UNIVERSITY of RWANDA

COLLEGE OF BUSINESS AND ECONOMICS

MICRO-CREDIT SCHEMES AND AGRICULTURAL COOPERATIVE'S PERFORMANCE IN RWANDA, A CASE OF AGRICULTURAL COOPERATIVES IN NYANZA DISTRICT.

BY

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DECLARATION

I, Jeannine UMUGWANEZA hereby declare that this thesis titled ***"Micro-Credit Schemes and Agricultural Cooperative's Performance in Rwanda, a case of Agricultural Cooperatives in Nyanza District"***is my original work and it has not been submitted for any university. All the references,I have used or quoted have been indicated and acknowledged by complete sources.

Student's Name: Jeannine UMUGWANEZA

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APPROVAL SHEET

This thesis entitled***"Micro-Credit Schemes and Agricultural Cooperative's Performance in Rwanda, a case of Agricultural Cooperatives in Nyanza District"***has been written and submitted by Jeannine UMUGWANEZA in partial fulfilment of the requirements for the degree of Master of Finance, is hereby accepted and approved.

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The thesis is accepted in partial fulfilment of the requirements for the degree of Master of Business Administration.

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Member of the Jury Member of the Jury

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Date

DEDICATION

To my family members including parents, brothers and sisters;

I dedicated this book to all professors met in this academic journey,

My thesis supervisor; and my friends and colleagues from all academic levels.

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My special gratitude thanks goes to my almighty God for His huge love, direction, safety and benedictionto me whereas doing this study.The appreciation also goes to all team of University of Rwanda particularly all lecturers from all academic levels for this journey.

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Jeannine UMUGWANEZA

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LIST OF ABBREVIATIONS/ ACRONYMS

BAAC	: Bank of Agriculture and Agricultural Co-operatives
CGFs	: Committee on the Global Financial System
FAO	: Food and Agriculture Organization
MFIs	: Micro-Finance Institutions
MINECOFIN	: Ministry of Finance and Economic Planning
NISR	: National Institute of Statistics of Rwanda
RFIs	: Rural Financial Institutions
RLFs	: Rwanda Labor Force Survey
SACCOs	: Savings and Credit Cooperative Societies
SI	: Shareholder Investment
SPSS	: Statistical Package for Social Sciences
UR	: University of Rwanda
USA	: United States of America

ABSTRACT

The study was about micro-credit schemes and agricultural cooperative performance in Rwanda, a case study of agricultural cooperatives in Nyanza district. Based on FinScope survey (2016), about 86% of Rwandan adults are from households that are involved directly or indirectly in agricultural activities. Overall farmers are financially included with inclusion ranges varying between 86% and 91%. The specific objectives to be achieved during this study were to analyse the effectiveness of Micro-credit schemes received by Agricultural cooperatives in Nyanza District, to find out determinants of financial performance for farming cooperatives in Nyanza District, since 2012 to 2019; and to determine relationship between Micro-credit schemes and financial performance of farming cooperatives in Nyanza District. Methodology based on quantitative approachstudy population comprises 51 agricultural cooperatives in Nyanza District. Data collection instruments were questionnaire, and documentation, while Data Analysis Methods were Descriptive statistic method, Econometric model, and correlation matrix to show relationship between variables. Findings shows that there is a positive and low correlation between revolving credit facility in micro-credit schemes and profitability ratios (ROA, ROE, GPM, &NPM) of Agricultural cooperatives (r= **.282***, p<0.05). The results also revealed that there is also positive and strong correlation between instalment credit and profitability ratios represented by return on asset, return on equity, gross margin profit, and net profit margin (r= **.534****, p<0.01). Findings revealed that there is a positive and moderate correlation between revolving credit facility in micro-credit schemes and liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives (r= **.348***, p<0.05). The results also show that there is positive and strong correlation between instalment credit and liquidity ratios for Agricultural cooperatives represented by quick ratio, and current ratio (r= **.598******,** p<0.01). There is also positive and very strong correlation between open credit in micro-credit schemes and liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives (r= **.694******,** p<0.01).Results from analysis of correlation matrix confirmed that there is a positive and moderate correlation between instalment credit in micro-credit schemes and solvability ratios of Agricultural cooperatives represented by Debt-to-Assets, & Debt-to-Equity (r= **.579****, p<0.01). Findings also show that there is positive and low correlation between open credit in micro-credit schemes and solvability ratios (Debt-to-Assets, & Debt-to-Equity) of Agricultural cooperatives (r= **.286*****,** p<0.05). Findings revealed that there is a positive and moderate correlation between revolving credit facility in micro-credit schemes and Activity ratios (account receivables, inventory, &payables) in Agricultural cooperatives (r= **.343***, p<0.05). The results also show that there is positive and strong correlation between instalment credit and Activity ratios (account receivables, inventory, &payables) in Agricultural cooperatives (r= **.450******,** p<0.01). There is also positive and strong correlation between open credit in micro-credit schemes and Activity ratios (account receivables, inventory, &payables) in Agricultural cooperatives (r= **.519******,** p<0.01).Findings on the relationship between micro-credit schemes and agricultural cooperatives performanceindicated that the F-test= 46.509 which is positive and significant at 0.0% shows that we cannot accept $H_0$5 which states that Micro-credit schemes has no significant effect on financial performance of Agri-cooperatives in Nyanza District. As conclusion, based on the findings, we conclude that there is positive and significant effect on Micro-credit schemes on Activity performed in Agri-cooperatives in Nyanza District. Agri-cooperative societies should initiate and implement financial policies to allow them to manage the costs of finance effectively. It is furthermore recommended that Agri-cooperative societies should fully involve all the members in the affairs of the organization.

Key Words:*Micro-Credit Schemes, performance, agricultural cooperative*

CHAPTER ONE
INTRODUCTION

1.0 Introduction

The chapter displaysthe contextual to the study, declaration of the problem, objectives of the study, the research questions, and thesignificance of the study, scope of the study and organization of the study.

1.1. Background of study

Agriculture has continued the key portion that can push the development of the third world economies as they are still lagging behind industrially. In the process of advancing this programme, most of the economies have resorted to some mechanisms which would enhance the promotion of their objectives and the attainment of their ultimate goals. Some of these remain the formation of farmers' cooperatives and credit schemes to facilitate financial access for smallholder farmers. Hence, in recent decades the procedure of credit plan has altered farming and country networks in various parts of the World(FAO, 2005).

Farming is careful as a significant income earner and therefore as a measure of poverty reduction in developing countries. In order to achieve this, there is also a need to have a strong credit base with proper policies and regulations which would ensure that farmers have full access to and they are also facilitated in terms of credit acquisition and utilisation to ensure minimum defaults. This therefore would needa proper training and education for maximum knowledge and appreciation of the credit facilities and not to have misuse of the same. Agricultural credit showsasignificant role in farming development. Farmingdomestic models recommend that farm credit is not only prerequisite by the restrictions of self-finance(De Janvry and Sadoulet, 1995).

Agricultural financing is one of the most significantimpacts to grow rural areas in developing nations. Payment of bank credit remains a way of financing. In fact, facilitation of access to credit can surge amount of creative investment. Credit has a vital role for removal of farmer`s financial constraints to capitalise in farm actions, cumulative productivity and refining technologies. Credit convenienceis important for improvement of quality and quantity of farm products so, that it can rise farmer`s income and avoid from rural migration(Kohansal, 2008).

Once credit is limited, some debtors cannot become the amount of credit they want at the prevailing interest rate, nor can they safe more credit by offering to pay a higher interest rate. In such circumstances, liquidness can produce a compulsoryrestriction on many farmers` operations. Fronting such a situation, households take to select how to invest and what inputs to buy, depending on the level of credit they receive. Admittance to credit for farmers is joined with some difficulties (Ghorbani, 2005).

Kohansal*et al.,* (2008) saw that the number of credit instalments by farmer remainedimportant at 5% level but other variables like credit volume were not significant.A lot has been printed on the success and failures of rural cooperatives. Obasi, (2013) bargains that dairy ranchers in India remain progressively actual and have advancedassistances to the people complicated in rancher's activities because of credit given.

For many countries and Rwanda specifically, agribusiness remains the foundation of the economy. In 2016/2017 financial year, agribusiness contributed 31 percentage of the national GDP, created 60 percentage of the outside trade, gave 75 percentage of crude materials provided to businesses and gave around 45 percentage of all Government incomes, followed by industry at 17.6% and services at 51.5% (NISR, 2018).As of now, the horticulture segment represents a sum of 3,342,779 ranchers, among which 1,248,017 (37.3%) are involved with market driven agribusiness while 2,094,762 (62.7%) do cultivating for family operation or subsistence. Along these lines, with the new ILO sense of business, agribusiness utilizes 41.8% of the absolute work in Rwanda (NISR,2017).

In 2018/2019 agricultural year, the physical crop cultivated land in Rwanda was 1.1million hectares which was a 79.9% of total agricultural land (NISR, 2020). Government of Rwanda tried to increase the capacity of credit firms to cutneed through agribusiness advancement; and there is plentiful proof to demonstrate that the advantages of the credit disbursements exceed the disadvantages and therefore the government set up savings and Credit Cooperative Societies (SACCOs) through the country to inspire farming cooperatives to approach Saving and Credit Scheme (MINECOFIN, 2012).

In Rwanda, GoR (2012:14) stated that there continueddissimilarprocedures of joint assistance that lived until now which help Rwandans to finding their own responses to their difficulties. These are like work collections where the membershipssupport each other in rotation

(Umubyizi), jointly carry out farming (Ubudehe), building and public action (Umuganda, Ubudehe), revolving savings and credit relatives where members make steadyaids to a rotating credit fund (Ibimina).Rwandan culture and government comfort the old-style philosophy of mutual support in the creativities which remain economically anxious with.

Davis (1995:5) accounts that government of Rwanda has explained the rule of sanctioning cooperatives observed as charitable, autonomous, independent association of persons, whose purpose is to inspire members to grow in community and to act collectively both for the intrinsic value of being part of a living public and to overcome their difficulties of economic dependency through putting their efforts together.Kamaani (2000:1) reveals cooperatives as one of the ways in which the wellbeing of people can be improved. Therefore, in the rural areas where agriculture is still the main basis of income, farmers joint cooperatives so as to raise their ordinary of living and in so doing they form the SACCOs which rise the efforts of the microfinance institutions in providing them with the much-needed finances to improve their efficiency and thus effectiveness.

In as much as a lot has been written about the role of Agri-credit in enhancing and increasing the economies of the third world economies, not much has been done in Rwanda given its history since colonial times where there have been unending civil conflicts. After the 1994, the government of Rwanda came up with many programs to boost the agricultural sector including the upcoming of so many farmers' cooperatives; savings & credit cooperatives societies. These are feast all over the country. The enquiry then remains as to whether these cooperatives have any significant positive effect on the farmers who have come together to form the farmers cooperatives. There is therefore a need for the researcher to find out the extent to which saving and credit Schemes are contributing to financial performance of the farmers' cooperatives in Rwanda by look at some specific cooperatives in Nyanza district.

1.2 Problem Statement

According to Bazaar (2020) Micro-Credit System or MCS is a business scheme existingfrom micro financial institutions (MFIs). The schemes remain primarily available for micro enterprise activities such as farming activities, artisan activities, and so on. These schemes contribute low-income individuals to engage themselves in income-generating activities for a maintainableliving. Micro credit schemes are providing to self-help groups as well in order to

allow them to set up projects and earn incomes. Micro-credit schemesdisplayasignificant role particularly in farming development especially Agri-cooperatives in emergingnations.

One element of an effective strategy for poverty reduction is to promote the productive use of farm inputs. This iscompleted by creating opportunities for raising agricultural productivity among small and marginalized farmers. Microcredit is mainly relevant to increasing yield of rural economy, especially agricultural productivity in such an environment where economic growth is occurring, microcredit also has the capacity to transmit the benefits of growth more rapidly and more equitably through the informal sector(Nosiru*et al.* 2010).There was still scarcity of studies on area of Rwanda on related topic (Micro-credit schemes and agricultural cooperatives performance) because all studies mentioned lacked something where none of them has been addressed in Rwanda.

Despite utilityof microcredits to agricultural cooperativesin enhancing yields and performance, it is well recognized that for many small-scale farmers still lacked the access to financial services as critical constraint followed by problems with collateralization of the loans where the farmers need to have collaterals or security for the loans which most of them lack; high interest rate for credit; lack of clear property rights and incomplete land reforms; increased transaction costs for monitoring and screening loans; indebtedness of the producers.All these challenges resulting the depressed farm income that led them to fail on reaching satisfactory performance (NISR, 2020).

According to information above, the study intended to investigate on what is effectiveness of Micro-credit schemes received by agricultural cooperatives in Nyanza District; and how does Micro-credit schemes influence the financial performance of farming cooperatives in Nyanza District. It is therefore this study investigated the effect of micro-credit schemes on financial performance of farming cooperatives in Nyanza District.

1.3 Research Objectives

Objectives of the study was into two categories including general objective and specific objectives.

1.3.1 General Objective

Due to financial constraints and time availability, the study aims at finding out the effect of micro credit schemes on farming cooperativesperformance in Rwanda, Nyanza District.

1.3.2 Specific Objectives

The specific objectives to be achieved during this study were:

1) To analyse the effectiveness of Micro-credit schemes received by Agricultural cooperatives in Nyanza District,
2) To find out determinants of financial performance for farming cooperatives in Nyanza District, since 2012 to 2019.
3) To determine relationship between Micro-credit schemes and financial performance of farming cooperatives in Nyanza District

1.4 Research Questions

1) What iseffectiveness of Micro-credit schemes received by agricultural cooperatives in Nyanza District?
2) What are determinants offinancial performance for farming cooperatives in Nyanza District?
3) What is the relationship between Micro-credit schemes and financial performance of farming cooperatives in Nyanza District?

1.5 Research Hypotheses

The study verified the following five null hypotheses:

i. **Ho1:** Micro-credit schemes do not affect positively profitability ratios (ROA, ROE, GPM, &NPM) of Agricultural cooperatives.
ii. **$H_0$2:** There is no positive effect of Micro-credit schemes onliquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives.
iii. **$H_0$3:** Micro-credit schemes have no significant effect on Solvability ratios (Debt-to-Assets, & Debt-to-Equity) of Agricultural cooperatives.
iv. **$H_0$4:** Micro-credit schemes have no significant effect on Activity ratios (account receivables, inventory, &payables of Agricultural cooperatives.
v. **$H_0$5:** Micro-credit schemes has no significant effect on of Agricultural cooperatives performance**.**

1.6 Significance of the study

The study has different interests as follows.

1.6.1 Government Agencies

ThestudymaybeofsignificancetogovernmentagenciessuchastheRwandaCooperativeAgency (RCA)through highlighting he extents to which the micro-financing can have on the performance of the agricultural sector and therefore could help in the policy formulation by the government.

1.6.2 Researchers and Academicians

The study may also be of benefit to researchers and academicians through contributing towards sealing the gap that is in existence with regard to this topic in Rwanda as an emerging market as well as to highlight issues of interest that essential further redress by future researchers. By virtue that micro-financing has been greatly embraced globally, and locally, this study may contribute greatly to the current literature and may be very valuable to the academic fraternity and form a basis for further research.

1.7 The Scope of the Study

In thisstudy, theresearcherevaluatedtheeffects of micro-credit schemes on agricultural cooperative performanceinRwanda with a specific emphasis on the agricultural cooperatives within Nyanza District over a period of 10 years.

1.8Organization Structure of Thesis

This thesis wasdivided in five chapters. First chapter was introduction that presents the background of the study, statement of problem, objectives of the study, research questions, significance of the study, scope of the study,brief explanation of thesis structure.Second chapter dealt the literature review that identifies the theoretical review, conceptual review, empirical review, and conceptual framework.Third chapter was methodology which showsresearch design, study population, samplingprocedures and sample size, data collection instruments, methods of data analysis, limitation of the study, and ethical considerations.Chapter fourwasanalysis and interpretation of results. Fifth chapter is the summary of the findings, conclusion, and recommendations.

CHAPTER TWO

LITERATURE REVIEW

The chapter looks at what has already been published by some accredited scholars and researchers who wrote on related study. It identifies the theoretical review, conceptual review, empirical review and conceptual frame work.

2.1. Microfinance and Credits Schemes

Microfinance delivers the financial service,counting loans, savings, and insurance, available to poor businesspersons and small business owners take no collateral and wouldn't otherwise qualify for a standard bank loan (Chandra, 2008). Micro-credit systemsapt to micro-finance is a continuance of small loans to entrepreneurs to qualify for old-style bank loans. Microcredit leases poor people for self-employment schemes that produce income, letting them to advance the quality of life for themselves and their families (Khan&Rahaman, 2007).

2.1.1Structures of Microfinance

Microfinance transports access to monetary and non-financial facilities for low-income individuals who want to developan access to money to start or develop their income-generating activities. Individual loans and savings to poor customers are minor. Microfinance has shaped financial products and services, which together permit people with low incomes to remain a customer of the bank (Khan&Rahman, 2007). The features of microfinance producesinclude:

- The loan delivers for short-term (for one year).
- Small quantities of loans and savings.
- Frequent payment lists or frequent deposits.
- Instalments ample up from both principal and interest,
- Advanced interest rates on credit
- Easy admittance to the microfinance services which protects the time and money of the client and offers better ideas to the clients for their financial and social status.
- Application procedures are humble.
- Short processing periods (between the completion of the application and the disbursement of the loan).
- The clients who payment on time develop eligible for next time high amount of loans
- Without collateral loaning to the poor (Khan&Rahaman, 2007).

2.1.2 Effectiveness of Micro-Credit Schemes

According to Singla (2014) Micro credit systemscreate with great profits that support low-income individuals to be financially safe and independent. The three main actualcategories of credit schemes which remain revolving credit, instilment, and open credit.

2.1.2.1 Revolving Credit Facility

A revolving credit facility remains a line of credit that is definite between a bank and a business. It creates with arecognised maximum amount, and the business can contact the funds at any time when desirable. The other designations for a revolving credit facility are functioning line, bank line, or, modestlya revolve.

2.1.2.2 Instalment

Instalment loans are substitute type of credit that comprisesanimmovable payment schedule for a specified period. An example of an instilment loan would be a car loan you are obligatory to pay a set amount of money at a recurring interval (ex. $280 per month) until the loan is remunerated off in full. Other examples comprise mortgages, student loans, and term loans.

2.1.2.3 Open Credit

Open credit remains a type of credit that desires full payment for each period, such as per month. You can borrow up to anextreme amount, comparable to a credit card limit, but you are obligatory to pay the funds borrowed in full at the end of each period. An example of this would be a cell phone bill you can type phone calls, send text messages, and practice data each month, and at the end of the month, you are compulsory to pay for the services you used (including any additional usage fees) (Mamoon, 2017).

The theories above are helpful in the current study because they facilitated the researcher to identify the effectiveness of micro-credit schemes received by agricultural cooperatives in Nyanza District; the features of micro credit schemes and how they have influenced the financial performance of farming cooperatives in Nyanza District.

According to Khan&Rahaman, (2007) some of the structures of micro credit systemsstay:

- They endure very affordable.
- These systemsreduced small amounts of money.
- They are naturally not reigned by the steady banks.
- These can be occupied by payees without providing any collateral or guarantee.

- The repayment eras for micro credit schemes remainobvious after measuring the nature and period of the self-employment activity. With the help of micro credit, even people belonging to the carefully underprivilegedunits of the society can surprise to gain and sustain economic self-sufficiency. Efficiency ofmicro-credit schemes endure in the three main kinds of credit schemes are therevolving credit which originates with documented maximum amount, and instalment, and open credits(Khan, &Rahaman, 2007).

During this study, efficiency of micro-credit schemes was referred to analyse how effectiveness of Micro-credit schemes established by Agricultural cooperatives in Nyanza District and defining how they inclined their financial performance of farming cooperatives in Nyanza District.

2.1.3Advantages and challenges of Micro-credits schemes

According to Kevin, (2015) advantages of microcredits to agricultural cooperatives continue to:

a) Buying of new inputs such as seeds, fertilizers etc.
b) Acquisition of implements such as tractors, threshers, harvesters, water pumping sets etc.
c) Better management of risk by allowing farmers to better manage risks of uncertainties of price, weather etc. as they can borrow money during raining days and pay back during peak years of the crops.
d) Permanent improvement in land, for example, sinking of wells, land reclamation, horticulture, crop rotation etc.
e) Better marketing of crops, if timely credit is available farmers not sell their produce immediately after the harvest is over as prices were low but is able to withhold the agricultural surplus and sell in the market when prices are high.
f) Facing crisis, the credit is required by the farmers to face crisis which could be caused by failure of crop, drought or floods.

Meatco Namibia (2018) speech marks some of the compensations of agricultural cooperatives:

a) Ease of formation: these could be formed easily by people with a common goal coming together and register a cooperative.
b) Allowagriculturalists to recover product and service quality and decrease risks.
c) Associates are authorisedcarefully and communally by being involved in decision making procedures.

d) Collectivesgenerate social relations which allow individual members achieve goals that they would otherwise not have attained on their own e.g., help plantershelp from economies of scale by dropping costs of acquiring inputs.
e) There remainscommunal action.
f) There is augmented member's production and incomes by serving better link them with finance, inputs, information and markets for output products.

There are also different shortcomings or challenges faced by agricultural cooperatives, according to Chester M. (2017) stretches the demerits of agricultural cooperatives.

a) Inadequate capital: agricultural cooperatives absence the essential capital for investment. As the cooperative produces in size, it would need extra capital for expansion and which might not be readily available as commercial banks might not be willing to advance them credit.
b) Famers' aversion to new methods, in the economies with high illiteracy levels, farmers may resist new methods of doing things to ensure increased productivity e.g., planting in lines and within predetermined spacing. This eventually affects the overall production.
c) Reluctance to repay loans on time, some of the farmers do not see the need of paying their facilities on time to the banks thus creating a situation where the banks are not willing to extend loans to them in the future.
d) Corruption of leaders: some managers of the cooperative societies take advantage of their positions to swindle out money from the society. Sometimes also members become too selfish and would not allow others to have their fair share of the proceeds thus leading to the collapse of the cooperative.
e) Sentimental attachment to their lands: in some of the developing economies where land is still possessed at a family level, there is the problem of too much sentimental attachment to the land in such that, the farmers remain not willing to release the land to the co-operative society for better organisation.

   Envy and jealousy: Sometimes some members of the co-operative society may become envious of the other successful members who may be adhering to new methods taught.

2.1.4 Financial Services offered in General and for smallholder farmers in particular

According to Singla (2014) there remainsa wide diversity of rural credit programmes sponsored or implemented by various development agencies. They slap in the modalities of operation and

institutional aspects. They live in both saving mobilization as well as loaning operations, and could replenish their resources by copying from other banks, refinance from central bank and grants from administration and givers. They are expected to follow more active and liberal lending policies than commercial banks such as loaning without stringent collateral, and for this resolve, to support earlierrelatives with potential clienteles and receive innovative methods to reach the poor and to ensure loan recoveries.

The fund is providing by an outside agency or a particular project which also lays down the criteria of lending and other operational modalities. The deal costs of lending are encountered from the interest charged on loans and any loan defaults remain a charge on the capital of the fund. A guarantee fund excess to safe a bank or any other lending organisation inillogicality of the default risks complicated in loaning to borrowers who cannot organise sufficient collateral. Their stress remains largely to recuperatesources and channel credit to counted target groups(Singla, 2014).

2.2. Financial Performance of Agricultural Cooperatives

According to Shamsuddin*et al.,* (2018) financial ratios have been used in assessing the performance and financial condition of a stable as they offer an indication of the government's profitability, liquidity, solvency, and efficiency. Hassan *et al.,* (2005) showed a study of how cooperatives work in the state of Kedah in Malaysia and their performance assessment was founded on liquidity, leverage and profitability ratios.

Shamsuddin*et al.* (2018) archives that most of the cooperatives' performance in the U.S and Europe is measured in terms of profitability, productivity, liquidity, leverage and asset efficiency ratios. The liquidity ratios designate the ability of a professional to meet its short-term obligations, so the higher the liquidity ratio the better. The leverage ratios designate the ability of the business to meet its short and long-term debts. A high ratio therefore income a high debt which surges the risk of bankruptcy. Asset utilization ratios could also be calculated to show the ability of the cooperative to use its assets such as receivables, inventory to generate sales (Ling, 2006).

Liquidity ratios degree the ability to fulfil short-term commitments with liquid assets. Such ratios are of particular interest to the cooperative's short-term creditors. These ratios

measureassets that can be reformed to cash quickly to fund growing short-term obligations. The current ratio and the quick ratio remain the two most commonly used activities of liquidity.

Current ratio shells balance-sheet financial performance amount of company liquidity. The current ratio designates a company's ability to meet short-term debt obligations. The current ratio measures whether or not a firm has enough resources to pay its debts over the next 12 months. The current ratio is calculated by dividing current assets by current liabilities: The current ratio = current assets / current liabilities.

Leverage ratios measure the extent of the firm's total debt burden. They copy the cooperative's ability to meet both short- and long-term debt obligations. There are several different leverage ratios that may be considered by market analysts, investors, or lenders. Some accounts that are considered to have significant comparability to debt are total assets, total equity, operating expenses, and incomes. Below are five of the most commonly used leverage ratios:

- Debt-to-Assets Ratio = Total Debt / Total Assets
- Debt-to-Equity Ratio = Total Debt / Total Equity
- Debt-to-Capital Ratio = Today Debt / (Total Debt + Total Equity).

Activity ratios: working capital is also revealedas operating capital, and it remains the excess of present assets over current liabilities. Attaining a helpful working capital remains essential; however, working capital should not stay too big in order to not draw up capital that can be used away. There persist three main mechanisms of working capital which are receivables: the accounts receivable turnover processes how capably a businessremains able to achieve its credit sales and change its account receivables into cash.

Profitability ratios: continuethe diversedimensionimpacts of profit evolution used by exploratory a business's performance such as gross profit margin (GPM), return on assets (ROA), and return on equity (ROE) (Elliot, *et al.*, 2005).

Net profit margin (NPM)

It calculates the percentage of alltransactions dollar remain after deducting interest, dividend, taxes, expenses and costs. In other words, it computes the percentage of profit a business is making against its sale. Higher value of return on transactiondisplays the better routine.

NPM= (Earnings/ Net sales) *100 (Elliot, *et al.* , 2005).

Gross Profit Margin

Gross margin deliberatesabout the profit of goods and services. It expresses how much it costs to yield the product. It is calculated by dividing gross profit (GP) by net sales (NS) and multiplying the quotient by 100: Gross Profit Margin = Gross Profit/Net Sales x 100 or GPM = GP/NS x 100 (Birrell, 2014).

Return on Assets

Return on Asset is intended by separating net income (NI) for the current year by the value of all the company's assets (A) and increasing the measure by 100. The return on assets (ROA) displays the percentage of how profitable a company's assets are in generating revenue (Bryman, 2008).

Return on Assets = Net income/assets x 100 or ROA = NI/TA x 100 or ROA =Net income / Average of total asset

Return on Equity

Return on equity trials how much a businesscreates for each dollar that stakeholdersplaced into it. You compute it by enchanting the net income made (NI) by the amount of money capitalised by stockholders (SI) and increasing the proportion by 100: return on equity = Net income/stockholderasset x 100 or ROE = NI/SI x 100 (Charles, 2003).

2.3 Micro-Credits Schemes and financial performance of Agricultural Cooperatives

Chen *et al.,* (2008) discovered credit accessibility by smallholder farmers in Zanzibar and in Bosnia-Herzegovina respectively. They have created that age, gender, marital status, wealth, income levels and degree of credit awareness remain the factors that impact credit accessibility. Microfinance denotes to financial services providing to low-income people, usually to help support self-employment. Examples of microfinance products comprise small loans, savings plans, insurance, payment transfers, and other services that are provided in small increments that low-income individuals can afford. These servicesaidrelatives to start and shape “micro” enterprises, the very small businesses that are significant sources of employment, income, and economic vitality in developing countries worldwide.Almost, lenders base their decisions to grant credit on applicant’s solvency information. The charm and standing of the potential borrower remainsavital factor though lending institutions stretch out the credits. However, to getanadvance, borrowers’necessityessentially comply with some lenders’ loan restrictions and conditions. Whenthese situationsremain not appropriate for borrowers; they do not apply for

loans. Formal institutions deny the dispossessed people access to credit for lack of tangible collateral as well as transactions costs of institutional credit(Okurut*et al.,* 2004).

According to Barnett *et al.,* (2000), the frequency of repetition from financial institutions stays often low for most of the small and medium scale enterprises. They hurt from their incomplete saving abilities and low revenues from their low farming investments.This constitutes a restriction to access long term loans from financial institutions. Purchase of such credit is also difficult for the farmers employed in cooperatives because of high interest rates on loaning, and this constrains them to apply for the microcredit.

Many debtors who sustained to admittance loans at high lending rates take undergone insolvency or lost their highly valued collateral to lenders as a result of non-payment on refunds (Collinson et al. 2005). Additional problem to access to credit is incomplete education in use of credit. Most agriculturalists' cooperatives in emerging countries are uneducated while debtors need at least a rational level of literacy to comprehend loans conditions and sign loan contracts (FAO, 1995). Therefore, some of the major dares faced by rural financial institutions stay to reduce transaction costs, alleviate the risk of the loan collection, and find new procedures of guarantees, modified to every context of interference (e-MFP, 2013).

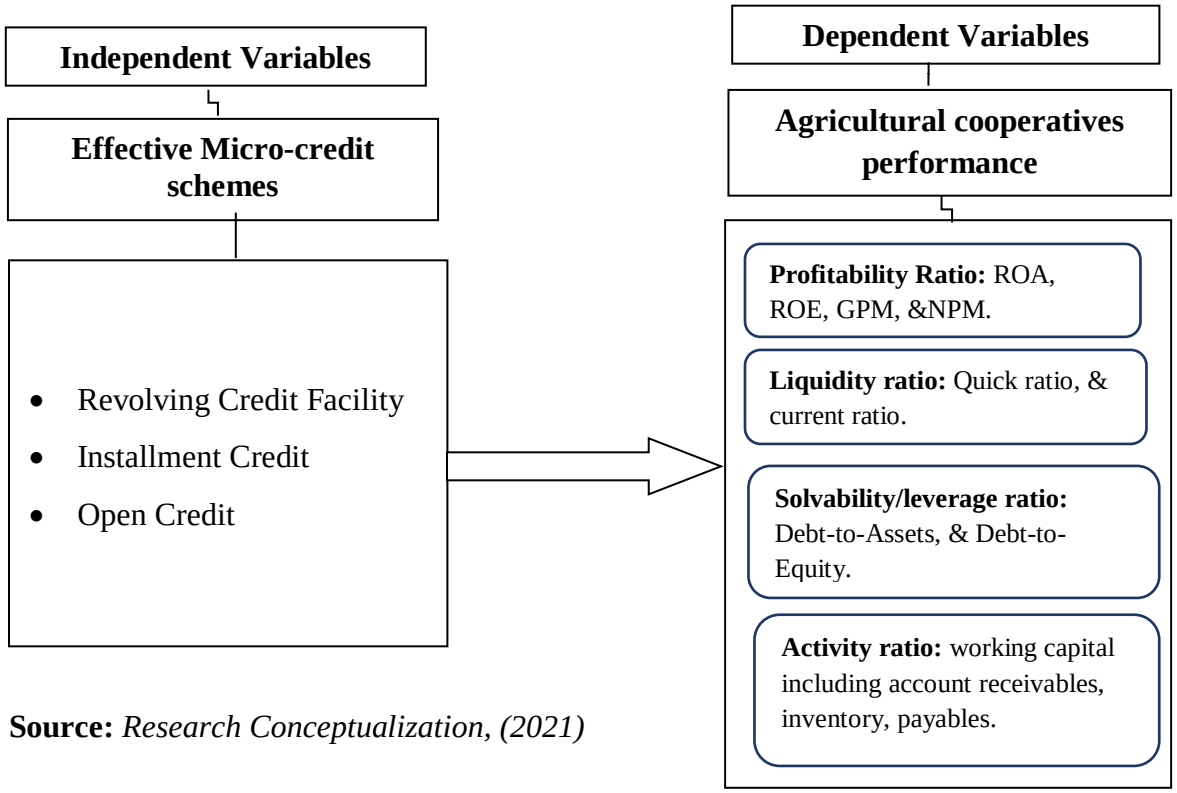
2.4 Critical Review and Gap

Different studies have been reviewed in the literature review have contributed so much to the current study; Diagne*et al.,* (2000) credit demand remaineddiscriminatory by a number of factors counting borrower-lender features, saving and withdraws operations and relationships associated with credit terms. Chen *et al.,* (2008) discovered credit accessibility by smallholder farmers in Zanzibar and in Bosnia-Herzegovina correspondingly. In decisive the solvency of the borrowers; stretches assurance to the credit institutions concerning the safety of loans and solves the unequal information problems. They long-established that many borrowers who continued to access loans at high loaning rates have experienced liquidation or lost their highly valuable collateral to lenders as a consequence of non-payment on refunds (Collinson*et al.* 2005). Nonetheless,there are still less studies spoke on micro-credit schemes and agricultural cooperative's performance in Rwanda, which indicated the scarcity of the studies on this topic. There is no study also used conceptual models as shown in this study. However, this study intended to examine the effect of micro-credit schemes on agricultural cooperative's performance in Rwanda particularly Agricultural Cooperatives in Nyanza District.

2.5 Conceptual Framework

In respect of this research, the designed conceptual framework below presents two categories of variables including Micro-credit schemes as independent variable, and agricultural cooperatives performance as dependent variables.

Figure 2.1: Conceptual Framework



Source: *Research Conceptualization, (2021)*

Revolving Credit Facility

A revolving credit facility remains a line of credit that is definite between a bank and a business. It creates with a recognised maximum amount, and the business can contact the funds at any time when desirable.

Instalment

Instalment loans are substitute type of credit that comprises an immovable payment schedule for a specified period.

Open Credit

Open credit remains a type of credit that desires full payment for each period, such as per month (Mamoon, 2017).

Profitability ratios: continue the diverse dimension impacts of profit evolution used by exploratory a business's performance such as gross profit margin (GPM), return on assets (ROA), and return on equity (ROE) (Elliot, *et al.*, 2005).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter classifies the events used to plan and conduct this study. It designates source of data collected, research population, and sample selection techniques, materials for data collection and methods for data analysis.

3.2 Research design

The study applied quantitative approach. It is quantitative approach in order to show effectiveness of Micro-credit schemes and agricultural cooperatives performance. The study also adopted coefficient of determination using statistical package for social sciences version 21.0 to determine relationship between variables.

3.3 Data Collection

The researcher collected data in the form of primary and secondary data. Data were collected at field in Nyanza District, Southern province through questionnaires, interviews, conversations with cooperative members, and representatives of cooperatives.

3.3.1 Population of the Study

The populace of this study comprises agricultural cooperatives which are functioning in Nyanza District. It was chosen because there are different agricultural cooperatives located in Busasamana, Busoro, Cyabakamyi, Kibirizi, Kigoma, Mukingo, Muyira, Ntyazo, Nyagisozi, and Rwabicuma sectors of Nyanza District worked with micro-credit schemes.

Table 3.1. Numbers of Cooperatives in Nyanza District

Sectors	Number of farming cooperatives
Busasamana	13
Busoro	5
Cyabakamyi	3
Kibirizi	3
Kigoma	4
Mukingo	7
Muyira	5
Ntyazo	4
Nyagisozi	3

Rwabicuma	4
Grand Total	**51**

Source:*Primary Data (2021)*

3.3.2 Sampling Design and Sample Size

The study used universal sampling that refers to the selection of sample of 51 respondents from selected cooperatives in Nyanza District. Every single questionnaire was distributed at each cooperative among the selected ones.

3.3.3 Sources of Data

The researcher used both primary and secondary data. Primary data collected on the field (agricultural cooperatives) in Nyanza District, Southern Province using questionnaireto cooperative members, and representatives. Secondary data collected from the published papers, thesis, documentation, newspapers and other resources.

Questionnaire

The questionnaires were used to gather the respondents' bio- data. Each questionnaire limited of closed ended requests to let the defendants to give maximum information on the subject of study. These surveys were understood into mother tongue "Kinyarwanda" to ease the statement with all respondents. Theorganised questionnaire was intended through five Likert- scales, where 5=Strongly Disagree; 4= Disagree; 3= Neutral; 2= Agree; 1= Strongly Agree.

Documentation

This was accomplished by accessing relevant documents especially the evidence from available papers, academic theses, textbooks, journals, dissertations written by other researchers, and reading government agencies annual reports, and Rwanda Cooperative Agency. This assisted the researcher to compare and checkvalidity of the materialfrom questionnaires especially as respects to performance.

3.3.4 Data Quality Control

Validity

According to Kothari (2009) validity is the most standards and designates the degree to which an instrument procedures what it is made-up to degree. In other words, validity remainedthe extent to which changes found with a calculating instrument reflect true differences among these being tested. Questionnaireswereassumed to supervisor and other lecturers to assess if it can give the relevant evidence.

Reliability

There remain two general methods to establish the reliability of a questionnaire where the first is to ask the questions again in a different part of the questionnaire in the same or slightly altered form, but in such a way as to yield the same information. This is a consistency check, but does not take into explanation variations in day-to-day variations. A second better method, called pre-test, is to re-administer a survey to the same group or individuals several days later and to compare the results that obtained.

For this study, the surveyswereassumed to different groups of respondents two dissimilar times to check if they provided the same view in terms of responses. The researcher did a pre-test of Cronbach's Alpha of 0.75 at agricultural collectivesfrom Ruhango withsix members.

Table 3.1. Legend Cronbach's Alpha test of Reliability

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable (Surveys)
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Table 3.2. Pre-tested result of Reliability

Cronbach's Alpha	N of Items
.820	6

Source:*Pre-test of reliability (2020)*

The pre-test result was completed to displaythe reliability statistics of .820 which wasconsidered as good; this aids the researcher to continue with the investigation at agricultural cooperatives of Nyanza District.

3.4 Data Analysis Methods

This part concerns the classification of responses into meaningful categories in order to bring out their meaningfulness. Questionnaires completed recorded in computer, and interpreted in Kinyarwanda.Then quantitative data collected through the questionnaires were summarized, coded, tabulated and later analysed. Descriptive statistic methodwas used the distribution frequencies and percentages. Econometric model also provided the impact of micro finance institutions on effect of micro-credit scheme on agricultural performance were analysed using a statistical package for social sciences (SPSS IBM 21.0).

In this study, main impartialremained to analyse effect of credit schemes on financial performance of farming cooperative. The study used correlation matrix to show relationship between variables. The multiple regression models used to correlative existing relationship between variables under studied.**Y=** $\beta 0+ \beta 1\chi_{1+} \beta 2\chi 2+ \beta 3\chi_{3+\alpha}$

Where, **X**is Micro-credit schemes, **Y** is Agri-cooperatives performance;

X1: Revolving Credit Facility;

X2: Installment Credit;

X3: Open Credit

Where **β0 =** Constant, **β1-β3** are coefficients of determination

3.5. Limitation of the Study

The study required fieldwork and the researcher had to get permits from the relevant authorities to be able to carry out the research. This led to time constraints as had to wait for some days before certain permits could be obtained. Some of the respondents could not give responses there and then and had to request for the questionnaires to be dropped behind and be picked at a later date which also caused some delays. Other respondents feared to give information as they were not sure as to whether the information, they were giving out stayed not confidential as private to the cooperative.

The researcher achieved to mitigate all these by confirming that released questionnaires for example prepared not stay over and beyond a certain time period, also the researcher became authorizations to carry out discussions and this concentrated the fear of the respondents.Covid 19 pandemic develop also controlfor time deliberate to texture the study.

3.6 Ethical Considerations

To ensure privacy of the information was providing by the respondents and to ascertain the practice of ethics in this study, the following actions were implemented by the researcher: respondents were coded instead of reflecting the names. She sought the permission through a written request to the concerned officials of study areas. The researcher demanded respondents to sign in the informed consent form, acknowledge the authors quoted in this study and the author of the standardized instrument through citations and referencing. The research obtainable the findings in a generalized manner.The ethical guidelines were put in place including dignity and wellbeing of respondents being protected at all times; the research data remained confidential

throughout the study; and the researcher did not require any name of the respondent to appear in the questionnaire.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION OF FINDINGS

The chapter presents the findings for data collected from agricultural cooperatives in Nyanza District.It comprises descriptive statistics on micro-credit schemes; descriptive results on financial performance of agricultural cooperatives; correlation matrix about the link between credit schemes and agricultural cooperatives performance; regression analysis; and discussion of research findings.

4.1 Data Presentation

Micro-credits by investing in different kinds of Agri-products that producing in their cooperatives. Below there are descriptive statistics on micro-credit schemes; descriptive results on financial performance of agricultural cooperatives; correlation matrix about the link between credit schemes and agricultural cooperatives performance; regression analysis; and discussion of research findings.

a) Descriptive Statistics on Micro-Credit Schemes for Agricultural Cooperatives

Based on FinScope survey (2016) about 86% of Rwandan adults are from households that are involved directly or indirectly in agricultural activities. Overall farmers are financially included with inclusion ranges varying between 86% and 91%. The agriculturalists who are involved in subsistence and commercial farming activities that remain mostly male, while farm workers are mainly female.Overall, farmers in Rwanda, especially farm workers and commercial farmers, are relatively young (i.e., ranges between 18 and 30 years). Nevertheless, agriculture loans from banks, Microfinance Institutions and SACCOs are still low compared to outstanding loans and has been decreasing from the past four years.

Micro-credit schemes originate with great assistances to support low-income individuals to be financially secure and independent. Some of the structures of micro credit schemes are very affordable; offer small quantities of money; can be taken by recipients without providing any collateral or assurance; and they can be used for self-employment projects and activities.Some of these schemes even come with micro insurance and micro leasing; and the repayment periods for micro credit schemes are absolute after measuring the nature and period of the self-employment

activity. The main kinds of micro-credit schemes remainthe revolving credit, and it comes with an established maximum amount, and the, instalment, and open credit.

Descriptive Statistics on revolving credit facility in Micro-Credit Schemes for Agricultural Cooperatives

Findings shown on table 4.1 presents'perceptions of respondents on revolving credit facility in micro-credit schemes for Agri-Cooperatives in Nyanza District as follows.

Table 4.1: Perceptions of Respondents on revolving credit facility from Micro-Credit Schemes for Agricultural Cooperatives

Revolving credit facility for Agri-cooperatives in Nyanza	SA		A		N		D		SD	
	fi	%	fi	%	fi	%	fi	%	fi	%
Application procedures of revolving credit facility are simple for Agri-cooperatives	24	47.1	13	25.5	14	27.5	0	0.0	0	0.0
In revolving credit facility, they have established maximum amount for Agri-business cooperatives to access the funds at any time when needed.	23	45.1	4	7.8	19	37.3	3	5.9	2	3.9
Revolving credit facilitybecome effectively for Agricultural cooperatives experiencedhighinstabilities in cash flows and unpredicted large expenditures.	18	35.3	8	15.7	20	39.2	2	3.9	3	5.9
Low cash balance Agricultural cooperativesin Nyanza, have been supported to enhance their net working capital.	24	47.1	14	27.5	7	13.7	4	7.8	2	3.9
Bank considers some important factors for determining the creditworthiness for Agricultural cooperatives in Nyanza.	2	3.9	36	70.6	9	17.6	2	3.9	2	3.9
Revolving credit facility give the flexibility of making purchases, transferring high-interest rate balances and borrowing cash to Agricultural cooperatives.	27	52.9	15	29.4	6	11.8	3	5.9	0	0.0
Agricultural cooperatives received personal line of credit that allows them borrow money as needed up to an assigned credit line, just like a credit card.	19	37.3	24	47.1	7	13.7	0	0.0	1	2.0
Revolving line credit allows agricultural cooperatives to borrow against equity they have.	14	27.5	37	72.5	0	0.0	0	0.0	0	0.0
In revolving credit facility, Agricultural cooperativesare charged interest based only on the withdrawal amount and not on the entire credit line.	8	15.7	40	78.4	2	3.9	0	0.0	1	2.0

Source: *Field Data, (2021)*

Findings indicated perceptions of respondents on revolving credit facility from Micro-Credit Schemes for Agricultural cooperatives.Application procedures of revolving credit facility are simple for Agri-cooperatives, confirmed by 72.5% strongly agreed and agreed. In revolving credit facility, they have established maximum amount for Agri-business companies to admittance the funds at any time oncewanted, stated by 52.9% respondents. Revolving credit facility become effectively for Agricultural cooperatives experienced high instabilities in cash

flows and unpredicted large expenditures, stated by 51.0%. Low cash balance Agricultural cooperatives in Nyanza, have been supported to enhance their net working capital, confirmed by 74.5%. Bank considers some important factors for determining the creditworthiness for Agricultural cooperatives in Nyanza, confirmed by 74.5%.Revolving credit facility give the suppleness of making acquisitions, transferring high-interest rate balances and borrowing cash to Agricultural cooperatives, confirmed by 82.4%. Agricultural cooperatives received individual line of credit that allows them borrow money as needed up to an assigned credit line, just like a credit card, stated by 84.3%. Revolving line credit allows agricultural cooperatives to borrow against equity they have, confirmed by all 100.0%, and 94.1% respondents said that in revolving credit facility, Agricultural cooperatives are exciting interest based only on the withdrawal amount and not on the whole credit line.

According to the answersfrom respondents, we close that the revolving credit facility of Micro-Credit Schemes for Agricultural Cooperatives were branded by request procedures of revolving credit facility which are simple for Agri-cooperatives; in revolving credit facility, cooperatives have established maximum amount for Agri-business cooperatives to access the funds at any time when needed; revolving credit facility become effectively for Agricultural cooperatives experienced high instabilities in cash flows and unpredicted large expenditures; low cash balance Agricultural cooperatives in Nyanza, have been supported to enhance their net working capital while bank considers some important factors for determining the creditworthiness for Agricultural cooperatives in Nyanza; Revolving credit facility give the flexibility of making purchases, transferring high-interest rate balances and borrowing cash to Agricultural cooperatives. However, Agricultural cooperatives received personal line of credit that allows them borrow money as needed up to an assigned credit line, just like a credit card; and revolving line credit allows agricultural cooperatives to borrow against equity they have in the Agricultural Cooperatives of Nyanza District.

Descriptive Statistics on instalment Creditin Micro-Credit Schemes for Agricultural Cooperatives.

Findings on table 4.2 illustrates perceptions of respondents on descriptive statistics on instalment Credit for Agri-cooperatives in Nyanza district.

Table 4.2: Perceptions of respondents on instalment Credit in Micro-Credit Schemes for Agricultural Cooperatives

Instalment Credit in Micro-Credit Schemes for Agricultural Cooperatives	SA		A		N		D		SD	
	fi	%	fi	%	fi	%	fi	%	fi	%
Instalment credit for Agricultural cooperatives come in the form of loan with a fixed loan amount and fixed payments.	16	31.4	30	58.8	1	2.0	3	5.9	1	2.0
In instalment credit, they have established repayment schedule for agricultural cooperatives.	27	52.9	23	45.1	0	0.0	0	0.0	1	2.0
They give agricultural cooperatives an exact timeframe to pay off what they borrowed.	20	39.2	30	58.8	0	0.0	0	0.0	1	2.0
The instalment credit is offered in a variety of ways including agricultural loan to facilitate Agri-cooperatives 'activities.	11	21.6	27	52.9	4	7.8	2	3.9	7	13.7
Application procedures of instalment credit are simple for borrowersAgri-cooperatives in Nyanza.	6	11.8	43	84.3	1	2.0	0	0.0	1	2.0
Instalments made up from both principal and interest for cooperatives.	20	39.2	19	37.3	7	13.7	3	5.9	2	3.9
In instalment credit, there are frequent payment schedules or frequent deposits for cooperatives.	13	25.5	35	68.6	0	0.0	1	2.0	2	3.9
The clients' cooperatives that pay on time become eligible for next time high amount of loans.	10	19.6	25	49.0	7	13.7	6	11.8	3	5.9

Source:*Field Data, (2021)*

Findings show insights of respondents on instalment credit in micro-credit schemes for agricultural cooperatives. However, instalment credit for Agricultural cooperatives come in the procedure of loan with a stationary loan amount and fixed expenditures, confirmed on 90.2%. In instalment credit, they have established repayment schedule for agricultural cooperatives, stated on 98.0%. They give agricultural cooperatives an exact timeframe to pay off what they borrowed, confirmed by 98.0%. The instalment credit is accessible in a diversity of ways including agricultural loan to facilitate Agri-cooperatives 'doings, stated on 74.5%.Application procedures of instalment credit are simple for borrowers Agri-cooperatives in Nyanza, confirmed by 96.1%.Instalments made up from both principal and interest for cooperatives, stated by 76.5%. In instalment credit, there are frequent payment schedules or frequent deposits for cooperatives, confirmed by 94.1%, while 68.6% confirmed that the clients' cooperatives that pay on time developqualified for next time high quantity of loans.

Descriptive Statistics on open credit in Micro-Credit Schemes for Agricultural Cooperatives

Perceptions of respondents below on table 4.3 show the open credit in micro-credit schemes for Agricultural cooperatives.

Table 4.3: Perceptions of Respondents on open credit in Micro-Credit Schemes for Agricultural Cooperatives

An open credit for Agri-cooperatives in Nyanza District	SA		A		N		D		SD	
	fi	%	fi	%	fi	%	fi	%	fi	%
Open credit allowed borrower's cooperative to make electronic purchases.	11	21.6	30	58.8	4	7.8	4	7.8	2	3.9
They are very affordable for beneficiaries' agricultural cooperatives.	7	13.7	35	68.6	5	9.8	2	3.9	2	3.9
The scheme offers small amounts of money.	23	45.1	27	52.9	0	0.0	1	2.0	0	0.0
They are typically not governed by the regular banks.	23	45.1	12	23.5	10	19.6	4	7.8	2	3.9
It's taken by beneficiaries 'cooperatives without providing any collateral or guarantee.	17	33.3	27	52.9	3	5.9	2	3.9	2	3.9
It is effectively used to strengthen agricultural projects and activities.	17	33.3	23	45.1	6	11.8	4	7.8	1	2.0
The interest rates for open credit are very low and economicalon Agricultural cooperatives.	20	39.2	24	47.1	4	7.8	2	3.9	1	2.0
Open credit offered depending on the necessityof agricultural cooperatives	4	7.8	39	76.5	5	9.8	2	3.9	1	2.0

Source: *Field Data, (2021)*

Findings show perceptions of respondents on open credit in Micro-Credit Schemes for Agricultural Cooperatives. Open credit allowed borrower's cooperative to make electronic purchases, as confirmed on 80.4%. They remain very affordable for beneficiaries' agricultural cooperatives, established by 82.5%. The scheme offers small amounts of money as specified by 98.0%. They are typically not ruled by the regular banks, stated by 68.6%. The open credit is occupied by beneficiaries 'cooperatives without providing any collateral or guarantee asquantified by 86.3% of respondents.It is effectively used to reinforce agricultural projects and activities as established by 78.4%; the interest rates for open credit remain very low and economical on Agricultural cooperatives, confirmed on 86.3%; and open credit offered depending on the necessity of agricultural cooperatives, confirmed by 84.3% respondents.

According to the findings specified show that open credit allowed borrower's cooperative to make electronic purchases; they are very affordable for beneficiaries' agricultural cooperatives; the scheme offers small amounts of money; they remain typically not governed by the regular banks; it's taken by beneficiaries 'cooperatives without providing any collateral or guarantee; it is effectively used to strengthen agricultural projects and activities; the interest rates for open

credit are very low and economical on Agricultural cooperatives; and open credit offered depending on the necessity of agricultural cooperatives.

b) Descriptive results on determinants of agricultural cooperatives performance

Most of the cooperatives' performance are measured in terms of profitability, productivity, liquidity, leverage and asset efficiency ratios. In this study, descriptive results on agricultural cooperatives performance are presented below accordingly respondents' opinions.

Perceptions of respondents on profitability ratios as Agricultural cooperatives' performance

Findings below on table 4.4 shows analysis on perceptions of respondents related to profitability ratios obtained on Agricultural cooperatives.

Table 4.4: Perceptions of respondents on profitability ratios as Agricultural cooperatives' performance

Profitability ratios as Agricultural cooperatives' performance	SA		A		N		D		SD	
	fi	%	fi	%	fi	%	fi	%	fi	%
Agri-cooperatives present an increase of the return on assets in previous years.	20	39.2	17	33.3	4	7.8	5	9.8	5	9.8
Cooperatives show high return on equity capable of generating cash internally, and therefore less dependent on debt financing.	10	19.6	18	35.3	17	33.3	2	3.9	4	7.8
Cooperatives have a high gross profit margin ratio that reflects a higher efficiency of core operations	13	25.5	30	58.8	5	9.8	1	2.0	2	3.9
Agricultural cooperatives present high operating profit margins which are generally more well-equipped to pay for fixed costs and interest on obligations	20	39.2	23	45.1	7	13.7	1	2.0	0	0.0
There is high productivitythat providethe final picture of how profitable cooperatives is after all expenses, including interest and taxes have been taken into account.	8	15.7	40	78.4	2	3.9	1	2.0	0	0.0

Source: *Field Data, (2021)*

Findings on perceptions of respondents on profitability ratios as Agricultural cooperatives' performance.Agri-cooperatives present an increase of the return on assets in previous years, confirmed by 72.5%.Cooperatives show high return on equity capable of generating cash internally, and therefore less dependent on debt financing, as stated on 54.9%. Cooperatives have a high gross profit margin ratio that reflects a higher efficiency of core operations, confirmed on 84.3%.Agricultural cooperatives present high operating profit margins which are generally more well-equipped to pay for fixed costs and interest on obligations, stated on 84.3%.There is high productivity that provide the final picture of how profitable cooperatives is after all expenses, including interest and taxes have been taken into account, as confirmed by 94.1% respondents.

Perceptions of respondents onLiquidity situationas Agricultural cooperatives' performance

Findings show that the perceptions of respondents on liquidity situation for Agri-cooperatives in Nyanza District as on table 4.5 indicated below.

Table 4.5: Perceptions of Respondents on Liquidity situation as Agricultural cooperatives' performance

Liquidity situation for Agri-cooperatives in Nyanza District	SA		A		N		D		SD	
	fi	%	fi	%	fi	%	fi	%	fi	%
Agricultural cooperatives have enough liquidity that help them to pay its short-term debt obligations.	23	45.1	21	41.2	3	5.9	3	5.9	1	2.0
Agricultural cooperatives have liquidity that help them determine the creditworthiness.	32	62.7	18	35.3	1	2.0	0	0.0	0	0.0
Farmers of cooperatives able determine investment worthiness using their liquidity.	9	17.6	41	80.4	1	2.0	0	0.0	0	0.0
Quick ratio is more of a true test of cooperatives' ability to cover its short-term obligations.	8	15.7	34	66.7	4	7.8	0	0.0	5	9.8
Agricultural cooperatives are able to fulfil short-term commitments with their liquid assets.	12	23.5	36	70.6	2	3.9	1	2.0	0	0.0
Agricultural cooperatives commonly used the current ratio, quick ratio, and cash ratio to measurement of their liquidity.	28	54.9	19	37.3	3	5.9	1	2.0	0	0.0

Source: *Field Data, (2021)*

Findings on perceptions of respondents on liquidity situation as Agricultural cooperatives' performance. Agricultural cooperatives have enough liquidity that aid them to wage its short-term debt obligations, confirmed on 86.3%. Agricultural cooperatives have liquidity that support them control the creditworthiness, confirmed on 98.0%. Farmers of cooperatives able regulate investment worthiness using their liquidity, recognized on 98.0%. Quick ratio is more of a true test of cooperatives' ability to cover its short-term obligationson 82.4%. Agricultural cooperatives are able to fulfil short-term commitments with their liquid assets, stated by 94.1%.Agricultural cooperatives commonly used the current ratio, quick ratio, and cash ratio to measurement of their liquidity, stated by 92.2% respondents.

Perceptions of respondents on solvabilityratio as Agricultural cooperatives' performance

In this study, the findings on solvability situation for Agricultural cooperatives as an indicator of performance presented on table 4.6 below.

Table 4.6: Perceptions of respondents on solvability ratio as Agricultural cooperatives' performance

Solvability situation for Agricultural cooperatives	SA		A		N		D		SD	
	fi	%	fi	%	fi	%	fi	%	fi	%
Agricultural cooperatives have ability to pay the interest expense on its debt.	23	45.1	19	37.3	5	9.8	2	3.9	2	3.9
There is ability of cooperatives to pay all debt obligations including repayment of principal and interest to bank's credits	11	21.6	23	45.1	14	27.5	1	2.0	2	3.9
Cooperatives have ability to pay interest expense with its cash balance.	13	25.5	23	45.1	5	9.8	6	11.8	4	7.8
The capacity of the cooperatives' revenues supportsto cover interest and other fixed charges.	6	11.8	22	43.1	10	19.6	9	17.6	4	7.8
Agricultural cooperatives haveability to meet both short- and long-term debt obligations.	7	13.7	22	43.1	17	33.3	4	7.8	1	2.0

Source: *Field Data, (2021)*

Findings on perceptions of respondents on solvability ratio as Agricultural cooperatives' performance, stated that Agricultural cooperatives have ability to pay the interest expense on its debt, confirmed on 82.4%. There is ability of cooperatives to pay all debt obligations including repayment of principal and interest to bank's credits stated by 66.7%. Cooperatives have ability to pay interest expense with its cash balance confirmed by 70.6%. The capacity of the cooperatives' revenues supports to cover interest and other fixed charges, confirmed by 54.9%.They reflect the cooperative's ability to meet both short- and long-term debt obligations, as confirmed by 56.9% respondents

Perceptions of respondents on activities ratio as Agricultural cooperatives' performance

Findings below on table 4.7 illustrates the perceptions of respondents on activities ratios as Agricultural cooperatives' performance.

Table 4.7: Perceptions of Respondents on activities ratio as Agricultural cooperatives' performance

activities ratio as Agricultural cooperatives' performance	SA		A		N		D		SD	
	fi	%	fi	%	fi	%	fi	%	fi	%
Improvement of product and service quality and reduce risks.	8	15.7	24	47.1	14	27.5	3	5.9	2	3.9
Members of agricultural cooperatives are empowered economically and socially by being engaged in decision making processes.	11	21.6	24	47.1	9	17.6	2	3.9	5	9.8
Working capital provides an insight into Agri-cooperatives' ability to meet current liabilities.	10	19.6	27	52.9	9	17.6	1	2.0	4	7.8
There is increased member's production and incomes by helping better link them with finance, inputs, information and markets for output products.	14	27.5	33	64.7	2	3.9	1	2.0	1	2.0
Accounts receivable turnover of agricultural cooperatives is efficiently to manage credit sales and convert account receivables into cash.	25	49.0	25	49.0	1	2.0	0	0.0	0	0.0
Able to purchase of new inputs such as seeds, fertilizers and others.	16	31.4	33	64.7	1	2.0	1	2.0	0	0.0

Source: *Field Data (2021)*

Perceptions of respondents on activities ratio as Agricultural cooperatives' performance, confirmed on Improvement of product and service quality and reduce risks as confirmed by 62.7%. Members of agricultural companies are permitted economically and socially by being promised in decision making procedures, establishedby 68.6%. Working capital delivers an insight into Agri-cooperatives' ability to encounter current liabilities, confirmed by 72.5%. There is increased member's production and incomes by helping better link them with finance, inputs, information and markets for output products, confirmed on 92.2%. Accounts receivable turnover of agricultural cooperatives remains efficiently to succeed credit sales and convert account receivables into cash, as confirmed on 98.0%; and they remain able to purchase of new inputs such as seeds, fertilizers and others, as confirmed on 96.1% respondents.

4.2 Correlation matrix about the link between Micro-Credit Schemes and Agricultural Cooperatives 'Performance

A correlation matrix is a table showing correlation coefficients between variables. Each cell in the table shows the correlation between two variables. A correlation matrix is used to summarize data, as and input into a more advanced analysis, and as a diagnostic for advanced analyses.

Table 4.8: Correlations Matrix

		Profitability ratios (ROA, ROE, GPM, &NPM)	Liquidity ratios (Quick ratio, & current ratio)	Solvability ratios (Debt-to-Assets, & Debt-to-Equity)	Activity ratios (account receivables, inventory, &payables)
Revolving Credit Facility	Pearson Correlation	**.282***	**.348***	.046	**.343***
	Sig. (2-tailed)	.045	.012	.747	.014
	N	51	51	51	51
Instalment Credit	Pearson Correlation	**.534****	**.598****	**.579****	**.450****
	Sig. (2-tailed)	.000	.000	.000	.001
	N	51	51	51	51
Open Credit	Pearson Correlation	.248	**.694****	**.286***	**.519****
	Sig. (2-tailed)	.080	.000	.042	.000
	N	51	51	51	51

***. Correlation is significant at the 0.05 level (2-tailed).*
****. Correlation is significant at the 0.01 level (2-tailed).*

Findings from study show that there is a positive and low correlation between revolving credit facility in micro-credit schemes and profitability ratios (ROA, ROE, GPM, &NPM) of Agricultural cooperatives (r= **.282***, p<0.05). The results also revealed that there is also positive and strong correlation between instalmentcredit and profitability ratios represented byreturn on asset, return on equity, gross margin profit, and net profit margin(r= **.534****, p<0.01).

Findings revealed that there is a positive and moderate correlation between revolving credit facility in micro-credit schemes and liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives (r= **.348***, p<0.05). The results also show that there is positive and strong correlation between instalment credit and liquidity ratiosfor Agricultural cooperatives represented by quick ratio, and current ratio (r= **.598****, p<0.01). There is also positive and very strong correlation between open credit in micro-credit schemes and liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives (r= **.694****, p<0.01).

Results from analysis of correlation matrix confirmed that there is a positive and moderate correlation between instalment credit in micro-credit schemes and solvability ratios of Agricultural cooperatives represented by Debt-to-Assets, & Debt-to-Equity (r= **.579****, p<0.01). Findings also show that there is positive and low correlation between open credit in micro-credit

schemes and solvability ratios (Debt-to-Assets, & Debt-to-Equity) of Agricultural cooperatives (r= **.286*****,** p<0.05).

Findings revealed that there is a positive and moderate correlation between revolving credit facility in micro-credit schemes and Activity ratios (account receivables, inventory, &payables) in Agricultural cooperatives (r= **.343***, p<0.05). The results also show that there is positive and strong correlation between instalment credit and Activity ratios (account receivables, inventory, &payables) in Agricultural cooperatives (r= **.450******,** p<0.01). There is also positive and strong correlation between open credit in micro-credit schemes and Activity ratios (account receivables, inventory, &payables) in Agricultural cooperatives (r= **.519******,** p<0.01).

4.3 Regression Analysis

Regression analysis remains a set of statistical methods used for the estimation of relationships between a dependent variable and one or more independent variables. It was used to assess the strength of the relationship between variables and for modelling the future relationship between them. In this study, regression analysis was used also to test and verify hypotheses of the study.

Ho1: *Micro-credit schemes do not affectpositively pprofitability ratios (ROA, ROE, GPM, &NPM) of Agricultural cooperatives.*

Table 4.9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.576[a]	.332	**.289**	1.89568

a. Predictors: (Constant),*Micro-credit schemes (open credit, revolving credit facility, instalment credit)*

The results indicate that Adj. R^2= **.289**representing 28.9% change for profitability ratios (ROA, ROE, GPM, &NPM) comes from micro-credit schemes in the Agricultural cooperatives. This means that **71.1%** of profitability ratios (ROA, ROE, GPM, &NPM) in Agricultural cooperatives come from other variables that are not included in Model of this research.

Table 4.10: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	83.859	3	27.953	**7.779**	**.000[b]**
	Residual	168.900	47	3.594		
	Total	252.759	50			

a. Dependent Variable: profitability ratios (ROA, ROE, GPM, &NPM)
b. Predictors: (Constant),*Micro-credit schemes (open credit, revolving credit facility, instalment credit)*

The results from regression analysis indicated that the F-test= **7.779**which is positive and significant at 0% shows that we cannot accept **$H_0$1**states that Micro-credit schemes do not affect positively profitability ratios (ROA, ROE, GPM, &NPM) of Agricultural cooperatives. This is based on the fact that findings indicated positive and significant effect of Micro-credit schemes onprofitability ratios (ROA, ROE, GPM, &NPM) of Agricultural cooperatives.

Table 4.11: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.498	1.592		2.198	.033
	Revolving Credit Facility	.125	.070	**.227**	**1.793**	**.079**
	Instalment Credit	.349	.087	**.558**	**3.986**	**.000**
	Open Credit	-.103	.124	**-.121**	**-.826**	**.413**

a. Dependent Variable:*profitability ratios (ROA, ROE, GPM, &NPM)*

The results indicated that revolving credit facility of micro-credit schemes have positive and significant effect on profitability ratios (ROA, ROE, GPM, &NPM) of Agricultural cooperatives(β1= **.227**, t= **1.793**; p-value = **.079** greater than 5%. Instalment credit in micro-credit schemes has positive and significant effect on profitability ratios (ROA, ROE, GPM, &NPM) of Agricultural cooperatives(β2= **.558**, t= **3.986** and p-value = **.000** less than 5%. While open credit in micro-credit schemes has negative and significant effect on profitability ratios (ROA, ROE, GPM, &NPM) of Agricultural cooperatives(β3= **-.121**, t= **-.826** and p-value= **.413** less than 5%.

$H_0$2: *There is no positive effect of Micro-credit schemes onliquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives.*

Table 4.12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.757[a]	.573	**.545**	1.57002

a. Predictors: (Constant),*Micro-credit schemes (Open Credit, Revolving Credit Facility, instalment Credit)*

The results indicates that Adj. R^2= **.545** representing 54.5% change for liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives comes from micro-credit schemes in Agri-cooperatives. This means that 45.5% of liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives come from other variables that are not included in Model of this research.

Table 4.13: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	155.255	3	51.752	**20.995**	**.000[b]**
	Residual	115.854	47	2.465		
	Total	271.109	50			

a. Dependent Variable:*liquidity ratios (Quick ratio, & current ratio)*
b. Predictors: (Constant),*Micro-credit schemes (Open Credit, Revolving Credit Facility, instalment Credit)*

The results from regression analysis indicated that the F-test= **20.995**which is positive and significant at 0% shows that we cannot accept $H_0$2 which states that There is no positive effect of Micro-credit schemes on liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives. This is based on the fact that the findings indicated positive and significant effect on Micro-credit schemes on liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives.

Table 4.14: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.520	1.318		-.395	.695
	Revolving Credit Facility	.075	.058	**.131**	**1.295**	**.202**
	Instalment Credit	.210	.072	**.325**	**2.899**	**.006**
	Open Credit	.422	.103	**.480**	**4.096**	**.000**

a. Dependent Variable:*liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives*

The results indicated that revolving credit facility from micro-credit schemes have positive and significant effect on liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives

(β1= **.131**, t= **1.295**; p-value = **.202** less than 5%. Instalment credit in the micro-credit schemes has positive and significant effect on liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives (β2= **.325**, t= **2.899** and p-value = **.006** less than 5%. While open credit in micro-credit schemes has positive and significant effect on liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives (β3= **.480**, t= **4.096** and p-value= **.000**less than 5%.

$H_0$3: *Micro-credit schemes have no significant effect on Solvability ratios (Debt-to-Assets, & Debt-to-Equity) of Agricultural cooperatives*.

Table 4.15: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.581[a]	.338	**.296**	2.10048

a. Predictors: (Constant),*Micro-credit schemes (Open Credit, Revolving Credit Facility, instalment Credit)*

The results indicates that Adj. R^2= **.296** representing **29.6**% change for Solvability ratios (Debt-to-Assets, & Debt-to-Equity) comes from micro-credit schemes in Agriculturalcooperatives. This means that 70.4% of Solvability ratios (Debt-to-Assets, & Debt-to-Equity) come from other variables that are not included in Model of this research.

Table 4.16: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	105.841	3	35.280	**7.996**	**.000[b]**
	Residual	207.365	47	4.412		
	Total	313.206	50			

a. Dependent Variable:*Solvability ratios (Debt-to-Assets, & Debt-to-Equity)*

b. Predictors: (Constant),*Micro-credit schemes (Open Credit, Revolving Credit Facility, instalment Credit)*

The results indicated that the F-test= **7.996** which is positive and significant at 0% shows that we cannot accept **$H_0$3** which states that Micro-credit schemes have no significant effect on Solvability ratios (Debt-to-Assets, & Debt-to-Equity) of Agricultural cooperatives. This is based on the fact that the findings indicated positive and significant effect of Micro-credit schemes represented by open credit, revolving credit facility, instalment credit to Solvability ratios (Debt-to-Assets, & Debt-to-Equity) of Agricultural cooperatives.

Table 4.17: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.537	1.763		2.573	.013
	Revolving Credit Facility	-.033	.077	**-.054**	**-.425**	**.673**
	Installment Credit	.411	.097	**.591**	**4.239**	**.000**
	Open Credit	-.005	.138	**-.005**	**-.035**	**.973**

a. Dependent Variable:*Solvability ratios (Debt-to-Assets, & Debt-to-Equity)*

The results indicated that revolving credit facility of micro-credit schemes have negative and significant effect on Solvability ratios (Debt-to-Assets, & Debt-to-Equity) of Agricultural cooperatives (β1= **-.054**, t= **-.425**; p-value = **.673** greater than 5%. Instalment credit in micro-credit schemes has positive and significant effect on Solvability ratios (Debt-to-Assets, & Debt-to-Equity) of Agricultural cooperatives (β2= **.591**, t= **4.239** and p-value = **.000** less than 5%. While open credit represents micro-credit schemes have positive and significant effect on Solvability ratios (Debt-to-Assets, & Debt-to-Equity) β3= **-.005**, t= **-.035** and p-value= **.973** less than 5% for of Agricultural cooperatives.

$H_0$4:*Micro-credit schemes have no significant effect on Activity ratios (account receivables, inventory, &payables ofAgricultural cooperatives.*

Table 4.18: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.588[a]	.346	**.304**	2.09069

a. Predictors: (Constant), *Micro-credit schemes (open credit, revolving credit facility, instalment credit).*

The results indicates that Adj. R^2= **.304** representing **30.4**% change for activity ratios (account receivables, inventory, &payables) comes from micro-credit schemes in Agricultural cooperatives. This means that 69.7% of activity ratios (account receivables, inventory, &payables ofAgricultural cooperatives come from other variables that are not included in Model of this research.

Table 4.19: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	108.500	3	36.167	**8.274**	**.000[b]**
	Residual	205.435	47	4.371		
	Total	313.936	50			

a. Dependent Variable:*Activity ratios (account receivables, inventory, &payables)*

b. Predictors: (Constant),*Micro-credit schemes (open credit, revolving credit facility, instalment credit)*

The results indicated that the F-test= **8.274** which is positive and significant at **0**% shows that we cannot accept **$H_0$4** which states that Micro-credit schemes have no significant effect on Activity ratios (account receivables, inventory, &payables)of Agricultural cooperatives. This is based on the fact that the findings indicated positive and significant effect on Micro-credit schemes on Activity ratios (account receivables, inventory, &payables) for Agricultural cooperatives.

Table 4.20: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.132	1.755		1.214	.231
	Revolving Credit Facility	.117	.077	**.191**	**1.523**	**.134**
	Instalment Credit	.172	.096	**.247**	**1.780**	**.081**
	Open Credit	.308	.137	**.326**	**2.248**	**.029**

a. Dependent Variable:*Activity ratios (account receivables, inventory, &payables)*

The results indicated that revolving credit facility from micro-credit schemes have positive and significant effect on Activity ratios (account receivables, inventory, &payables) for ofAgricultural cooperatives (β1= **.191**, t= **1.523**; p-value = **.134** less than 5%. Instalment credit in micro-credit schemes has positive and significant effect on Activity ratios (account receivables, inventory, &payables) ofAgricultural cooperatives (β2= **.247**, t= **1.780** and p-value = **.081** greater than 5%. It was also found that open credit in micro-credit schemes has positive and significant effect on Activity ratios (account receivables, inventory, &payables) (β3= **.326**, t= **2.248** and p-value= **.029** less than 5% for of Agricultural cooperatives.

$H_0$5: *Micro-credit schemes has no significant effect on of Agricultural cooperatives performance.*

Table 4.21: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.698[a]	.487	**.476**	4.14092

a. Predictors: (Constant), *Micro-Credit Schemes*

The results indicates that Adj. R^2= **.476** representing **47.6**% change for performance comes from micro-credit schemes in Agri-cooperatives. This means that 52.4% of Agricultural cooperatives come from other variables that are not included in Model of this research.

Table 4.22: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	797.505	1	797.505	**46.509**	**.000[b]**
	Residual	840.214	49	17.147		
	Total	1637.719	50			

a. Dependent Variable:*Agricultural cooperatives performance*

b. Predictors: (Constant), *Micro-Credit Schemes*

The results indicated that the F-test= **46.509** which is positive and significant at **0.0**% shows that we cannot accept **$H_0$5** which states that Micro-credit schemes has no significant effect on Agricultural cooperatives performance. This is based on the fact that the findings indicated positive and significant effect of Micro-credit schemes on Agricultural cooperatives performance.

Table 4.23: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	9.103	3.172		2.870	.006
	Micro-Credit Schemes	.622	.091	**.698**	**6.820**	**.000**

a. Dependent Variable:*Agricultural cooperatives performance*

The results indicated that micro-credit schemes have positive and significant effect on Agricultural cooperatives performance (β1= **.698**, t= **6.820**; p-value = **.000**less than 5%).

4.4 Discussion of Research Findings

Findings on micro-credit schemes show descriptive Statistics on revolving credit facility for Agri-cooperatives in Nyanza District presented on table 4.1 show the perceptions of respondents on revolving credit facility in micro-credit schemes for Agri-Cooperatives in Nyanza District stated that application procedures of revolving credit facility are simple; they are establishing maximum amount for Agri-business admittance the funds at any time oncewanted; efficiently to business feeling sharp fluctuations in its cash flows and some unexpected large expenses; supporting Agri-companies sometimes have low cash equilibriums to support their net employed capital wants; Bank considers several important factors for defining the solvency; and they are charitable the suppleness of making acquisitions, transporting high-interest rate balances and borrowing cash to help meet financial needs; individual line of credit permits to borrow money as wanted up to an allocated credit line, just like a credit card; they are revolving line of credit that allows you to borrow against the equity you have in your home; and borrowers are charged interest based only on the withdrawal amount and not on the entire credit line.

Findings on descriptive statistics for instilment credit in micro-credit schemes for Agri-cooperatives in Nyanza District shown on table 4.2 that confirmed that it comes in the form of a loan with a fixed loan amount and fixed payments; establishing repayment schedule; this credit gives borrower an exact timeframe to pay off what s/he borrowed; it is offered in a variety of ways like personal, Agricultural, student, auto or mortgage loan; application procedures are simple for borrowers; instalments made up from both principal and interest; frequent Payment schedules or frequent deposits; and the clients who pay on time become eligible for next time high amount of loans.

Findings on descriptive statistics on open credit for Agri-cooperatives in Nyanza District confirmed on table 4.3 that allowing borrower to make electronic purchases; they are very affordable for beneficiaries; the scheme offers small amounts of money; they are typically not governed by the regular banks; it's taken by beneficiaries without providing any collateral or guarantee; it is used for self-employment projects and activities; keeping the financial condition of the beneficiaries in mind, and the interest rates very low and economical; and it offers the repeat loans to individuals or self-help groups depending on the necessity.

Findings on descriptive results on financial performance of agricultural cooperatives confirmed by having profitability for Agri-cooperatives in Nyanza District; table 4.4 show that Farmers in

Agri-cooperatives increase their return on assets; return on equity was increased for farmers in agricultural cooperatives; return on investment is highly demonstrated in the financial analysis; gross profit margin determined how strong the agri-business for farmers in cooperatives; and there is progressive net profit for farmers in Agri-Cooperatives.

Findings show that perceptions of respondents on liquidity situation for Agri-cooperatives in Nyanza District shown on table 4.5 that confirmed Cooperatives are able to make liquidity through current ratio that equal current asset over current liability; liquidity analysis is calculated by farmers using quick ratio to strengthen liquidity; agriculturalists in cooperatives are able to cover quick ratio as to compute it by current assets minus inventory over their current liabilities; able to assess their aptitude to meet the short-term obligations; capability to fulfil short-term commitments with liquid assets; and deliver a good indication of liquidity.

Findings for solvability situation in Agri-cooperatives in Nyanza District were presented on table 4.6 confirmed by there is progressive debt to equity ratio; there is progressive equity ratio; it is progressive of debt ratio; they measure the capacity of the cooperative's revenues to support interest and other fixed charges; and they reflect the cooperative's ability to meet both short- and long-term debt obligations.

Findings on table 4.7 proves the views of respondents on activities ratio for Agri-cooperatives in Nyanza District, established that enhancement of product and service quality and reduce risks; members are official economically and informally by being involved in decision making processes; cooperatives create social relations which enable individual members attain goals; there is augmented member's production and incomes by serving better link them with finance, inputs, evidence and markets for output products; enduringupgrading in land for farmers in cooperatives; and able to acquisition of new inputs such as seeds, fertilizers and others.

CHAPTER FIVE
CONCLUSION AND RECOMMENDATIONS

The chapter scrutinises the results from the analysis of data composed from respondents in the Agricultural cooperatives in Nyanza District. It planned possible recommendations with a conclusion relating to the whole study as drawn.

5.1 Summary of Major Findings

The study was about micro-credit schemes and agricultural cooperative performance in Rwanda, a case study of agricultural cooperatives in Nyanza district. The specific objectives remained to analyse the efficiency of Micro-credit schemes received by Agricultural cooperatives in Nyanza District, to find out the extent to how financial performance for farming cooperatives in Nyanza District, and determine relationship between Micro-credit schemes and financial performance of farming cooperatives in Nyanza District.The population was 51 members of Agri-cooperatives in Nyanza District, and using universal sampling techniques selected 51 respondents. Date collection methods were questionnaires, and documentation. Data analysis methods were descriptive statistical method, correlation matrix and multiple regression models.

5.1.1 Findings on Effectiveness of Micro-Credit Schemes for Agricultural Cooperatives

Results on table 4.1 indicated perceptions of respondents on revolving credit facility from Micro-Credit Schemes for Agricultural cooperatives. Application procedures of revolving credit facility are simple for Agri-cooperatives, confirmed by 72.5% strongly agreed and agreed. In revolving credit facility, they have recognised maximum amount for Agri-business cooperatives to admission the reserves at any time when wanted, stated by 52.9% respondents. Revolving credit facility become effectively for Agricultural cooperatives experienced high instabilities in cash flows and unpredicted large expenditures, stated by 51.0%. Little cash balance Agricultural cooperatives in Nyanza, have been supported to enhance their net working capital, confirmed by 74.5%. Bank considers some important factors for crucial the creditworthiness for Agricultural cooperatives in Nyanza, confirmed by 74.5%. Revolving credit facility stretch the flexibility of making purchases, transferring high-interest rate balances and borrowing cash to Agricultural cooperatives, confirmed by 82.4%. Agricultural cooperatives established personal line of credit that allows them borrow money as needed up to an assigned credit line, just like a credit card,

stated by 84.3%. Revolving line credit lets agricultural cooperatives to borrow against equity they have, confirmed by all 100.0%, and 94.1% respondents said that in revolving credit facility, Agricultural cooperatives are charged interest based only on the withdrawal amount and not on the entire credit line.

Findings on table 4.2 illustrates Findings show perceptions of respondents on instalment credit in micro-credit schemes for agricultural cooperatives. However, instalment credit for Agricultural cooperatives come in the form of loan with a fixed loan amount and fixed payments, confirmed on 90.2%. In instalment credit, they have established repayment schedule for agricultural cooperatives, stated on 98.0%. They stretch agricultural cooperatives an exact timeframe to pay off what they borrowed, confirmed by 98.0%. The instalment credit is existing in a variety of ways including agricultural loan to facilitate Agri-cooperatives 'activities, stated on 74.5%. Application procedures of instalment credit are modest for borrowers Agri-cooperatives in Nyanza, confirmed by 96.1%. Instalments made up from both principal and interest for cooperatives, specified by 76.5%. In instalment credit, there are frequent payment schedules or frequent deposits for cooperatives, confirmed by 94.1%, while 68.6% confirmed that the clients' cooperatives that pay on time become eligible for next time high amount of loans.

Findings on table 4.3 show findings show perceptions of respondents on open credit in Micro-Credit Schemes for Agricultural Cooperatives. Open credit allowed borrower's cooperative to make electronic purchases, as confirmed on 80.4%. They are very affordable for beneficiaries' agricultural cooperatives, confirmed by 82.5%. The scheme offers small amounts of money as stated by 98.0%. They are typically not governed by the regular banks, stated by 68.6%. Open credit is taken by beneficiaries 'cooperatives without providing any collateral or guarantee as stated by 86.3% of respondents. It is effectively used to strengthen agricultural projects and activities as confirmed by 78.4%; the interest rates for open credit are very low and economical on Agricultural cooperatives, confirmed on 86.3%. Open credit offered depending on the necessity of agricultural cooperatives, confirmed by 84.3% respondents.

5.1.2 Findings on agricultural cooperatives performance

The table 4.4 show findings on perceptions of respondents on profitability ratios as Agricultural cooperatives' performance. Agri-cooperatives present an increase of the return on assets in previous years, confirmed by 72.5%. Cooperatives show tall return on equity capable of generating cash internally, and therefore less reliant on debt financing, as stated on 54.9%. Cooperatives have a high gross profit margin ratio that reflects a higher efficiency of core operations, confirmed on 84.3%. Agricultural cooperatives present high operating profit margins which are generally well-equipped to pay for fixed costs and interest on obligations, stated on 84.3%. There is high productivity that provide the last picture of how lucrative cooperatives remains after all expenses, counting interest and taxes have been taken into account, as confirmed by 94.1% respondents.Results on table 4.5 offeringsanswers on views of respondents on liquidity situation as Agricultural cooperatives' performance. Agricultural cooperatives have satisfactory liquidity that aid them to pay its short-term debt obligations, confirmed on 86.3%. Agricultural cooperatives have liquidity that funding them determine the creditworthiness, confirmed on 98.0%. Farmers of cooperatives able determine investment valueby their liquidity, recognized on 98.0%. Quick ratio is more of a true test of cooperatives' ability to cover its short-term duties on 82.4%. Agricultural cooperatives are able to fulfil short-term promises with their liquid assets, specified by 94.1%. Agricultural cooperatives usually used the current ratio, quick ratio, and cash ratio to extent of their liquidity, stated by 92.2% respondents.

The table 4.6 displays findings on views of respondents on solvability ratio as Agricultural cooperatives' performance, specified that Agricultural cooperatives have aptitude to pay the interest expense on its debt, confirmed on 82.4%. There is capability of cooperatives to pay all debt obligations including repayment of principal and interest to bank's credits stated by 66.7%. Cooperatives have ability to pay interest expense with its cash balance confirmed by 70.6%. The capacity of the cooperatives' revenues supports to cover interest and other fixed charges, confirmed by 54.9%.They reflect the cooperative's ability to meet both short- and long-term debt obligations, as confirmed by 56.9% respondents.

Findings on table 4.7 exemplified the perceptions of respondents on activities ratio as Agricultural cooperatives' performance, confirmed on improvement of product and service quality and reduce risks as confirmed by 62.7%. Members of agricultural cooperatives are allowed economically and socially by being engaged in decision making processes, confirmed by 68.6%. Working capital provides an insight into Agri-cooperatives' ability to meet current

liabilities, confirmed by 72.5%. There is increased member's production and incomes by helping better link them with finance, inputs, information and markets for output products, confirmed on 92.2%. Accounts receivable turnover of agricultural cooperatives is efficiently to manage credit sales and convert account receivables into cash. Confirmed on 98.0%. Able to purchase of new inputs such as seeds, fertilizers and others, as confirmed on 96.1% respondents.

5.1.3 Findings on Relationship between Micro-credit schemes and agricultural cooperatives performance

Findings show that there is a positive and low correlation between revolving credit facility in micro-credit schemes and profitability ratios (ROA, ROE, GPM, &NPM) of Agricultural cooperatives ($r= .282^{*}$, $p<0.05$). The results also exposed that there is also positive and strong correlation between instalment credit and profitability ratios represented by return on asset, return on equity, gross margin profit, and net profit margin ($r= .534^{**}$, $p<0.01$). Findings discovered that there is a positive and moderate correlation between revolving credit facility in micro-credit schemes and liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives ($r= .348^{*}$, $p<0.05$). The results also display that there is positive and strong correlation between instalment credit and liquidity ratios for Agricultural cooperatives represented by quick ratio, and current ratio ($r= .598^{**}$, $p<0.01$). There is also positive and very strong correlation between open credit in micro-credit schemes and liquidity ratios (quick ratio, & current ratio) for Agricultural cooperatives ($r= .694^{**}$, $p<0.01$).

Results from analysis of correlation matrix confirmed that there is a positive and moderate correlation between instalment credit in micro-credit schemes and solvability ratios of Agricultural cooperatives represented by debt-to-assets, & debt-to-equity ($r= .579^{**}$, $p<0.01$). Findings also show that there is positive and low correlation between open credit in micro-credit schemes and solvability ratios (debt-to-assets, & debt-to-equity) of Agricultural cooperatives ($r= .286^{*}$, $p<0.05$). Findings discovered that there is a positive and moderate correlation between revolving credit facility in micro-credit schemes and activity ratios (account receivables, inventory, &payables) in Agricultural cooperatives ($r= .343^{*}$, $p<0.05$). The results also show that there is positive and strong correlation between instalment credit and Activity ratios (account receivables, inventory, &payables) in Agricultural cooperatives ($r= .450^{**}$, $p<0.01$). There is also positive and strong correlation between open credit in micro-credit schemes and Activity ratios (account receivables, inventory, &payables) in Agricultural cooperatives ($r= .519^{**}$, $p<0.01$).

However, the findings show that there is on positive and significant relationship between Micro-credit schemes and agricultural cooperatives performance in Nyanza District.

5.2 Conclusion

During this study, regression analysis was used also to test and verify the research hypotheses of the study. The results from regression analysis indicated that the F-test= 7.779 which is positive and significant at 0% displays that we cannot accept $H_0$1 states that Micro-credit schemes do not affect positively profitability ratios (ROA, ROE, GPM, &NPM) of Agricultural cooperatives. This is based on the fact that findings indicated positive and significant effect of Micro-credit schemes on profitability ratios (ROA, ROE, GPM, &NPM) of Agricultural cooperatives.

The results from regression analysis indicated that the F-test= 20.995which is positive and significant at 0% shows that we cannot accept $H_0$2 which states that there is no positive effect of Micro-credit schemes on liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives. This is based on the fact that the findings indicated positive and significant effect on Micro-credit schemes on liquidity ratios (Quick ratio, & current ratio) for Agricultural cooperatives.

The results indicated that the F-test= 7.996 which is positive and significant at 0% shows that we cannot accept $H_0$3 which states that Micro-credit schemes have no significant effect on Solvability ratios (Debt-to-Assets, & Debt-to-Equity) of Agricultural cooperatives. This is based on the fact that the findings indicated positive and significant effect of Micro-credit schemes represented by open credit, revolving credit facility, instalment credit to Solvability ratios (Debt-to-Assets, & Debt-to-Equity) of Agricultural cooperatives.

The results indicated that the F-test= 8.274 which is positive and significant at 0% shows that we cannot accept $H_0$4 which states that Micro-credit schemes have no significant effect on Activity ratios (account receivables, inventory, &payables)of Agricultural cooperatives. This is based on the fact that the findings indicated positive and significant effect on Micro-credit schemes on Activity ratios (account receivables, inventory, &payables) for Agricultural cooperatives. As conclusion, the results indicated that the F-test= 46.509 which is positive and significant at 0.0% shows that we cannot accept $H_0$5 which states that Micro-credit schemes has no significant effect on Agricultural cooperatives performance. This is based on the fact that the findings indicated positive and significant effect of Micro-credit schemes on Agricultural cooperatives performance.

5.3 Recommendations

The agriculture makes a key device to poverty mitigation in many countries and has potentials to reduce food prices, to generate employment and increase farm income in rural areas. Farmers working in cooperatives as investors need long term investment to ensure the continuity and sustainability of their activities. They use financial credit to realize success of their investment which generate income in future.

To Agricultural Cooperatives in Nyanza and others

Agri-cooperative societies should initiate and implement financial policies to allow them to manage the costs of finance effectively. They should also start internal control systems that will make control of various actions such as administrative expenditures much easier. It is furthermore recommended that Agri-cooperative societies should fully involve all the members in the affairs of the organization. This means that nothing should be done without notifying and inviting them for critical discussions. This increases the social capital thus good working relationship. Agri-cooperative societies should moreover, express and implement appropriate risk management strategies to enable them manage risks, minimize losses and improve financial performance.

To Microfinance institutions and other financial institutions

Microfinance institutions should conduct micro credit consciousness programs for the farmers in Agri-cooperatives because mostly some farmers don't take the knowledge about the micro finance services so that they can be involved by the microfinance services. MFIs and farmers' mutual effort can gain the welfares of microfinance services and win the battle against poverty.

5.4 Suggestions to further studies

The researcher suggests that further studies should be carried out on effect of farming training on performance of agricultural cooperative in Rwanda, and determinants of financial sustainability of agricultural cooperative societies in Rwanda.

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APPENDICES

Appendix 1: QUESTIONNAIRE

Re: Introductory Letter to Respondents

Dear Respondent,

My name is Jeannine UMUGWANEZA a student at UR/Masters level. I am conducting a study to fulfil the academic requirements of University of Rwanda on the topic entitled *"**Micro-Credit Schemes and Agricultural Cooperative Performance in Rwanda, a case study of Agricultural Cooperatives in Nyanza District**"* Therefore, you are chosen to take part in this important study, and I will be grateful if you answer these questions, the information will be provided would only be used for academic purposes and shall be treated with highly confidential.

Thank you,

Jeannine UMUGWANEZA

SECTION I: Socio-Demographic Characteristics?

What is your Gender?

Male [ ] Female [ ]

How old are you?

21 and 30 year old [ ] 31 and 40 years old [ ]

41 and 50 years old [ ] above 51 years [ ]

Marital Status

Single [ ] Married [ ] Divorced [ ] Widow [ ]

What is your Education level?

Masters and above [ ] Bachelor's degree [ ]

Secondary level [ ] Primary level [ ]

How long have your cooperative been working with Micro-credits?

Less than 1 year [ ]2- 3years [ ]4-5years [ ]

Please, pick on which kind of Agri-product producing in your cooperative, among the mentioned below?

No.	Agricultural Products	Tick (v) for your Agri-product
1	Fruits	
2	Bananas	
3	Beans	
4	Rice	
5	Cassava	
6	Coffee	
7	Horticulture	
8	Maize	
9	Sorghum	
10	Mushroom	
11	Vegetables	
12	Others	

SECTION II: Effectiveness of Micro-Credits Schemes received by Agricultural Cooperatives

On a 5-point Likert scale, kindly indicate how much you agree with the following statements under each part: **5:** Strongly Disagree **4:** Disagree **3:** Neutral **2:** Agree **1:** Strongly agree

What are Micro-Credits Schemes received by Agricultural Cooperatives?

Revolving Credit Facility		**1**	**2**	**3**	**4**	**5**
1	Application procedures of revolving credit facility are simple for Agri-cooperatives					
2	In revolving credit facility, they have established maximum amount for Agri-business cooperatives to access the funds at any time when needed.					
3	Revolving credit facility become effectively for Agricultural cooperatives experienced high instabilities in cash flows and unpredicted large expenditures.					
4	Low cash balance Agricultural cooperatives in Nyanza, have been supported to enhance their net working capital.					
5	Bank considers some important factors for determining the creditworthiness for Agricultural cooperatives in Nyanza.					
6	Revolving credit facility give the flexibility of making purchases, transferring high-interest rate balances and borrowing cash to Agricultural cooperatives.					
7	Agricultural cooperatives received personal line of credit that allows them borrow money as needed up to an assigned credit line, just like a credit card.					
8	Revolving line credit allows agricultural cooperatives to borrow against equity they have.					
9	In revolving credit facility, Agricultural cooperatives are charged interest based only on the withdrawal amount and not on the entire credit line.					
Installment Credit		**1**	**2**	**3**	**4**	**5**
10	Instalment credit for Agricultural cooperatives come in the form of loan with a fixed loan amount and fixed payments.					
11	In instalment credit, they have established repayment schedule for agricultural cooperatives.					
12	They give agricultural cooperatives an exact timeframe to pay off what they borrowed.					

13	The instalment credit is offered in a variety of ways including agricultural loan to facilitate Agri-cooperatives 'activities.					
14	Application procedures of instalment credit are simple for borrowers Agri-cooperatives in Nyanza.					
15	Instalments made up from both principal and interest for cooperatives.					
16	In instalment credit, there are frequent payment schedules or frequent deposits for cooperatives.					
17	The clients' cooperatives that pay on time become eligible for next time high amount of loans.					
Open Credit		**1**	**2**	**3**	**4**	**5**
18	Open credit allowed borrower's cooperative to make electronic purchases.					
19	They are very affordable for beneficiaries' agricultural cooperatives.					
20	The scheme offers small amounts of money.					
21	They are typically not governed by the regular banks.					
22	It's taken by beneficiaries 'cooperatives without providing any collateral or guarantee.					
23	It is effectively used to strengthen agricultural projects and activities.					
24	The interest rates for open credit are very low and economical on Agricultural cooperatives.					
25	Open credit offered depending on the necessity of agricultural cooperatives					

SECTION III: Agricultural Cooperatives Performance

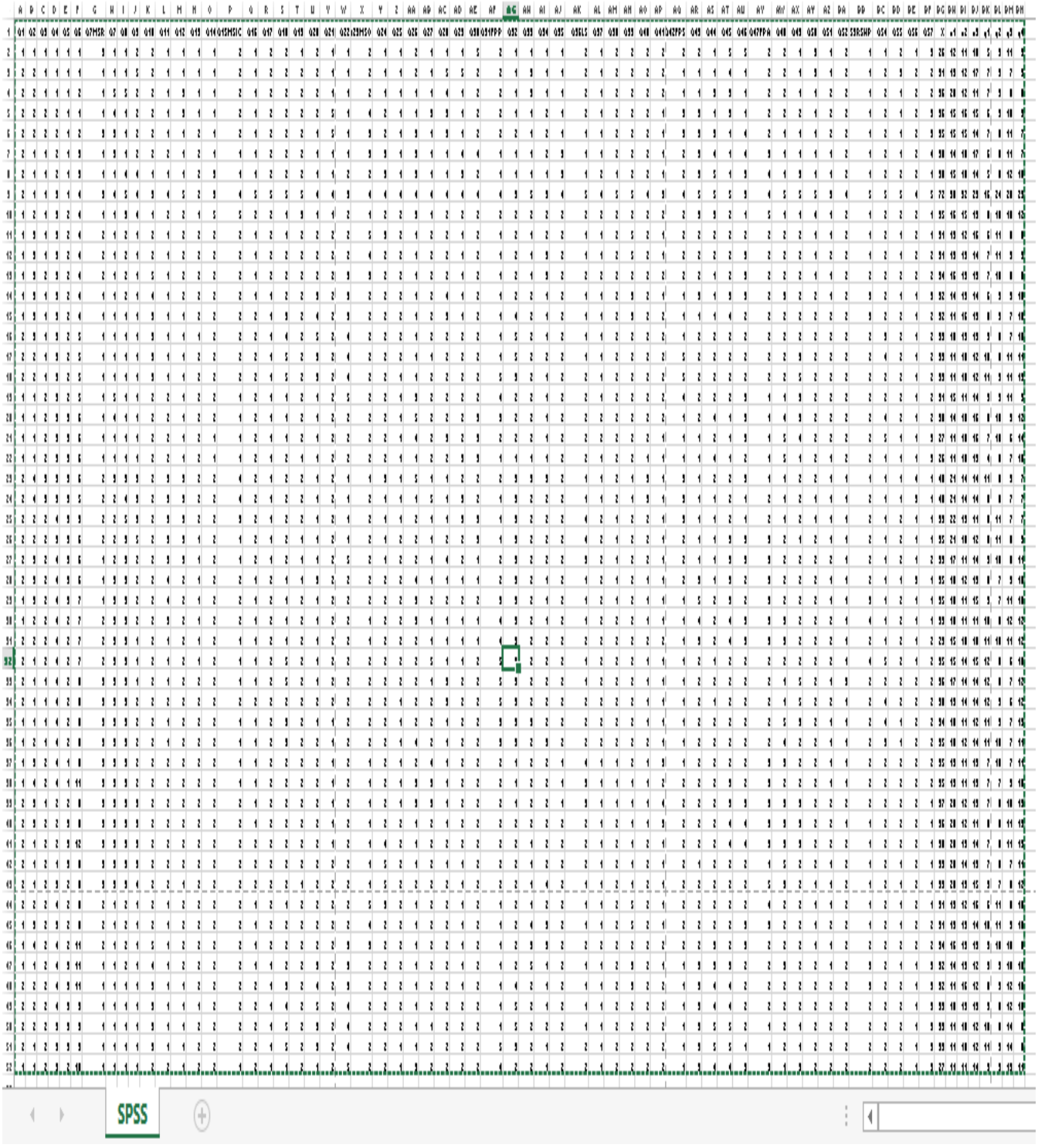
What are the factors indicating agricultural cooperatives performance?

Profitability ratios		**1**	**2**	**3**	**4**	**5**
1	Agri-cooperatives present an increase of the return on assets in previous years.					
2	Cooperatives show high return on equity capable of generating cash internally, and therefore less dependent on debt financing.					
3	Cooperatives have a high gross profit margin ratio that reflects a higher efficiency of core operations					
4	Agricultural cooperatives present high operating profit margins which are generally more well-equipped to pay for fixed costs and interest on obligations					
5	There is high productivity that provide the final picture of how profitable cooperatives is after all expenses, including interest and taxes have been taken into account.					
Liquidity ratios		**1**	**2**	**3**	**4**	**5**
6	Agricultural cooperatives have enough liquidity that help them to pay its short-term debt obligations.					
7	Agricultural cooperatives have liquidity that help them determine the creditworthiness.					
8	Farmers of cooperatives able determine investment worthiness using their liquidity.					
9	Quick ratio is more of a true test of cooperatives' ability to cover its short-term obligations.					
10	Agricultural cooperatives are able to fulfil short-term commitments with their liquid assets.					
11	Agricultural cooperatives commonly used the current ratio, quick ratio, and cash ratio to measurement of their liquidity.					
Solvability ratios		**1**	**2**	**3**	**4**	**5**
12	Agricultural cooperatives have ability to pay the interest expense on its debt.					
13	There is ability of cooperatives to pay all debt obligations including repayment of principal and interest to bank's credits					
14	Cooperatives have ability to pay interest expense with its cash balance.					
15	The capacity of the cooperatives' revenues supports to cover interest and other fixed charges.					
16	Agricultural cooperatives have ability to meet both short- and long-term debt obligations.					
Activity ratios		1	2	3	4	5
17	Improvement of product and service quality and reduce risks.					

18	Members of agricultural cooperatives are empowered economically and socially by being engaged in decision making processes.					
19	Working capital provides an insight into Agri-cooperatives' ability to meet current liabilities.					
20	There is increased member's production and incomes by helping better link them with finance, inputs, information and markets for output products.					
21	Accounts receivable turnover of agricultural cooperatives is efficiently to manage credit sales and convert account receivables into cash.					
22	Able to purchase of new inputs such as seeds, fertilizers and others.					

THANK YOU

Appendix 2: Date Base from SPSS



Appendix 3: Statistical Findings from SPSS ANALYSIS

I. RESPONDENT PROFILE RESULTS

What is your Gender?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	21	41.2	41.2	41.2
	2	30	58.8	58.8	100.0
	Total	51	100.0	100.0	

How old are you?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	35.3	35.3	35.3
	2	16	31.4	31.4	66.7
	3	13	25.5	25.5	92.2
	4	4	7.8	7.8	100.0
	Total	51	100.0	100.0	

Marital Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	19	37.3	37.3	37.3
	2	30	58.8	58.8	96.1
	3	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

What is your Education level?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	7.8	7.8	7.8
	2	7	13.7	13.7	21.6
	3	22	43.1	43.1	64.7
	4	18	35.3	35.3	100.0
	Total	51	100.0	100.0	

How long have your cooperative been working with Micro-credits?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	19.6	19.6	19.6
	2	23	45.1	45.1	64.7
	3	18	35.3	35.3	100.0
	Total	51	100.0	100.0	

Please, pick on which kind of Agri-product producing in your cooperative, among the mentioned below?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fruits	3	5.9	5.9	5.9
	Bananas	2	3.9	3.9	9.8
	Beans	2	3.9	3.9	13.7
	Rice	7	13.7	13.7	27.5
	Cassava	5	9.8	9.8	37.3
	Coffee	7	13.7	13.7	51.0
	Horticulture	4	7.8	7.8	58.8
	Maize	11	21.6	21.6	80.4
	Sorghum	4	7.8	7.8	88.2
	Mushroom	1	2.0	2.0	90.2
	Vegetables	4	7.8	7.8	98.0
	Others	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

II. DESCRIPTIVE RESULTS/CREDITS SCHEMES RECEIVED BY AGRICULTURAL COOPERATIVES

Application procedures of revolving credit facility are simple

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	24	47.1	47.1	47.1
	2	13	25.5	25.5	72.5
	3	14	27.5	27.5	100.0
	Total	51	100.0	100.0	

Establishing maximum amount for Agri-business access the funds at any time when needed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	23	45.1	45.1	45.1
	2	4	7.8	7.8	52.9
	3	19	37.3	37.3	90.2
	4	3	5.9	5.9	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

It is effectively to business experiencing sharp fluctuations in its cash flows and some unexpected large expenses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	18	35.3	35.3	35.3
	2	8	15.7	15.7	51.0
	3	20	39.2	39.2	90.2
	4	2	3.9	3.9	94.1
	5	3	5.9	5.9	100.0
	Total	51	100.0	100.0	

Supporting Agri-companies sometimes have low cash balances to support their net working capital needs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	24	47.1	47.1	47.1
	2	14	27.5	27.5	74.5
	3	7	13.7	13.7	88.2
	4	4	7.8	7.8	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

Bank considers several important factors for determining the creditworthiness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	2	3.9	3.9	3.9
	2	36	70.6	70.6	74.5
	3	9	17.6	17.6	92.2
	4	2	3.9	3.9	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

Giving the flexibility of making purchases, transferring high-interest rate balances and borrowing cash to help meet financial needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	27	52.9	52.9	52.9
	2	15	29.4	29.4	82.4
	3	6	11.8	11.8	94.1
	4	3	5.9	5.9	100.0
	Total	51	100.0	100.0	

Personal line of credit allows to borrow money as needed up to an assigned credit line, just like a credit card

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	19	37.3	37.3	37.3
	2	24	47.1	47.1	84.3
	3	7	13.7	13.7	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Revolving line of credit that allows you to borrow against the equity you have in your home

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	1	14	27.5	27.5	27.5
	2	37	72.5	72.5	100.0
	Total	51	100.0	100.0	

The borrower is charged interest based only on the withdrawal amount and not on the entire credit line

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	15.7	15.7	15.7
	2	40	78.4	78.4	94.1
	3	2	3.9	3.9	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

It comes in the form of a loan with a fixed loan amount and fixed payments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	16	31.4	31.4	31.4
	2	30	58.8	58.8	90.2
	3	1	2.0	2.0	92.2
	4	3	5.9	5.9	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Establishing repayment schedule

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	27	52.9	52.9	52.9
	2	23	45.1	45.1	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

This credit gives borrower an exact timeframe to pay off what s/he borrowed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	20	39.2	39.2	39.2
	2	30	58.8	58.8	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

It is offered in a variety of ways like personal, Agricultural, student, auto or mortgage loan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11	21.6	21.6	21.6
	2	27	52.9	52.9	74.5
	3	4	7.8	7.8	82.4
	4	2	3.9	3.9	86.3
	5	7	13.7	13.7	100.0
	Total	51	100.0	100.0	

Application procedures are simple for borrowers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	11.8	11.8	11.8
	2	43	84.3	84.3	96.1
	3	1	2.0	2.0	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Instalments made up from both principal and interest

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	20	39.2	39.2	39.2
	2	19	37.3	37.3	76.5
	3	7	13.7	13.7	90.2
	4	3	5.9	5.9	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

Frequent Payment schedules or frequent deposits

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	13	25.5	25.5	25.5
	2	35	68.6	68.6	94.1
	4	1	2.0	2.0	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

The clients who pay on time become eligible for next time high amount of loans

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	19.6	19.6	19.6
	2	25	49.0	49.0	68.6
	3	7	13.7	13.7	82.4
	4	6	11.8	11.8	94.1
	5	3	5.9	5.9	100.0

	Total	51	100.0	100.0	

Allowing borrower to make electronic purchases

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11	21.6	21.6	21.6
	2	30	58.8	58.8	80.4
	3	4	7.8	7.8	88.2
	4	4	7.8	7.8	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

They are very affordable for beneficiaries

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	13.7	13.7	13.7
	2	35	68.6	68.6	82.4
	3	5	9.8	9.8	92.2
	4	2	3.9	3.9	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

The scheme offers small amounts of money

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	23	45.1	45.1	45.1
	2	27	52.9	52.9	98.0
	4	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

They are typically not governed by the regular banks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	23	45.1	45.1	45.1
	2	12	23.5	23.5	68.6
	3	10	19.6	19.6	88.2
	4	4	7.8	7.8	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

It’s taken by beneficiaries without providing any collateral or guarantee.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	17	33.3	33.3	33.3
	2	27	52.9	52.9	86.3
	3	3	5.9	5.9	92.2
	4	2	3.9	3.9	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

It is used for self-employment projects and activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	17	33.3	33.3	33.3
	2	23	45.1	45.1	78.4
	3	6	11.8	11.8	90.2
	4	4	7.8	7.8	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Keeping the financial condition of the beneficiaries in mind, and the interest rates very low and economical

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	20	39.2	39.2	39.2
	2	24	47.1	47.1	86.3
	3	4	7.8	7.8	94.1
	4	2	3.9	3.9	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

It offers the repeat loans to individuals or self-help groups depending on the necessity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	4	7.8	7.8	7.8
	2	39	76.5	76.5	84.3
	3	5	9.8	9.8	94.1
	4	2	3.9	3.9	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

III. DESCRIPTIVE RESULTS/ AGRICULTURAL COOPERATIVES PERFORMANCE

Farmers in Agri-cooperatives increase their return on assets

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	20	39.2	39.2	39.2
	2	17	33.3	33.3	72.5
	3	4	7.8	7.8	80.4
	4	5	9.8	9.8	90.2
	5	5	9.8	9.8	100.0
	Total	51	100.0	100.0	

Return on equity was increased for farmers in Agricultural cooperatives

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	1	10	19.6	19.6	19.6
	2	18	35.3	35.3	54.9
	3	17	33.3	33.3	88.2
	4	2	3.9	3.9	92.2
	5	4	7.8	7.8	100.0
	Total	51	100.0	100.0	

Return on investment is highly demonstrated in the financial analysis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	13	25.5	25.5	25.5
	2	30	58.8	58.8	84.3
	3	5	9.8	9.8	94.1
	4	1	2.0	2.0	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

Gross profit margin determined how strong the Agri-business for farmers in cooperatives

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	20	39.2	39.2	39.2
	2	23	45.1	45.1	84.3
	3	7	13.7	13.7	98.0
	4	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

There is progressive net gross profit for farmers in Agri-Cooperatives

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	15.7	15.7	15.7
	2	40	78.4	78.4	94.1
	3	2	3.9	3.9	98.0
	4	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Cooperatives are able to make liquidity through current ratio that equal current asset over current liability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	23	45.1	45.1	45.1
	2	21	41.2	41.2	86.3
	3	3	5.9	5.9	92.2
	4	3	5.9	5.9	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Liquidity analysis is calculated by farmers using quick ratio to strengthen liquidity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	32	62.7	62.7	62.7
	2	18	35.3	35.3	98.0
	4	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Farmers in cooperatives are able to cover quick ratio as to calculate it using current assets minus inventory over their current liabilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	9	17.6	17.6	17.6
	2	41	80.4	80.4	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Able to evaluate their ability to meet the short-term obligations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	15.7	15.7	15.7
	2	34	66.7	66.7	82.4
	3	4	7.8	7.8	90.2
	5	5	9.8	9.8	100.0
	Total	51	100.0	100.0	

Ability to fulfill short-term commitments with liquid assets

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	12	23.5	23.5	23.5
	2	36	70.6	70.6	94.1
	3	2	3.9	3.9	98.0
	4	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Provide a good indication of liquidity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	28	54.9	54.9	54.9
	2	19	37.3	37.3	92.2
	3	3	5.9	5.9	98.0
	4	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

There is progressive debt to equity ratio

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	23	45.1	45.1	45.1
	2	19	37.3	37.3	82.4
	3	5	9.8	9.8	92.2
	4	2	3.9	3.9	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

There is progressive equity ratio

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11	21.6	21.6	21.6
	2	23	45.1	45.1	66.7
	3	14	27.5	27.5	94.1
	4	1	2.0	2.0	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

It is progressive of debt ratio

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	13	25.5	25.5	25.5
	2	23	45.1	45.1	70.6
	3	5	9.8	9.8	80.4
	4	6	11.8	11.8	92.2
	5	4	7.8	7.8	100.0
	Total	51	100.0	100.0	

They measure the capacity of the cooperative's revenues to support interest and other fixed charges

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	6	11.8	11.8	11.8
	2	22	43.1	43.1	54.9
	3	10	19.6	19.6	74.5
	4	9	17.6	17.6	92.2

	5	4	7.8	7.8	100.0
	Total	51	100.0	100.0	

They reflect the cooperative's ability to meet both short- and long-term debt obligations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	13.7	13.7	13.7
	2	22	43.1	43.1	56.9
	3	17	33.3	33.3	90.2
	4	4	7.8	7.8	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Improvement of product and service quality and reduce risks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	8	15.7	15.7	15.7
	2	24	47.1	47.1	62.7
	3	14	27.5	27.5	90.2
	4	3	5.9	5.9	96.1
	5	2	3.9	3.9	100.0
	Total	51	100.0	100.0	

Members are empowered economically and socially by being engaged in decision making processes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	11	21.6	21.6	21.6
	2	24	47.1	47.1	68.6
	3	9	17.6	17.6	86.3
	4	2	3.9	3.9	90.2
	5	5	9.8	9.8	100.0
	Total	51	100.0	100.0	

Cooperatives create social relations which enable individual members attain goals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	10	19.6	19.6	19.6
	2	27	52.9	52.9	72.5
	3	9	17.6	17.6	90.2
	4	1	2.0	2.0	92.2
	5	4	7.8	7.8	100.0
	Total	51	100.0	100.0	

There is increased member's production and incomes by helping better link them with finance, inputs, information and markets for output products

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	14	27.5	27.5	27.5
	2	33	64.7	64.7	92.2
	3	2	3.9	3.9	96.1
	4	1	2.0	2.0	98.0
	5	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Permanent improvement in land for farmers in cooperatives

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	25	49.0	49.0	49.0
	2	25	49.0	49.0	98.0
	3	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

Able to purchase of new inputs such as seeds, fertilizers and others

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	16	31.4	31.4	31.4
	2	33	64.7	64.7	96.1
	3	1	2.0	2.0	98.0
	4	1	2.0	2.0	100.0
	Total	51	100.0	100.0	

IV. RELATIONSHIP BETWEEN MICRO-CREDITS SCHEMES AND FINANCIAL PERFORMANCE OF AGRICULTURAL COOPERATIVES IN NYANZA DISTRICT

CORRELATION MATRIX

		Revolving Credit Facility	Installment Credit	Open Credit	Profitability	Liquidity situation	Solvability	Activity
Revolving Credit Facility	Pearson Correlation	1	.172	.337*	.282*	.348*	.046	.343*
	Sig. (2-tailed)		.228	.016	.045	.012	.747	.014
	N	51	51	51	51	51	51	51
Installment Credit	Pearson Correlation	.172	1	.524**	.534**	.598**	.579**	.450**
	Sig. (2-tailed)	.228		<.001	<.001	<.001	<.001	<.001
	N	51	51	51	51	51	51	51
Open Credit	Pearson Correlation	.337*	.524**	1	.248	.694**	.286*	.519**
	Sig. (2-tailed)	.016	<.001		.080	<.001	.042	<.001
	N	51	51	51	51	51	51	51
Profitability	Pearson Correlation	.282*	.534**	.248	1	.373**	.282*	.443**
	Sig. (2-tailed)	.045	<.001	.080		.007	.045	.001
	N	51	51	51	51	51	51	51
Liquidity situation	Pearson Correlation	.348*	.598**	.694**	.373**	1	.394**	.550**
	Sig. (2-tailed)	.012	<.001	<.001	.007		.004	<.001
	N	51	51	51	51	51	51	51
Solvability	Pearson Correlation	.046	.579**	.286*	.282*	.394**	1	.352*
	Sig. (2-tailed)	.747	<.001	.042	.045	.004		.011
	N	51	51	51	51	51	51	51
Activity	Pearson Correlation	.343*	.450**	.519**	.443**	.550**	.352*	1
	Sig. (2-tailed)	.014	<.001	<.001	.001	<.001	.011	
	N	51	51	51	51	51	51	51

*. Correlation is significant at the 0.05 level (2-tailed).

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

V. REGRESSION ANALYSIS RESULTS

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.576[a]	.332	.289	1.896

a. Predictors: (Constant), Open Credit, Revolving Credit Facility, Installment Credit

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	83.859	3	27.953	7.779	.000[b]
	Residual	168.900	47	3.594		
	Total	252.759	50			

a. Dependent Variable: Profitability

b. Predictors: (Constant), Open Credit, Revolving Credit Facility, Instalment Credit

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.498	1.592		2.198	.033
	Revolving Credit Facility	.125	.070	.227	1.793	.079
	Installment Credit	.349	.087	.558	3.986	.000
	Open Credit	-.103	.124	-.121	-.826	.413

a. Dependent Variable: Profitability

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.757[a]	.573	.545	1.570

a. Predictors: (Constant), Open Credit, Revolving Credit Facility, Installment Credit

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	155.255	3	51.752	20.995	.000[b]
	Residual	115.854	47	2.465		
	Total	271.109	50			

a. Dependent Variable: Liquidity situation

b. Predictors: (Constant), Open Credit, Revolving Credit Facility, Installment Credit

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.520	1.318		-.395	.695
	Revolving Credit Facility	.075	.058	.131	1.295	.202
	Installment Credit	.210	.072	.325	2.899	.006
	Open Credit	.422	.103	.480	4.096	.000

a. Dependent Variable: Liquidity situation

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.581[a]	.338	.296	2.100

a. Predictors: (Constant), Open Credit, Revolving Credit Facility, Installment Credit

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	105.841	3	35.280	7.996	.000[b]
	Residual	207.365	47	4.412		
	Total	313.206	50			

a. Dependent Variable: Solvability

b. Predictors: (Constant), Open Credit, Revolving Credit Facility, Installment Credit

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.537	1.763		2.573	.013
	Revolving Credit Facility	-.033	.077	-.054	-.425	.673
	Installment Credit	.411	.097	.591	4.239	.000
	Open Credit	-.005	.138	-.005	-.035	.973

a. Dependent Variable: Solvability

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.588[a]	.346	.304	2.091

a. Predictors: (Constant), Open Credit, Revolving Credit Facility, Installment Credit

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	108.500	3	36.167	8.274	.000[b]
	Residual	205.435	47	4.371		
	Total	313.936	50			

a. Dependent Variable: Activity

b. Predictors: (Constant), Open Credit, Revolving Credit Facility, Installment Credit

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.132	1.755		1.214	.231
	Revolving Credit Facility	.117	.077	.191	1.523	.134
	Installment Credit	.172	.096	.247	1.780	.081
	Open Credit	.308	.137	.326	2.248	.029

a. Dependent Variable: Activity

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.791[a]	.626	.602	3.610

a. Predictors: (Constant), Open Credit, Revolving Credit Facility, Installment Credit

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1025.177	3	341.726	26.220	.000[b]
	Residual	612.542	47	13.033		
	Total	1637.719	50			

a. Dependent Variable: Financial Performance of Agri-cooperatives in Nyanza District

b. Predictors: (Constant), Open Credit, Revolving Credit Facility, Installment Credit

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.048	3.031		2.655	.011
	Revolving Credit Facility	.196	.133	.140	1.478	.146
	Installment Credit	1.013	.167	.637	6.078	.000
	Open Credit	.391	.237	.181	1.653	.105

a. Dependent Variable: Financial Performance of Agri-cooperatives in Nyanza District

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.698[a]	.487	.476	4.141

a. Predictors: (Constant), Micro-Credit Schemes

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	797.505	1	797.505	46.509	.000[b]
	Residual	840.214	49	17.147		
	Total	1637.719	50			

a. Dependent Variable: Financial Performance of Agri-cooperatives in Nyanza District

b. Predictors: (Constant), Micro-Credit Schemes

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	9.103	3.172		2.870	.006
	Micro-Credit Schemes	.622	.091	.698	6.820	.000

a. Dependent Variable: Financial Performance of Agri-cooperatives in Nyanza District

APPENDIX 4: FINANCIAL STATEMENTS FROM AGRI-COOPERATIVES IN NYANZA DISTRICT

EXTRACTS OF FINANCIAL STATEMENTS FOR THE YEAR 2018

NO	COOPERATIVES	TYPES	NI	ASSETS	N.E	ROA	ROE
			A	B	C	D	E
						A/B %	A/C %
1	Imbereheza	Maize	26,709,000	24,900,000	15,000,000	107	178
2	Kundubuzima	Cassava	24,652,000	19,750,000	16,000,000	125	154
3	Cooproriz	Rice	21,456,000	16,567,000	11,000,000	130	195
4	Coamanya	Maize	23,760,000	21,378,000	18,000,000	111	132
5	Dufatanye	many products	27,557,000	10,567,000	14,000,000	261	197
6	Abishizehamwe	Maize	19,832,000	10,567,000	13,000,000	188	153
7	mizero coffee	Coffee	67,405,000	45,769,000	25,000,000	147	270
8	Cooprorizagasasa	Rice	20,768,000	10,567,000	14,000,000	197	148
9	Itetero	Mushroom	17,192,000	11,435,000	8,000,000	150	215
10	Imbaraga	Cassava	15,000,000	10,457,000	14,000,000	143	107
11	Abadatezuka	Maize	9,450,000	10,000,000	13,000,000	95	73
12	Girumurava	Maize	9,000,000	12,364,000	9,500,000	73	95
13	abishyizehamwe	Cassava	4,050,000	8,000,000	9,000,000	51	45
14	kirezi coffee	Coffee	8,000,000	10,567,000	12,000,000	76	67
15	twivugurure	Maize	9,500,000	17,050,000	12,000,000	56	79
16	Ingenzi	Maize	6,330,000	10,337,000	11,400,000	61	56
17	Iramata	Maize	8,610,000	10,598,000	10,500,000	81	82
18	dufatanyumurimo	Maize	7,450,000	10,547,000	15,000,000	71	50
19	twesimihigo	Cassava	9,010,000	10,569,000	13,000,000	85	69
20	Horeco	Pepper	8,412,000	12,567,000	11,000,000	67	76
21	duteraninkunga	Horticulture	7,000,000	10,312,000	12,310,000	68	57
22	Koainya	Bean	5,450,000	10,565,000	13,000,000	52	42
23	Amizero	Horticulture	8,120,000	10,347,000	15,000,000	78	54
24	abahujeubumwe	Maize	7,300,000	10,567,000	8,000,000	69	91
25	ubushakebwiza	Maize	6,800,000	10,511,000	12,300,000	65	55
26	Twisungane	Mushroom	6,700,000	10,541,000	11,000,000	64	61
27	Inadeco	Maize	8,500,000	10,567,000	11,000,000	80	77
28	Abajeneza	Maize	9,080,000	10,567,000	12,000,000	86	76
29	Coabimu	Maize	6,500,000	10,567,000	11,000,000	62	59
30	Twibumbire	Maize	7,000,100	10,117,000	23,000,000	69	30
31	Cooproriznyarubogo	Rice	8,900,000	10,567,000	21,000,000	84	42
32	duhuzimbaraga	Rice	8,453,300	10,521,000	15,000,000	80	56
33	izere coffee	Coffee	4,300,000	10,198,000	13,340,000	42	32
34	Umusingi	Maiza	7,580,000	10,300,000	14,200,000	74	53
35	Urugangazi	Cassava	6,700,000	13,000,040	11,800,000	52	57

36	Coaribu	Maize	9,700,000	21,000,000	25,000,000	46	39
37	twesimihigo 2	Cassava	8,760,000	12,567,000	15,000,000	70	58
38	Garukurebe	Mushroom	7,000,000	11,000,000	8,000,000	64	88
39	Abahuje	Maize	10,000,000	27,000,000	19,000,000	37	53
40	Dufatanyumurimo	Maize	9,600,000	25,000,000	18,000,000	38	53
41	Tubeho	Maize	8,200,000	19,000,000	18,000,000	43	46
42	Abafashamyumvire	Banana	3,000,000	4,000,000	4,500,000	75	67
43	duhuzimbaraganyamiyaga	Rice	9,900,000	30,000,000	40,000,000	33	25
44	Cocumanu	Maize	10,000,000	30,000,000	35,600,000	33	28
45	dutegureimbere	Maize	9,000,000	28,000,000	23,500,000	32	38
46	igiremuhinzi	Maize	7,001,000	29,500,000	26,000,000	24	27
47	Abahujeintego	Maize	8,900,000	20,000,000	22,000,100	45	40
48	dutezimberekawa	Coffee	1,000,000	26,700,000	27,700,100	4	4
49	twizamuregatagara	Maize	6,000,600	16,500,000	19,000,000	36	32
50	Urumuri	Maize	9,000,000	25,000,000	27,000,000	36	33
51	Abishyizehamwe 2	Rice	6,840,000	21,750,000	23,800,000	31	29

Note: NI =Net Income, NE = Net Equity (Total Equities deduct all Liabilities), ROA = Return On Assets and ROE = Return On Equity

CASH AND ACID TEST RATIOS 2018

NO	COOPERATIVES	TYPES	CASH	C.A	STOCK	C.L	C.R	A.T.R
			A	B	C	D	A/D	B-C/D
							%	%
1	Imbereheza	Maize	9,000,000	15,000,000	7,000,000	7,000,000	129	114
2	Kundubuzima	Cassava	600,000	1,200,000	500,000	550,000	109	127
3	Cooproriz	Rice	800,000	1,500,000	600,000	750,000	107	120
4	Coamanya	Maize	6,000,000	7,000,000	1,000,000	5,500,000	109	109
5	Dufatanye	many products	12,000,000	13,000,000	950,000	9,000,000	133	134
6	Abishizehamwe	Maize	8,700,000	9,000,000	0	8,000,000	109	113
7	mizero coffee	Coffee	7,000,000	9,000,000	2,500,000	6,000,000	117	108
8	Cooprorizagasasa	Rice	1,000,000	1,300,000	400,000	800,000	125	113
9	Itetero	mushroom	2,000,000	4,000,000	1,900,000	1,900,000	105	111
10	Imbaraga	Cassava	4,000,000	6,000,000	1,500,000	4,000,000	100	113
11	Abadatezuka	Maize	560,000	600,000	100,000	570,000	98	88
12	Girumurava	Maize	210,000	300,000	100,000	220,000	95	91
13	Abishyizehamwe	Cassava	340,000	500,000	170,000	345,000	99	96
14	kirezi coffee	Coffee	560,000	600,000	90,000	580,000	97	88
15	Twivugurure	Maize	320,000	400,000	70,000	400,000	80	83
16	Ingenzi	Maize	780,000	900,000	130,000	800,000	98	96
17	Iramata	Maize	420,000	550,000	80,000	600,000	70	78
18	Dufatanyumurimo	Maize	430,000	600,000	160,000	500,000	86	88
19	Twesimihigo	Cassava	450,000	450,000	0	500,000	90	90
20	Horeco	pepper	120,000	140,000	30,000	130,000	92	85
21	Duteraninkunga	horticulture	560,000	600,000	50,000	570,000	98	96
22	Koainya	Bean	780,000	780,000	0	790,000	99	99
23	Amizero	horticulture	230,000	240,000	0	300,000	77	80
24	abahujeubumwe	Maize	400,000	510,000	80,000	440,000	91	98
25	Ubushakebwiza	Maize	6,000,000	6,100,000	200,000	8,000,000	75	74
26	Twisungane	mushroom	5,000,000	5,600,000	700,000	5,050,000	99	97
27	Inadeco	Maize	2,000,000	2,400,000	300,000	2,300,000	87	91
28	Abajeneza	Maize	12,000,000	14,000,000	3,000,000	12,570,000	95	88
29	Coabimu	Maize	890,000	900,000	100,000	900,000	99	89
30	Twibumbire	Maize	120,000	130,000	10,000	130,000	92	92
31	Cooproriznyarubogo	Rice	78,000	90,000	5,000	90,000	87	94
32	Duhuzimbaraga	Rice	560,000	700,000	100,000	660,000	85	91
33	izere coffee	Coffee	450,000	500,000	30,000	550,000	82	85
34	Umusingi	Maiza	210,000	220,000	30,000	219,000	96	87
35	Urugangazi	Cassava	240,000	300,000	60,000	250,000	96	96
36	Coaribu	Maize	1,250,000	1,300,000	0	1,300,000	96	100
37	twesimihigo 2	Cassava	1,000,000	1,100,000		1,300,000	77	85
38	Garukurebe	mushroom	230,000	250,000	30,000	240,000	96	92

39	abahuje	Maize	4,500,000	5,500,000	500,000	5,000,000	90	100
40	Dufatanyumurimo	Maize	6,700,000	7,000,000	500,000	7,000,000	96	93
41	Tubeho	Maize	900,000	1,100,000	110,000	1,000,000	90	99
42	Abafashamyumvire	banana	2,000,000	2,100,000	300,000	2,100,000	95	86
43	duhuzimbaraganyamiyaga	Rice	100,000	150,000	60,000	110,000	91	82
44	Cocumanu	Maize	1,000,000	1,200,000	300,000	1,040,000	96	87
45	Dutegureimbere	Maize	1,800,000	1,900,000	110,000	1,900,000	95	94
46	igiremuhinzi	Maize	2,000,000	2,300,000	180,000	2,500,000	80	85
47	Abahujeintego	Maize	1,800,000	2,000,000	130,000	1,900,000	95	98
48	dutezimberekawa	Coffee	200,000	300,000	70,000	250,000	80	92
49	twizamuregatagara	Maize	1,200,000	1,500,000	210,000	1,300,000	92	99
50	Urumuri	Maize	900,000	1,100,000	90,000	1,100,000	82	92
51	Abishyizehamwe 2	Rice	120,000	150,000	35,000	125,000	96	92

EXTRACTS OF FINANCIAL STATEMENTS FOR THE YEAR 2016

NO	**COOPERATIVES**	**TYPES**	**NI**	**ASSETS**	**N.E**	**ROA**		**ROE**
			A	**B**	**C**	**D**		**E**
						A/B %		**A/C %**
1	Imbereheza	Maize	13,354,500	17,430,000	14,000,000	77		95
2	Kundubuzima	Cassava	12,326,000	13,825,000	13,000,000	89		95
3	Cooproriz	Rice	10,728,000	11,596,900	11,000,000	93		98
4	Coamanya	Maize	11,880,000	14,964,600	13,000,000	79		91
5	Dufatanye	many products	6,000,000	7,396,900	7,000,000	81		86
6	Abishizehamwe	Maize	7,000,000	7,396,900	8,000,000	95		88
7	mizero coffee	Coffee	31,000,000	32,038,300	32,000,000	97		97
8	Cooprorizagasasa	Rice	7,000,000	7,396,900	9,800,000	95		71
9	Itetero	Mushroom	8,000,000	8,004,500	9,000,000	100		89
10	Imbaraga	Cassava	7,000,000	7,319,900	9,800,000	96		71
11	Abadatezuka	Maize	4,725,000	7,000,000	9,100,000	68		52
12	Girumurava	Maize	4,500,000	8,654,800	6,650,000	52		68
13	Abishyizehamwe	Cassava	2,025,000	5,600,000	6,300,000	36		32

14	kirezi coffee	Coffee	4,000,000	7,396,900	8,400,000	54		48
15	Twivugurure	Maize	4,750,000	11,935,000	8,400,000	40		57
16	Ingenzi	Maize	3,165,000	7,235,900	7,980,000	44		40
17	Iramata	Maize	4,305,000	7,418,600	7,350,000	58		59
18	Dufatanyumurimo	Maize	3,725,000	7,382,900	10,500,000	50		35
19	Twesimihigo	Cassava	4,505,000	7,398,300	9,100,000	61		50
20	Horeco	Pepper	4,206,000	8,796,900	7,700,000	48		55
21	Duteraninkunga	Horticulture	3,500,000	7,218,400	8,617,000	48		41
22	Koainya	Bean	2,725,000	7,395,500	9,100,000	37		30
23	Amizero	Horticulture	4,060,000	7,242,900	10,500,000	56		39
24	Abahujeubumwe	Maize	3,650,000	7,396,900	5,600,000	49		65
25	Ubushakebwiza	Maize	3,400,000	7,357,700	8,610,000	46		39
26	Twisungane	Mushroom	3,350,000	7,378,700	7,700,000	45		44
27	Inadeco	Maize	4,250,000	7,396,900	7,700,000	57		55
28	Abajeneza	Maize	4,540,000	7,396,900	8,400,000	61		54
29	Coabimu	Maize	3,250,000	7,396,900	7,700,000	44		42
30	Twibumbire	Maize	3,500,050	7,081,900	16,100,000	49		22
31	Cooproriznyarubogo	Rice	4,450,000	7,396,900	14,700,000	60		30
32	Duhuzimbaraga	Rice	4,226,650	7,364,700	10,500,000	57		40
33	izere coffee	Coffee	2,150,000	7,138,600	9,338,000	30		23
34	Umusingi	Maiza	3,790,000	7,210,000	9,940,000	53		38
35	Urugangazi	Cassava	3,350,000	9,100,028	8,260,000	37		41
36	Coaribu	Maize	4,850,000	14,700,000	17,500,000	33		28
37	twesimihigo 2	Cassava	4,380,000	8,796,900	10,500,000	50		42
38	Garukurebe	Mushroom	3,500,000	7,700,000	5,600,000	45		63
39	Abahuje	Maize	5,000,000	18,900,000	13,300,000	26		38
40	Dufatanyumurimo	Maize	4,800,000	17,500,000	12,600,000	27		38

41	Tubeho	Maize	4,100,000	13,300,000	12,600,000	31		33
42	Abafashamyumvire	Banana	1,500,000	2,800,000	3,150,000	54		48
43	duhuzimbaraganyamiyaga	Rice	4,950,000	21,000,000	28,000,000	24		18
44	Cocumanu	Maize	5,000,000	21,000,000	24,920,000	24		20
45	Dutegureimbere	Maize	4,500,000	19,600,000	16,450,000	23		27
46	Igiremuhinzi	Maize	3,500,500	20,650,000	18,200,000	17		19
47	Abahujeintego	Maize	4,450,000	14,000,000	15,400,070	32		29
48	Dutezimberekawa	Coffee	500,000	18,690,000	19,390,070	3		3
49	Twizamuregatagara	Maize	3,000,300	11,550,000	13,300,000	26		23
50	Urumuri	Maize	4,500,000	17,500,000	18,900,000	26		24
51	Abishyizehamwe 2	Rice	3,420,000	15,225,000	16,660,000	22		21

Note: NI =Net Income, NE = Net Equity (Total Equities deduct all Liabilities), ROA = Return On Assets and ROE = Return On Equity

Cash ratio (C.R) and Acid Test Ratios (A.T.R) 2016

NO	COOPERATIVES	TYPES	CASH	C.A	STOCK	C.L	C.R	A.T.R
			A	B	C	D	A/D	B-C/D
1	Imbereheza	Maize	4,000,000	5,000,000	1,500,000	4,300,000	93	81
2	Kundubuzima	Cassava	4,500,000	5,000,000	0	6,000,000	75	83
3	Cooproriz	Rice	7,000,000	9,000,000	3,000,000	8,000,000	88	75
4	Coamanya	Maize	5,000,000	6,600,000	900,000	6,500,000	77	88
5	Dufatanye	many products	9,000,000	13,000,000	4,500,000	9,500,000	95	89
6	Abishizehamwe	Maize	5,000,000	6,000,000	1,200,000	5,600,000	89	86
7	mizero coffee	coffee	4,000,000	6,700,000	2,000,000	5,600,000	71	84
8	Cooprorizagasasa	Rice	700,000	1,200,000	400,000	810,000	86	99
9	Itetero	mushroom	940,000	1,100,000	100,000	1,100,000	85	91
10	Imbaraga	Cassava	1,800,000	2,210,000	400,000	2,210,000	81	82
11	Abadatezuka	Maize	150,000	240,000	50,000	230,000	65	83
12	Girumurava	Maize	90,000	110,000	15,000	110,000	82	86

13	abishyizehamwe	Cassava	230,000	260,000	70,000	250,000	92	76
14	kirezi coffee	coffee	400,000	500,000	0	600,000	67	83
15	Twivugurure	Maize	120,000	140,000	10,000	150,000	80	87
16	Ingenzi	Maize	240,000	230,000	40,000	250,000	96	76
17	Iramata	Maize	100,000	140,000	30,000	130,000	77	85
18	dufatanyumurimo	Maize	200,000	210,000	0	220,000	91	95
19	Twesimihigo	Cassava	230,000	233,000	0	235,000	98	99
20	Horeco	pepper	60,000	69,000	10,000	70,000	86	84
21	duteraninkunga	horticulture	300,000	330,000	10,000	340,000	88	94
22	Koainya	bean	450,000	480,000	25,000	460,000	98	99
23	Amizero	horticulture	80,000	100,100	15,000	90,900	88	94
24	abahujeubumwe	Maize	600,000	670,000	80,000	700,000	86	84
25	ubushakebwiza	Maize	9,000,000	11,000,000	4,000,000	9,800,000	92	71
26	Twisungane	mushroom	5,000,000	5,400,000	500,000	5,000,000	100	98
27	Inadeco	Maize	3,000,000	4,000,000	1,200,000	3,400,000	88	82
28	Abajeneza	Maize	9,000,000	11,000,000	3,000,000	9,700,000	93	82
29	Coabimu	Maize	400,000	600,000	160,000	450,000	89	98
30	Twibumbire	Maize	60,000	80,000	14,000	67,000	90	99
31	Cooproriznyarubogo	Rice	780,000	90,000	11,000	80,000	975	99
32	duhuzimbaraga	Rice	180,000	300,000	120,000	190,000	95	95
33	izere coffee	coffee	200,000	250,000	50,000	230,000	87	87
34	Umusingi	Maiza	140,000	180,000	30,000	160,000	88	94
35	Urugangazi	Cassava	260,000	300,000	30,000	280,000	93	96
36	Coaribu	maize	900,000	1,200,000	400,000	980,000	92	82
37	twesimihigo 2	Cassava	1,000,000	1,250,000	300,000	1,100,000	91	86
38	Garukurebe	mushroom	140,000	190,000	30,900	180,000	78	88
39	abahuje	Maize	4,000,000	6,000,000	2,000,000	4,500,000	89	89
40	Dufatanyumurimo	Maize	2,900,000	4,000,000	1,120,000	3,000,000	97	96
41	Tubeho	Maize	450,000	700,000	400,000	500,000	90	60
42	Abafashamyumvire	banana	1,500,000	2,500,000	600,000	2,100,000	71	90
43	duhuzimbaraganyamiyaga	Rice	20,000	40,000	9,000	30,000	67	103
44	Cocumanu	Maize	300,000	500,000	90,000	420,000	71	98
45	dutegureimbere	Maize	900,000	1,300,000	500,000	980,000	92	82
46	igiremuhinzi	Maize	2,000,000	2,400,000	400,000	2,200,000	91	91
47	Abahujeintego	Maize	1,000,000	1,700,000	350,000	1,500,000	67	90
48	dutezimberekawa	Coffee	80,000	110,000	15,000	90,000	89	106
49	twizamuregatagara	Maize	500,000	600,000	120,000	500,000	100	96

50	Urumuri	Maize	900,000	1,000,000	0	970,000	93	103
51	Abishyizehamwe 2	Rice	30,000	60,000	20,000	40,000	75	100

Comparisons between 2016 and 2018 for Net Income (NI), ROA (Return on Assets) and ROE

NO	COOPERATIVES	TYPES	NI	ROA	ROE
			NI 2018-NI 2016	ROA2018-ROA2016	ROE2018-ROE2016
1	Imbereheza	Maize	13,354,500	31	83
2	Kundubuzima	Cassava	12,326,000	36	59
3	Cooproriz	Rice	10,728,000	37	98
4	Coamanya	Maize	11,880,000	32	41
5	Dufatanye	many products	21,557,000	180	111
6	Abishizehamwe	Maize	12,832,000	93	65
7	mizero coffee	Coffee	36,405,000	51	173
8	Cooprorizagasasa	Rice	13,768,000	102	77
9	Itetero	mushroom	9,192,000	50	126
10	Imbaraga	Cassava	8,000,000	48	36
11	Abadatezuka	Maize	4,725,000	27	21
12	Girumurava	Maize	4,500,000	21	27
13	Abishyizehamwe	Cassava	2,025,000	14	13
14	kirezi coffee	Coffee	4,000,000	22	19
15	Twivugurure	Maize	4,750,000	16	23
16	Ingenzi	Maize	3,165,000	17	16
17	Iramata	Maize	4,305,000	23	23
18	Dufatanyumurimo	Maize	3,725,000	20	14
19	Twesimihigo	Cassava	4,505,000	24	20
20	Horeco	Pepper	4,206,000	19	22

21	Duteraninkunga	horticulture	3,500,000	19	16
22	Koainya	Bean	2,725,000	15	12
23	Amizero	horticulture	4,060,000	22	15
24	abahujeubumwe	Maize	3,650,000	20	26
25	Ubushakebwiza	Maize	3,400,000	18	16
26	Twisungane	mushroom	3,350,000	18	17
27	Inadeco	Maize	4,250,000	23	22
28	Abajeneza	Maize	4,540,000	25	22
29	Coabimu	Maize	3,250,000	18	17
30	Twibumbire	Maize	3,500,050	20	9
31	Cooproriznyarubogo	Rice	4,450,000	24	12
32	Duhuzimbaraga	Rice	4,226,650	23	16
33	izere coffee	Coffee	2,150,000	12	9
34	Umusingi	Maiza	3,790,000	21	15
35	Urugangazi	Cassava	3,350,000	15	16
36	Coaribu	Maize	4,850,000	13	11
37	twesimihigo 2	Cassava	4,380,000	20	17
38	Garukurebe	mushroom	3,500,000	18	25
39	Abahuje	Maize	5,000,000	11	15
40	Dufatanyumurimo	Maize	4,800,000	11	15
41	Tubeho	Maize	4,100,000	12	13
42	Abafashamyumvire	Banana	1,500,000	21	19
43	duhuzimbaraganyamiyaga	Rice	4,950,000	9	7
44	Cocumanu	Maize	5,000,000	10	8
45	Dutegureimbere	Maize	4,500,000	9	11
46	igiremuhinzi	Maize	3,500,500	7	8
47	Abahujeintego	Maize	4,450,000	13	12
48	dutezimberekawa	Coffee	500,000	1	1

49	twizamuregatagara	Maize	3,000,300	10	9
50	Urumuri	Maize	4,500,000	10	10
51	Abishyizehamwe 2	Rice	3,420,000	9	8