (percentages and frequencies). The means and standard deviations were used to analyze the difference of farmers on before and post SHGs.

Paired sample test were used to explore the significant difference between the Production, savings and the expenses on basic needs of SHG members before and after joining the SHG.

The Chi Square test was carried out to assess the significant association between the time of joining the SHG and the opening the bank account for saving and getting loans.

RESULTS AND INTERPRETATION

Personal data of the respondents

The personal data of the respondents, concern the location, the age, the sex, the marital status, educational level and the number of household members of the smallholder farmers members of the SHGs who were involved in the research.

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Table 1: Location of respondents

Cell name (Akagari)	Frequency	Percent
Byinza	10	13.3
Gafumba	44	58.7
Kimuna	21	28.0
Total	75	100.0

Source: Primary data 2015

This table shows the distribution of 75 respondents in 3 cells, where 13.3% are from Byinza, 58.7% are from Gafumba and 28% are from Kimuna. All these cells are in Rusatira sector, Huye District, Southern Rwanda.

Table 2: Age of respondents

Age	Frequency	Percent
Less than 20 years	1	1.3
Between 20 and 35	22	29.3
Between 35 and 50	26	34.7
Between 50 and 65	19	25.3
Greater or equal 65 years	7	9.3
Total	75	100.0

Source: Primary data 2015

This table gives the age categories of the respondents where a big number of the respondents (34.7%) are found between 35 and 50 years and only 1 respondent has less than 20 years old. This shows that 65% of these farmers are in their middle age (i.e. relatively active).

This portrays that most of the smallholder maize farmers members of SHGs are in their active and productive age when they can put in their best for optimum productivity.

Table 3: Sex of respondents

Sex of Respondent	Frequency	Percent
Male	32	42.7
Female	43	57.3
Total	75	100.0

Source: Primary data 2015

This table shows that 42.7% of the respondents are male while 57.3% are female. this shows that participation is farmers SHGs is for all with the majority of women.

Table 4: Education level of respondents

Education level	Frequency	Percent
Illiterate	16	21.3
Primary	52	69.3
Secondary	7	9.3
Total	75	100.0

Source: Primary data 2015

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This table shows that the majority of smallholder maize farmer's members of SHG (69.3%) have primary level of education, while 9.3% have attended the secondary and 21.3% are illiterate. This implies that the education level of the farmers was very low. Education of the farmer plays an important role in decision making and accessing crucial production information. It helps farmers in gaining skills and adapts new technologies.

Table 5: Marital Status of respondents

Marital Status	Frequency	Percent
Single	10	13.3
Married	63	84.0
Widow	2	2.7
Total	75	100.0

Source: Primary data 2015

This table gives the marital status of the respondents where 13% are single, 84% are married and 2.7% are widows. The fact that a big part of these farmers are married showed that they really know the life situation, what they want, and the increase of production and income is very meaningful to them for their living standards improvement.

Table 6: Number of Children under 16

Number of Children	Frequency	Percent
None	24	32.0
1-2 children	38	50.7
3-5 Children	13	17.3
Total	75	100.0

Source: Primary data 2015

This table is showing the presence of children under 16 (unproductive people) where 32% of households don't have any child who is under 16, 50.7% have between 1 to 2 children and 17.3% have 3 to 5 children.

Table 7: Number of family members per household

Number of family members	Frequency	Percent
2 members	6	8.0
3-5 members	45	60.0
More than 5 members	24	32.0
Total	75	100.0

Source: Primary data 2015

This table shows that 8% of households have 2 members, 60% have 3 to 5 members and 32% are composed of more than 5 members.

6.2. Farmers Self Help Group and their economic role in smallholder maize producer's development

The farmers SHGs economic role is very significant as the farmers during their meetings they save (some of them do the saving on weekly, fortnightly and monthly basis), they do the internal lending, the SHGs connect their members to Microfinances (SACCO) and get loans

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through the opened bank accounts, and mobilize farmers to sell a part of the produce and through different trainings the farmers mindset is changed and their income increases.

Table 8: Cross tabulation between Date of joining SHG and Opening Bank Account

Cross tabulation between Date of joining SHG and Opening Bank Account			Opening Bank Account		Total
			Yes	No	
Date of joining SHG	2012	Frequency	60	3	63
		% within Opening Bank Account	84.5	75.0	84.0
	2013	Frequency	10	0	10
		% within Opening Bank Account	14.1	0.0	13.3
	2014	Frequency	1	1	2
		% within Opening Bank Account	1.4	25.0	2.7
Total		Frequency	71	4	75
		% within Opening Bank Account	100.0	100.0	100.0

Source: Primary data 2015

Table 9: Chi-Square Tests

Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.507[a]	2	.014
Likelihood Ratio	4.338	2	.114
Linear-by-Linear Association	1.995	1	.158
N of Valid Cases	75		

Source: Primary data 2015

There is enough evidence of to reject Ho meaning that there is a relationship between Date of joining Self Help Group and opening the Bank Account. The Date of joining Self Help Group influences farmers to have his or her own bank account and through this bank account farmers can save and have access to bank loan. The Pearson coefficient is 0.014 which is less than level of significance of 0.05.

Table 10: Reasons for joining the SHG

Reasons for joining SHG	Frequency	Percent
To save	2	2.7
To increase the income from the Agriculture production	1	1.3
To save, To increase the agriculture knowledge	5	6.7
To save, To increase the income from the Agriculture production	27	36.0
To Save, To get a loan	2	2.7
To increase the income from the Agriculture production, To get a loan	2	2.7
To save, To increase the agriculture knowledge, To increase the income from the Agriculture production	12	16.0

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To save, To increase the agriculture knowledge, To get a loan	1	1.3
To save, To increase the agriculture knowledge, To increase the income from the Agriculture production, To get a loan	6	8.0
To save, To increase the income from the Agriculture production, To get a loan	15	20.0
To increase the agriculture knowledge, To increase the income from the Agriculture production, To get a loan	2	2.7
Total	75	100.0

Source: Primary data 2015

The table shows that the major reason for joining the Farmers SHGs is to save, to increase the income from the Agriculture production, to get a loan and to increase the agriculture knowledge and most of the smallholder farmers have joined the SHG for saving and increase the income from the agriculture production (36%). This is most important, for increasing the income and the agriculture production

Table 11: New skills after joining the SHG

Training	Frequency	Percent
Yes	56	74.7
No	19	25.3
Total	75	100.0

Source: Primary data 2015

This table shows that 74.7 % of the farmers SHGs have been trained since they joined the SHGs. So, this can imply that being a member of SHG give chances of being trained and the capacity building is done to people who are working together.

Table 12: Trainings received by SHGs members

The training received titles	Frequency	Valid Percent
Income generating activities	1	1.8
Use of improved seeds, fertilizers and pest management	25	44.6
Marketing	1	1.8
Other (Business Plan, Extension)	1	1.8
Social Mobilization, Income generating activities	1	1.8
Social Mobilization, Use of improved seeds, fertilizers and pest management	1	1.8
Social Mobilization, Marketing	1	1.8
Income generating activities, Use of improved seeds, fertilizers, pest management	9	16.1
Income generating activities, marketing	3	5.4
Income generating activities, Use of improved seeds, fertilizers and pest management, marketing	5	8.9
Social Mobilization, Income generating activities, Use of improved seeds, fertilizers and pest management, marketing	1	1.8
Use of improved seeds, fertilizers and pest management, Marketing	5	8.9

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Social Mobilization, Use of improved seeds, fertilizers and pest management, Marketing	1	1.8
Social Mobilization, Income generating activities, Use of improved seeds, fertilizers and pest management, Marketing	1	1.8
Total	56	100.0

Source: Primary data 2015

This table shows the list of all trainings delivered to SHGs members and 44.6% said that they have been trained on the Use of improved seeds, fertilizers and pest management, which showed the great role of SHG in capacity building of smallholder farmers, for increasing the production, hence the increase of the income. All kind of trainings given to these smallholder farmers were oriented to the improvement of Agribusiness.

Table 13: Saving in SHG

Saving frequency in SHG	Frequency	Percent
Fortnightly	10	13.3
Weekly	65	86.7
Total	75	100.0

Source: Primary data 2015

This table shows that the farmers SHGs save once a week (86.7%) and once in two weeks (13.3%). This is very important in helping smallholder maize farmers in increasing their savings and having a good culture of saving.

Table 14: Loans taken from SHG

Loans	Frequency	Percent
Yes	58	77.3
No	17	22.7
Total	75	100.0

Source: Primary data 2015

According to this table, 77.3% of the respondents have got loans from the SHG. This can help a farmer doing his daily activities and get solutions to some issues which can arise day to day.

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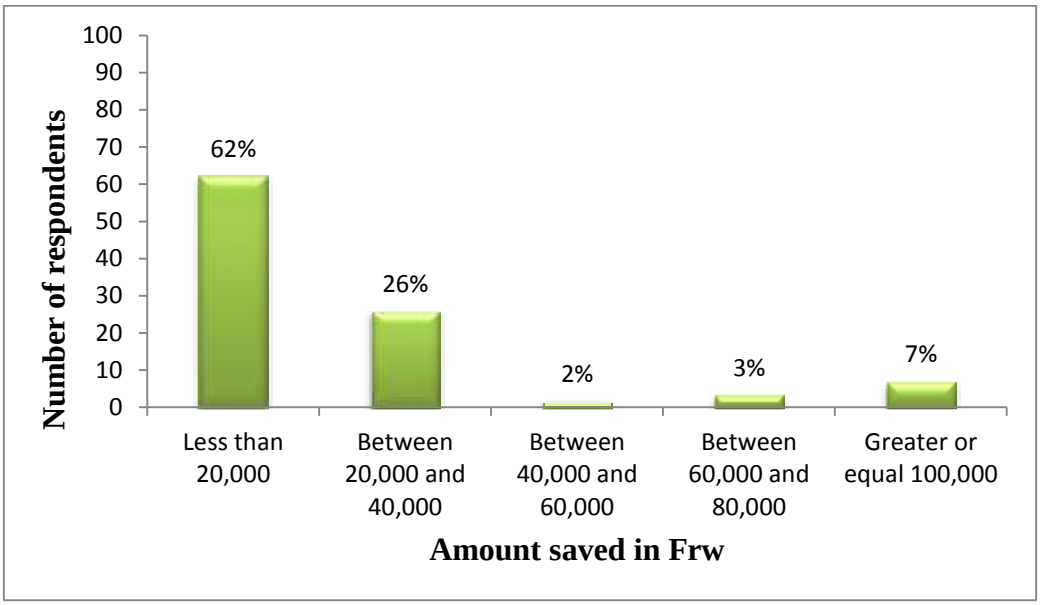

Figure 1: Amount saved by the smallholder farmers

Source: Primary data 2015

According to the Figure, the savings amount varies and the farmers who saved less than 20,000 Frw are 62% and there are the ones who have saved more than 100,000 Frw.

Agriculture production, Profitability and the role played by the SHG

In Agriculture the increase of production and profitability by all means is a necessity. The farmers SHGs can play a greater role in increasing the production, the productivity and the profitability and this can be of a great importance in Rwandan Agriculture.

Table 15: Production before joining the SHG (Season A2011) and after joining the SHG (Season A2015)

Production quantity per class Interval (Kg)	Production quantity (Kg) before joining SHG		Production quantity (Kg) after joining SHG	
	Frequency	Percent	Frequency	Percent
Less than 100	49	65.3	9	12.0
Between 100 and 200	18	24.0	4	5.3
Between 200 and 300	3	4.0	15	20.0
Between 300 and 400	1	1.3	12	16.0
Between 400 and 500	1	1.3	11	14.7
Between 500 and 600	0	0.0	4	5.3
Between 600 and 700	0	0.0	3	4.0
Between 700 and 800	0	0.0	3	4.0
Between 800 and 900	1	1.3	3	4.0
Between 900 and 1000	1	1.3	3	4.0
Greater or equal 1000	1	1.3	8	10.7
Total	75	100.0	75	100.0

Source: Primary data 2015

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This table shows that the production increased after joining the SHG when comparing to before joining the SHG. For example 65.3% of the respondents before joining the SHG have had the production which is less than 100 Kg and only 1 respondent have got more than 1 ton. After joining the SHG only 12% have got less than 100 Kg and 8 respondents have got more than 1 ton.

Table 16: PAIRED-SAMPLES T TEST: Maize Production

Paired Samples Statistics						
	Mean	N	Std. Deviation		Std. Error Mean	
Production quantity (Kg) after joining the SHG	691.88	75	1245.176		143.781	
Production quantity (Kg) before joining the SHG	165.65	75	369.226		42.635	
Paired Samples Test						
	Paired Differences			t	df	Sig. (2-tailed)
	Mean	Std. Dev	Std. Error Mean			
Production quantity (Kg) after joining the SHG and Production quantity (Kg) before joining the SHG	526.227	905.811	104.594	5.031	74	.000

Source: Primary data 2015

Paired t test compares means across the same variable and the same cases at two different times.

The objective of the study was to compare the variability of production before and after the Small farmers join SHG. The data was collected on the production quantity of 75 small farmers before and after joining SHG. The null hypothesis is that the production was not changed (or that the production of 75 small farmers remained unchanged after joining SHG). There is a difference for the mean production quantity before and after joining Self Help Group because the p-value is less than significance level of 5 percent (0.00<0.05). The production quantity before joining Self Help Group is less than the production quantity after joining Self Help Group (165.65< 691.88).

The sample standard deviation for production quantity before is 369.226 kg and for production quantity after joining Self Help Group is 1245.176 kg. Much of this variability is due to the increase of fertilizers and improved seeds, knowledge gained from different training and so on, and the paired t test design dramatically reduces the standard deviation to 905.811kg, meaning the paired t test has significantly more power for knowing the variability of production quantity.

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Table 17: Agriculture patterns after joining the SHG in comparison to before SHG

Items	Values	Frequency	Percent
1. Compost making and Use	Increased	73	97.3
	Don't know	2	2.7
	Total	75	100.0
2. The Use of inorganic Fertilizers	Increased	73	97.3
	Don't know	2	2.7
	Total	75	100.0
3. The Quantity of Fertilizers Used	Increased	73	97.3
	Don't know	2	2.7
	Total	75	100.0
4. The Use of selected and improved seeds	Increased	73	97.3
	Don't know	2	2.7
	Total	75	100.0
5. Working with Agro dealers	Increased	72	96.0
	Don't know	3	4.0
	Total	75	100.0

Source: Primary data 2015

This table shows that Compost making and use; the use of inorganic fertilizers; the quantity of fertilizers used; the use of selected and improved seeds and Working with Agro dealers increased. More than 96% of the respondents accepted that.

Table 18: Agriculture information

Source of Agriculture information	Frequency	Percent
From SHG meeting	49	65.3
From Radio	2	2.7
Other (Agro dealers, District staffs, RAB)	2	2.7
From SHG meeting, From Radio	16	21.3
From SHG meeting, Other (RSSP Extensionists, Tubura)	6	8.0
Total	75	100.0

Source: Primary data 2015

This table tells that a big number of the smallholder maize producers got the agriculture information from the SHG (65.3% of the respondents) and others from Radio. This emphasize on the role of SHGs in promoting the access to agriculture information to the farmers.

Table 19: Variability of Price (Frw/Kg)

Price (Frw/Kg)	Frequency	Valid Percent
145	1	1.4
150	22	30.1
160	19	26.0
168	10	13.7
170	19	26.0
175	1	1.4
200	1	1.4
Total	73	100.0

Source: Primary data 2015

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This table shows that, there is different in prices which famers sell their production. The price varies from 145 Frw to 200Frw per Kg. This is due to different buyers and the time they sell the produce, and also the time of harvesting.

Table 20: Potential buyers of the maize production

Maize Buyers	Frequency	Valid Percent
Farmers Cooperatives	31	42.5
Local Market	35	47.9
Farmers Cooperatives, Local Market	5	6.8
Farmers Cooperatives, Agro dealers, Local Market	2	2.7
Total	73	100.0

Source: Primary data 2015

This table shows us that, the buyers of maize production are Farmers Cooperatives (42.5) and Local markets (47.9) and Agro dealers.

Table 21: Farmers who sold the production

	Frequency	Percent
Yes	73	97.3
No	2	2.7
Total	75	100.0

Source: Primary data 2015

This table tells us that the farmers who sold their production are 97.3, which means that these farmers are doing agriculture oriented to market and are leaving behind the subsistence agriculture.

Table 22: Profit or loss of small farmers

Profit/Loss	Frequency	Valid Percent
Less 10,000	12	16.4
Between 10,000 and 20,000	14	19.2
Between 20,000 and 30,000	12	16.4
Between 30,000 and 40,000	12	16.4
Between 40,000 and 50,000	6	8.2
Between 50,000 and 60,000	4	5.5
Between 60,000 and 70,000	2	2.7
Between 80,000 and 90,000	1	1.4
Between 90,000 and 100,000	3	4.1
Greater or equal 100,000	7	9.6
Total	73	100.0

Source: Primary data 2015

This table shows that on Season A 2015, the farmers have got profit from their maize production where 16.4% of farmers got less than 10,000 Frw and 9.6% of them have got greater or equal to 100,000 Frw as profit. This table shows also that the profitability is small comparing to all the activities done, and this may due to low price and this price which is keep changing day after day.

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Table 23: Mean and Standard deviation of the production, cost and revenue of the Season A2015

Variables	N	Mean	Std. Deviation
Maize Production (kg) per one Are	72	22.29	8.714
Production cost per one kg (Frw)	71	91.13	25.197
Income from one kg of maize (Frw)	71	161.75	10.497

Source: Primary data 2015

The average production per hectare is 2223 kg. The average cost per kilogram shown that 91.13 Frw was used to produce 1kg maize while the average revenue per kilogram shows that 161.75 Frw was generated as revenue from selling 1kg of the maize produced.

Return on Rwandan francs invested by the smallholder maize farmer's shows that for every one Rwandan franc invested, 0.56 was gained. This means that 56% profit was made per season. From this result, one can conclude that maize farmers in the study area were poorly rewarded for their efforts.

Table24: Multivariate Linear Regression Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.961[a]	.924	.919	358.225

a. Predictors: (Constant), Seeds, Fertilizers, Maize production area, Labor

The information that needs to take from this table is R-Square (0.924). The R-Square is the proportion of variation in the dependent variable that is explained by the four independent variables (Area, Seeds, Fertilizers, and Labor). This R-Square is expressed that 92.4 percent of the variation in overall satisfaction can be explained by these four independent variables in the model.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	105962718.956	4	26490679.739	206.434	.000[b]
	Residual	8726125.784	68	128325.379		
	Total	114688844.740	72			

a. Dependent Variable: Production

b. Predictors: (Constant), Seeds, Fertilizers, Maize production area, Labor

Multivariate linear regression is used when you have more than one independent variable and one dependent variable. There is an association between independent variables (Seeds, Fertilizers, Maize production area, Labor) and production of smallholder farmers after joining the Self Help Groups because the probability with F Statistic is less than 5% of significance level (0.00<0.05).

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Coefficients[a] of Multivariate regression model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	91.113	93.559		.974	.334
Maize production area (Ares)	13.446	1.660	.586	8.102	.000
Labor (Man days)	4.195	2.295	.644	5.390	.000
Fertilizers (Kg)	11.418	4.783	.083	2.387	.020
Seeds (Kg)	47.193	7.012	.969	6.730	.000

a. Dependent Variable: Production

Source: Primary data 2015

This multivariate regression model illustrates that the probability associated with T Statistic of each independent variable is less than 5% significance level; we can assert independent variable has an impact on the outcome. The coefficients of our model show that there is positive influence of Area, Seeds, Labor and Fertilizers on the production of small farmers joined Self Help Group.

The Relationship between Savings and Production and their role in enhancing the farmers income

Smallholder maize farmer's savings can play a big role in farm production increase by helping the farmers to get improved seeds, fertilizers and other necessary inputs without any problems, and may help these farmers to get the necessary needs for the day to day life and hence the income, the production and the living standards are improved through the saving which is important in economic development of each and everyone.

Table 25: Owing the bank account

Bank Account	Frequency	Percent
Yes	71	94.7
No	4	5.3
Total	75	100.0

Source: Primary data 2015

This table shows that 94.7% of the smallholder maize farmer's members of SHG have bank accounts. This is very important to farmers who are doing market oriented agriculture.

Table 26: Time of opening the bank account

Year of opening bank account	Frequency	Valid Percent
2007	4	5.6
2008	1	1.4
2009	2	2.8
2010	2	2.8
2011	1	1.4
2012	26	36.6
2013	25	35.2
2014	10	14.1
Total	71	100.0

Source: Primary data 2015

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This table shows that a big number of smallholder farmers members of SHGs have opened the bank account after joining the SHG. 85.9 % of the respondents have opened the bank Account since 2012.

Table 27: Financial institution working with SHG members

Bank	Frequency	Valid Percent
SACCO	64	90.1
BPR	3	4.2
SACCO, BK	3	4.2
SACCO, BPR	1	1.4
Total	71	100.0

Source: Primary data 2015

This table shows that 90.1% of the farmers SHG members have their accounts in SACCO.

This shows that farmers prefer working with SACCO as they got loans for inputs easily than other banks.

Table 28: Purpose of saving

The purpose of saving	Frequency	Percent
Saving for input Acquisition	48	64.0
For loan Acquisition	1	1.3
Saving for inputs Acquisition, Security for Money	16	21.3
Saving for inputs Acquisition, For loan Acquisition	4	5.3
Saving for inputs Acquisition, Security for Money, For loan Acquisition	4	5.3
For loan Acquisition, Other (Education of children)	1	1.3
Saving for inputs Acquisition, For loan Acquisition, Other (Education for the children)	1	1.3
Total	75	100.0

Source: Primary data 2015

According to this table, the main purpose for saving is saving for Inputs Acquisition (64% of the respondents, and other objectives of saving are loan acquisition, security of money and saving for education of children.

Table 29: Savings before joining the SHGs and after joining the SHGs (Frw)

Amount of Saving per class Interval (Frw)	Saving (Frw) before joining SHG		Saving (Frw) after joining SHG	
	Frequency	Percent	Frequency	Percent
No saving	48	64.0	0	0.0
Less 10,000	10	13.3	14	18.7
Between 10,000 and 20,000	4	5.3	25	33.3
Between 20,000 and 30,000	6	8.0	10	13.3
Between 30,000 and 40,000	1	1.3	6	8.0
Between 40,000 and 50,000	4	5.3	2	2.7
Between 50,000 and 60,000	0	0.0	3	4.0

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Between 60,000 and 70,000	0	0.0	3	4.0
Between 70,000 and 80,000	0	0.0	3	4.0
Between 80,000 and 90,000	1	1.3	0	0.0
Between 90,000 and 100,000	1	1.3	3	4.0
Greater or equal 100,000	0	0.0	6	8.0
Total	75	100.0	75	100.0

Source: Primary data 2015

This table shows that the savings increased after joining the SHGs in comparison to before joining the SHG. For example 64% of the respondents said that they have not saved before joining the SHG and no one has saved more than 100,000 Frw. After joining the farmers SHGs, everyone is saving and 6 people saved more than 100,000 Frw.

Table 30: PAIRED-SAMPLES T TEST: Savings

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
Saving after joining SHG	46972.00	75	74034.996	8548.825
Saving before joining SHG	9540.00	75	19521.776	2254.181

Paired Samples Test						
	Paired Differences			t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean			
Saving after joining and saving before joining SHG	37432.000	65523.019	7565.947	4.947	74	.000

Source: Primary data 2015

Paired t test compares means across the same variable and the same cases at two different times.

The objective of the study was to compare the variability of saving before and after the Small farmers join SHG. The data was collected on saving of 75 different small farmers before and after joining SHG. The null hypothesis is that the saving was not changed (or that the saving of 75 different small farmers remained unchanged after joining SHG). There is a difference for the mean amount of saving before and after joining Self Help Group because the p-value is less than significance level of 5 percent (0.00<0.05). The saving before joining Self Help Group is less than saving after joining Self Help Group (9540<46972).

The sample standard deviation for saving before is 19521.776 Frw and for Saving quantity after joining Self Help Group is 74034.996 Frw. Much of this variability is due to different knowledge gained from training and increase of income from production and so on, and the paired t test design dramatically reduces the standard deviation to 65523.019 Frw, meaning the paired t test has significantly more power for knowing the variability of saving.

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Table 31: Pearson Correlations between respondent Savings and maize production

Correlations		Production	Saving after joining SHG
Production	Pearson Correlation	1	.570**
	Sig. (2-tailed)		.000
	N	75	75
Saving after joining SHG	Pearson Correlation	.570**	1
	Sig. (2-tailed)	.000	
	N	75	75

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

Source: Primary data 2015

There is enough evidence of to reject Ho meaning that there is a relationship between the two variables. The maize production influences the saving of small farmers. (The correlation coefficient is 57% which means there is a moderate correlation between maize production and saving of smallholder maize farmers members of SHGs. The family saving has increased after joining of Self-Help Group. This result is very obvious as the Self-Help Groups promote the saving habit among the group members

Living standards and expenditures of Smallholder maize farmer's members of SHG

The living standards depend mainly on income got by the household members. The expenses on food, education, and health insurance, clothing and household furniture can determine the income as the expenses increase with the income got. The smallholder maize farmers living standards can change depending on the increase and decrease of the production and the general income got.

Table 32: Family expenditures after joining the SHG in comparison to before joining the SHG

Items	**Values**	**Frequency**	**Percent**
1. Food	Increased	74	98.7
	Same	1	1.3
	Total	75	100.0
2. Clothing	Increased	71	94.7
	Same	4	5.3
	Total	75	100.0
3. Education	Increased	66	88.0
	Same	3	4.0
	Don't know	6	8.0
	Total	75	100.0
4. Household Furniture	Increased	71	94.7
	Same	3	4.0
	Don't know	1	1.3
	Total	75	100.0
5. Health Insurance (Mutuelle de santé)	Increased	73	97.3
	Same	2	2.7
	Total	75	100.0

Source: Primary data 2015

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The expenditures on food, clothing, education, household furniture and health insurance have increased (more that 88% of the respondents) which means that their income increased. The expenses on education increased according to 88% of the respondents and 98.7% of the respondent said that their expenditure on food increased and the expenses on clothing, household furniture and health insurance increased considerably.

Table 33: Monthly expenditures before joining the SHG (2011) AND after joining the SHG (2015)

Monthly expenditures (Frw)	Monthly expenditures in (Frw) before joining the SHG		Monthly expenditures in (Frw) before joining the SHG	
	Frequency	Percent	Frequency	Percent
Less 10,000	18	24.0	0	0.0
Between 10,000 and 20,000	32	42.7	7	9.3
Between 20,000 and 30,000	17	22.7	12	16.0
Between 30,000 and 40,000	5	6.7	11	14.7
Between 40,000 and 50,000	1	1.3	26	34.7
Between 50,000 and 60,000	1	1.3	9	12.0
Between 60,000 and 70,000	1	1.3	3	4.0
Between 70,000 and 80,000	0	0.0	4	5.3
Between 80,000 and 90,000	0	0.0	2	2.7
Between 90,000 and 100,000	0	0.0	0	0.0
Greater or equal 100,000	0	0.0	1	1.3
Total	75	100.0	75	100.0

Source: Primary data 2015

This table shows that there is an increase in monthly expenditures after joining the SHG when comparing to before they join the SHG.

For example, 24% of the smallholder maize farmers were used to spend less than 10,000 Frw per month and no one spent 100,000 Frw before they join the SHG. After joining the SHG, no one is spending less than 10,000Frw, they are spending above and they have people saving greater than 100,000 Frw.

Monthly expenditures on food, house and clothes of the respondents were analyzed to ascertain whether there is any significant improvement in the income and expenditure of the family after joining the farmers Self Help Groups. For this, a comparison was made between the monthly expenses before and after joining the SHGs. Paired t-test showed that there is a significant difference in the monthly expenses of the family before and after joining the SHGs i.e., monthly income of the family of respondents were significantly high after joining the farmers. Similar results are also observed by Vasantha Kumari (2012) in her study.

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Table 34: PAIRED-SAMPLES T TEST: MONTHLY EXPENDITURES

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
Monthly expenditures after joining the SHG	44986.67	75	20404.354	2356.092
Monthly expenditures before joining the SHG	18833.33	75	11269.827	1301.328

Paired Samples Test						
	Paired Differences			t	df	Sig. (2-tailed)
	Mean	Std. Dev	Std. Error			
Monthly expenditures after joining the SHG – and monthly expenditures before joining the SHG	26153.333	16476.021	1902.487	13.747	74	.000

Source: Primary data 2015

Paired t test compares means across the same variable and the same cases at two different times.

The objective of the study was to compare the variability of monthly expenditures before and after the Small farmers join SHG. The data was collected on monthly expenditures of 75 different small farmers before and after joining SHG. The null hypothesis is that the monthly expenditures were not changed (or that the monthly expenditures of 75 different small farmers remained unchanged after joining SHG). There is a difference for the mean monthly expenditures before and after joining Self Help Group because the p-value is less than significance level of 5 percent (0.00<0.05).

The monthly expenditures before joining Self Help Group are less than the monthly expenditures after joining Self Help Group (18833.33<44986.67).

The sample standard deviation for monthly expenditure before joining the SHG is 11269.827 Frw and for monthly expenditure after joining Self Help Group is 20404.354 Frw. Much of this variability is due to the increase of income, and the paired t test design dramatically reduces the standard deviation to 16476.021 Frw, meaning the paired t test has significantly more power for knowing the variability of production quantity.

The paired sample t test shows some interesting results. At constant prices there has been a significant change in average monthly family income, consumption expenditure (at 5 per cent level of significance), monthly expenditure, production and savings. The average monthly income at constant prices has shown a significant increase. This is quite obvious. The nominal income of the group members has increased after joining of SHGs and that has increased their real income also.

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CONCLUSION AND KEY FINDINGS

The main objective of the study was to analyze the contribution of farmers Self Help Groups in enhancing the smallholder maize farmer's income in Southern Rwanda. The present research report was guided by the following specific objectives: to highlight the economic role of Self Help Groups in smallholder maize crop production, to study the relationship between Savings and production among smallholder maize producers members of SHGs, to compare the maize production before and after the SHGs participation and to compare the living standards of Self Help Groups families before and after the SHGs.

On Farmers Self Help Group and their economic role in smallholder maize producer's development, the key findings from the field survey revealed that after joining Self Help Group, the farmers open the bank account and through this bank account farmers can save and have access to bank loan. The Pearson coefficient is 0.014 which is less than level of significance of 0.05 (Chi-Square). The major reason for joining the Farmers SHGs is to save, to increase the income from the Agriculture production, to get a loan and to increase the agriculture knowledge and most of the smallholder farmers have joined the SHG for saving and increase the income from the agriculture production (36%). This is most important, for increasing the income and the agriculture production, 74.7 % of the farmers SHGs have been trained since they joined the SHGs. So, this can imply that being a member of SHG give chances of being trained and the capacity building is done to people who are working together and 77.3% of the respondents have got loans from the SHG. This can help a farmer doing his daily activities and get solutions to some issues which can arise day to day.

On Agriculture production, Profitability and the role played by the SHG, the findings reveal that the production increased after joining the SHG when comparing to before joining the SHG. For example 65.3% of the respondents before joining the SHG have had the production which is less than 100 Kg and only 1 respondent have got more than 1 ton. After joining the SHG only 12% have got less than 100 Kg and 8 respondents have got more than 1 ton. The Paired t test revealed that there is a difference for the mean production quantity before and after joining Self Help Group because the p-value is less than significance level of 5 percent ($0.00<0.05$). The production quantity before joining Self Help Group is less than the production quantity after joining Self Help Group ($165.65< 691.88$).

The sample standard deviation for production quantity before is 369.226 kg and for production quantity after joining Self Help Group is 1245.176 kg. Much of this variability is due to the increase of fertilizers and improved seeds, knowledge gained from different training and so on, and the paired t test design dramatically reduces the standard deviation to 905.811kg, meaning the paired t test has significantly more power for knowing the variability of production quantity.

After joining the SHG, the findings show that the buyers of maize production are Farmers Cooperatives (42.5) and Local markets (47.9), that the farmers who sold their production are 97.3, which means that these farmers are doing agriculture oriented to market and are leaving behind the subsistence agriculture and there is also different in prices which famers sell their production. The price varies from 145 Frw to 200Frw per Kg. This is due to different buyers and the time they sell the produce, and also the time of harvesting.

The average production per hectare is 2223 kg. The average cost per kilogram shown that 91.13 Frw was used to produce 1kg maize while the average revenue per kilogram shows that 161.75 Frw was generated as revenue from selling 1kg of the maize produced.

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Return on Rwandan francs invested by the smallholder maize farmer's shows that for every one Rwandan franc invested, 0.56 was gained. This means that 56% profit was made per season. From this result, one can conclude that maize farmers in the study area were poorly rewarded for their efforts.

There is an association between independent variables (Seeds, Fertilizers, Maize production area, Labor) and production of smallholder farmers after joining the Self Help Groups because the probability with F Statistic is less than 5% of significance level (0.00<0.05). The coefficients of our model show that there is positive influence of Area, Seeds, Labor and Fertilizers on the production of small farmers joined Self Help Group.

On the Relationship between Savings and Production and their role in enhancing the farmer's income, the findings shows that 94.7% of the smallholder maize farmer's members of SHG have bank accounts, a big number of smallholder farmer's members of SHGs have opened the bank account after joining the SHG. 85.9 % of the respondents have opened the bank Account since 2012 date of joining SHG, 90.1% of the farmers SHG members have their accounts in SACCO, the main purpose for saving is saving for Inputs Acquisition (64% of the respondents, and other objectives of saving are loan acquisition, security of money and saving for education of children.

This shows that farmers prefer working with SACCO as they got loans for inputs easily than other banks. This is very important to farmers who are doing market oriented agriculture.

The findings show that the savings increased after joining the SHGs in comparison to before joining the SHG. For example 64% of the respondents said that they have not saved before joining the SHG and no one has saved more than 100,000 Frw. After joining the farmers SHGs, everyone is saving and 6 people saved more than 100,000 Frw.

The paired t test reveals that There is a difference for the mean amount of saving before and after joining Self Help Group because the p-value is less than significance level of 5 percent (0.00<0.05). The saving before joining Self Help Group is less than saving after joining Self Help Group (9540<46972). The sample standard deviation for saving before is 19521.776 Frw and for saving quantity after joining Self Help Group is 74034.996 Frw. Much of this variability is due to different knowledge gained from training and increase of income from production and so on, and the paired t test design dramatically reduces the standard deviation to 65523.019 Frw, meaning the paired t test has significantly more power for knowing the variability of saving. The family saving has increased after joining of Self-Help Group. This result is very obvious as the Self-Help Groups promote the saving habit among the group members. The findings reveal that the maize production influences the saving of small farmers. The correlation coefficient is 57% which means there is a moderate correlation between maize production and saving of smallholder maize farmers members of SHGs. The family saving has increased after joining of Self-Help Group. This result is very obvious as the Self-Help Groups promote the saving habit among the group members.

On Living standards and expenditures of Smallholder maize farmer's members of SHG, the expenditures on food, clothing, education, household furniture and health insurance have increased (more that 88% of the respondents) which means that their income increased. The expenses on education increased according to 88% of the respondents and 98.7% of the respondent said that their expenditure on food increased and the expenses on clothing, household furniture and health insurance increased considerably. 24% of the smallholder maize

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farmers were used to spend less than 10,000 Frw per month and no one spent 100,000 Frw before they join the SHG. After joining the SHG, no one is spending less than 10,000Frw, they are spending above and they have people saving greater than 100,000 Frw.

The Paired t test show that there is a difference for the mean monthly expenditures before and after joining Self Help Group because the p-value is less than significance level of 5 percent (0.00<0.05).

The monthly expenditures before joining Self Help Group are less than the monthly expenditures after joining Self Help Group (18833.33<44986.67).

The sample standard deviation for monthly expenditure before joining the SHG is 11269.827 Frw and for monthly expenditure after joining Self Help Group is 20404.354 Frw. Much of this variability is due to the increase of income, and the paired t test design dramatically reduces the standard deviation to 16476.021 Frw, meaning the paired t test has significantly more power for knowing the variability of production quantity. The paired sample t test shows some interesting results. At constant prices there has been a significant change in average monthly family income, consumption expenditure (at 5 per cent level of significance), monthly expenditure, production and savings. The average monthly income at constant prices has shown a significant increase. This is quite obvious. The nominal income of the group members has increased after joining of SHGs and that has increased their real income also.

In conclusion, farmers Self Help Groups in the study area have contributed in enhancing the income among the farmers members of SHGs through the increase of production and the economic activities played by these SHGs like savings and working with SACCO for getting loans and all this for input acquisition and the capacity building of the farmers members of SHGs has played a big role in development of these smallholder maize producers. This study agrees that the smallholder farming sector can contribute the development goals set out by the government of Rwanda

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