

**PROMOTION OF AGRIBUSINESS CLUSTER IN RICE VALUE CHAIN
AND ITS IMPACT ON FARMER'S WELFARE IN RWANDA
CASE OF MUKUNGURI AGRIBUSINESS CLUSTER (NYAMIYAGA
SECTOR, KAMONYI DISTRICT)**

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Masters Degree in Economics

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APPROVAL

This research work of USENGIMANA Emmanuel on “PROMOTION OF AGRIBUSINESS CLUSTER IN RICE VALUE CHAIN AND ITS IMPACT ON FARMER’S WELFARE IN RWANDA. CASE OF MUKUNGURI AGRIBUSINESS CLUSTER (NYAMIYAGA SECTOR, KAMONYI DISTRICT)” completed in partial fulfillment of the academic requirements for the award of Masters degree in Economics at Kigali Independent University ULK was done under my supervision and submitted with my approval.

Supervisor’s name

Signature:.....

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DECLARATION

I, USENGIMANA Emmanuel, hereby declare that this research study is my original work and has not been presented to any other Institution. No part of this research should be reproduced without the authors' consent

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USENGIMANA Emmanuel

DEDICATION

To almighty God

To my beloved Parents, Brothers and Sisters

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I would like to thank almighty God for his mercy and wonders that he has done for me in my life.

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ABBREVIATIONS AND ACRONYMS

BK	:	Bank of Kigali
BPR	:	Banque Populaire du Rwanda
CAF	:	Caisse des Affaires Financière
CCA	:	Canadian Cooperative Association
CDI	:	Center for Development and Innovation
COOPRORIZ:		Cooperative pour la Production du Riz
DFATD	:	Department of Foreign Affairs Trade and Development (Canada)
DRC	:	Democratic Republic of Congo
EDPRS	:	Economic Development and Poverty Reduction Strategy
EU	:	European Union
GDP	:	Gross Domestic Products
FAO	:	Food and Agriculture Organization
FGD	:	Focus Group Discussions
F-F	:	Firm-Farm
Fig	:	Figure
ICCO	:	Interchurch organization for development cooperation
ICT	:	Information, Communication and Technology
IRRI	:	International Rice Research Institute
IFDC	:	International Fertilizer development Center
IPAR	:	Institute of Policy Analysis and Research
MDGs	:	Millennium Development Goals
MFI	:	Micro-Finance Institutions
MINAGRI	:	Ministry of Agriculture and Animal Resources
MINECOFIN:		Ministry of Finance and Economic planning
MINICOM	:	Ministry of Trade and Industry
MRPIC	:	Mukunguri Rice Promotion and Investment Company
NGOs	:	Non-Governmental Organizations
NISR	:	National Institute of Statistics in Rwanda
OSU	:	Oregon State University
PhD	:	Doctor of Philosophy
RAB	:	Rwanda Agricultural Board

RBS	:	Rwanda Bureau of Standards
RCA	:	Rwanda Cooperative Agency
RDB	:	Rwanda Development Board
RISE	:	Rural Innovation Systems and Entrepreneurship
RSSP	:	Rural Sector Support Project
Rwf	:	Rwandan Franc
SIDO	:	Small Industries Development Organisations
SWOT	:	Strengths -Weakness- Opportunity- Threats
TAS	:	Thai Agricultural Standards
UGAMA	:	Umuryangowo Gushyigikira AMAkoperative
VC	:	Value chain
WB	:	World bank
WEF	:	World Economic Forum
WFP	:	World Food Program

ABSTRACT

The study conducted is titled, Promotion of agribusiness cluster in rice value chain and its impact on farmer's welfare in Rwanda, a case of Mukunguri agribusiness cluster (Nyamiyaga sector, Kamonyi District). The objectives of study were to examine the structure of Rice agribusiness cluster, to analyze the level of agriculture production in the Rice agribusiness cluster area, to analyze the contribution of Mukunguri Agribusiness Cluster to the welfare of farmers and to set up the best strategies that can improve the performance of Mukunguri agribusiness. In conducting the study the mixed approach of qualitative and quantitative were adopted, proposing sampling technique were used in sampling, while questionnaire, interview, documentary, and debriefing meeting through focus group discussion were used in data collection. Descriptive statistical analysis was used in data analysis. The findings showed that before the implication of MRPIC the rice value chain was composed by agri-shops as inputs suppliers, rice farmers as producers of paddy rice, and KABUYE s.a in collecting, processing and wholesaling function. The supermarkets, shops, open market and urban traders in retailing. Nowadays, value chain actors as well as supporters have changed. MRPIC LTD is currently negotiating with cooperatives and individual farmers to establish a contract farming which determine their business partnership in Rice value chain. The results also showed during agribusiness cluster, cooperative arrived to increase the working area, productivity and total production. The findings also revealed the increase of members capacity in the adherence to health insurance, and the tangible improvement in housing where the house property owner had increased from 81% to 98.4%. The study recommended that MRPIC LTD and COOPRORIZ ABAHUZABIKORWA must take advantage of new relationship with involvement of all stakeholders with strong collaboration.

Keywords: Agribusiness cluster, value chain and farmer's welfare

CHAPTER 1: INTRODUCTION TO THE STUDY

This report is about a thesis research undertaken on Mukunguri agribusiness cluster case between Agency for Investment, Promotion and Distribution MRPIC LTD (Mukunguri Rice Promotion and investment Company), different actors involved in the rice business and COOPRORIZ ABAHUZABIKORWA rice farmers' cooperative operating in Nyamiyaga sector of Kamonyi district, in Southern Province. The research was conducted for partial fulfillment of the requirements of master degree in Economics science

1.1 Background to the study:

The agricultural sector has been given a high priority in the government's planning for development. The current national thrust is for the sector to move from subsistence to commercial mode of production. This strategy aims to increase household incomes and lead to a 50 per cent reduction in poverty over twenty years (World Bank, 2005). With its projected contribution to economic growth, modernization of agriculture is seen as one of the six pillars of Vision 2020 along with sustainable land-use management and basic infrastructure.

Agriculture is also explicitly recognized in the EDPRS as one of the four priority sectors that will both stimulate economic expansion and make the greatest contribution to poverty reduction (FAO, 2010). By Rwanda vision 2020, agriculture is envisaged to contribute 33 per cent to GDP whereas industry, including agro-processing, is expected to grow from current levels of 14 per cent to 26 per cent of GDP (FAO, 2010).

Moreover, the proper strategy for growth has often been conceived as one of a more or less gradual shift from agriculture to industry, with the onus on agriculture to finance the shift in the first stage. Production of food and cash crops increased considerably between 2000 and 2005. The increase in production can partly be explained by specialization of stakeholders involved in crops value chain through development of Agribusiness cluster. This has been part of the sector strategy to ensure food security, income generation and poverty reduction. Livestock rearing has also been encouraged as an important category for income generation and nutrition for farm and non-farm families.

Food crops hold a very dominant position in Rwandan agriculture. However, since 1990 the largest percentage increases in area sown, by a large margin, have been fruit and vegetables (increasing more than fourfold), followed by Irish potatoes and wheat (FAO, 2010). This has meant that the

deployment of resources in agriculture has become increasingly responsive to market forces and increasingly integrated in the network of industrial interdependencies.

Agricultural products are shaped by technologies of growing complexity, and they incorporate the results of major research and development efforts as well as increasingly sophisticated individual and collective preferences regarding nutrition, health and the environment. While one can still distinguish the phase of welfare of farmers from the agribusiness cluster development, often this distinction is blurred by the complexity of technology and the extent of vertical integration: the welfare of farmers and extension of agriculture value chain is thus a joint process which is generating an entirely new type of industrial sector. However some small farmers are still living in extreme poverty (World Bank, 2005).

Enhancing crop productivity in food crops is generally not enough to lift smallholder farmers out of poverty. Farmers must also be assisted through different agriculture business to their primary production and also diversify their range of income-earning activities, both on and off the farm. Thus, it is a must for agribusiness cluster development to contribute to the improvement of socio-economic welfare of beneficiaries (farmers).

Sub-Saharan Africa is about the only region in the world where many development indicators are declining or stagnant. Agricultural production grew at a rate slower than that of population. This decline in agricultural production has been attributed to severe droughts, low farm prices, labor and capital flow into cities, cheap imports of food, neglected agricultural research and poor performance of agriculture business.

This performance of agriculture business leads sometimes to insignificant impact of some agriculture business. Hunger has become more wide spread, life expectancy has been declining, and food security and access to proper diets have been deteriorating. Of all the challenges facing African communities, their governments, and the international community that of endemic hunger is the most pressing.

According to World Bank (2005), the just under half of the region's population suffers from some level of food deprivation, with serious consequences for health and productivity. Many efforts have been deployed in increasing productivity, but, the greatest long-term source of food insecurity has now been poor investment in agriculture projects poor monitoring and evaluation of those projects especially for poor countries.

This is made worse by top-down decision about the projects initiation which leads both to bad ownership of the projects and low impacts to the beneficiaries. This problem is more remarkable in poor countries where we have a big portion of small scale farmers. Considering the fact that between 50 and 90 percent of the total production comes from small-scale farmers, the performance of smallholder producers is vital (Karugia, 2003).

The agricultural sector remains at the center of Rwanda's development programs and is now recognized as the engine of growth that will drive poverty reduction in Rwanda and improved living standards for her people. It stands out as one of the most strategic sectors to Rwanda's development and one of the Government of Rwanda's goals is to transform agriculture from subsistence to a modern sector as clearly set out in the EDPRS and Vision 2020 (MINECOFIN, 2000).

Therefore, the Government of Rwanda sees investment in agricultural projects as a primary solution. Nowadays Rwanda has put more efforts in Agribusiness cluster development by enhancing the improvement of crops value chain. Many projects small and big are being financed in all corners of the country. Some international and national NGOs are encouraged to intervene in agriculture business.

However, the performance of some agribusiness cluster is still questionable. That is why there is a need to assess the impacts of existing agribusiness cluster and to develop a strategy for rice value chain development by improvement of relationship between stakeholders involved in value chain.

1.2 Problem statement

According to World Bank (2005), feeding the world is only getting harder. By the year 2050, the world population is expected to reach 9 billion people. In looking at how to meeting this challenge, the Food and Agriculture Organization, (FAO), has estimated that, global demand for food will increase by 60 percent. Food security initiatives often focus on raising productivity through higher yields, crop intensification, and expanded crop acreage. Indeed, there have been advances in land use consolidation to increase agriculture production and development of agribusiness cluster through value chain development.

Rwanda's agricultural sector faces a set of unique challenges. Due to the country's high population density, land is a scarce commodity, while labor is Rwanda's most abundant factor endowment. As a result soil fertility has deteriorated dramatically over time. Thus, there is a high need to initiate

agricultural business and evaluate their performance to the socio economic development of the beneficiaries.

Therefore, the Government of Rwanda came up with investment in agriculture policy, which emphasizes agribusiness cluster development aimed at improving agricultural income (MINAGRI, 2005). Despite the high potential of the food crops sub-sector, the performance of agriculture business has been limited. The investment in agriculture business has been going on since long time and it has been increasing in recent years. At this case the rice business was taken into consideration by many stakeholders due to it is considered as food and cash crop and at the same time it is used for various categories of consumers in rural and urban settlements. It is in this approach Mukunguri Agribusiness cluster development has been initiated to change the life of rice farmers in Kamonyi District.

The rice farmers in Kamonyi district in Southern province of Rwanda where thesis was done are used to growing rice through business relations with agri-processing firms. Previously, COOPRORIZ ABAHUZABIKORWA, Rice cooperative farmers were in contract farming with KABUYE Rice processing factory, which is a processing company based in Kigali city. It had failed to continue working with rice farmers in Kamonyi due to the poor relationship and management issues that occurred between them. Later on MRPIC LTD (Mukunguri Rice Promotion and Investment Company) as a new processing company based in Nyamiyagasector, Kamonyi District had come to restart rice value chain in the area by re-establishing business relations among COOPRORIZ ABAHUZABIKORWA rice farmers' cooperative ,MRPIC LTD processing company and other value chain actors by forming agribusiness cluster development of rice.

This thesis will contribute to analyze the kind of promotion of Agribusiness Cluster in Rice value chain and its impact on farmer's welfare development in Rwanda.

1.3 Research objectives

This research is guided by two objectives which are general objectives and specific objectives.

1.3.1 General objective

The overall objective of this research is to develop a strategy for Rice value chain development by improvement of relationship between COOPRORIZ ABAHUZABIKORWA rice farmers, MRPIC LTD processing company and other involved actors through an analysis of the kind of promotion of

Agribusiness Cluster in Rice value chain and its impact on farmer' walefare development based in Nyamiyaga sector, Kamonyi District in Rwanda

1.3.2 Specific objectives.

The specific objectives are as following:

1. To examine the structure of Rice agribusiness cluster and value chain in Nyamiyaga sector
2. To examine the level of agriculture production in the Rice agribusiness cluster and value chain area.
3. To analyze the contribution of Mukunguri Agribusiness Cluster development to the welfare of farmers.
4. Set up the best strategies that can increase the performance of Mukunguri agribusiness.and to examine what should be done to improve the business relationship COOPRORIZ ABAHUZABIKORWA rice farmers ,MRPIC LTD processing company and other involved actors towards rice profitability and sales in Nyamiyaga sector

1.4 Research questions

1. What is the structure of Rice agribusiness cluster and value chain in Nyamiyaga sector?
2. What is the level of agriculture production in the Rice agribusiness cluster and value chain area?
3. How does Rice agribusiness cluster and value chain contribute to the walfare of farmers?
4. What are the best strategies that Rice agribusiness cluster and value chain can adopt to increase the economic welfare of farmers?

1.5 Hypotheses

- The structure of Rice agribusiness cluster and value chain in Nyamiyaga sector assessed;
- The level of agriculture production increased due to the Rice agribusiness cluster and value chain area.
- The Mukunguri Agribusiness Cluster contributes to development to the welfare of farmers.

- The future strategies of improving the business relationship among COOPRORIZ ABAHUZABIKORWA rice farmers, MRPIC LTD processing company and other involved actors towards rice profitability and sales known

1.6 Scope of the study

The study will deal with evaluation and setting up strategy of agribusiness cluster, which was initiated; It is an agriculture and business model from developing farmer capacity in Rice production, firm functioning and other potential stakeholder. The research was conducted in order to examine the rice agribusiness cluster located in Nyamiyaga Sector, Kamonyi district in southern province of Rwanda and it cover the period from 2010 to 2015

1.7 Significance of the study

The study will assess whether the kind of promotion of Agribusiness Cluster in Rice value chain and its impact on farmer's social economic development based in Nyamiyaga sector, Kamonyi District in Rwanda

These findings will be helpful to researchers in judging the degree to which they can conduct the complementary researches. UGAMA, CCA (rice agribusiness supporters) and other International and National NGOs need the same findings in order to plan for improvement. The findings will further add on the body of information that will be important other academicians and Public sector in the area of agribusiness planning and management.

1.8 Definitions of key concepts

1.8.1 Agribusiness:

Agribusiness is the business of agricultural production. It includes agrichemicals, breeding, crop production (farming and contract farming), distribution, farm machinery, processing, and seed supply, as well as marketing and retail sales.

Ray A. Goldberg coins the term agribusiness together with coauthor John H. Davis. They provided a rigorous economic framework for the field in their book *A Concept of Agribusiness* (Boston: Division of Research, Graduate School of Business Administration, Harvard University, 1957). That

seminal work traces a complex value-added chain that begins with the farmer's purchase of seed and livestock and ends with a product fit for the consumer's table.

1.8.2 Agribusiness cluster:

Agribusiness cluster is defined as collaboration between all actors needed to build profitable commodity-based value chains (producers and their organizations, input suppliers, finance suppliers, processors, warehouses managers, traders, business development services, etc.). The agribusiness cluster approach is designed to help rural smallholders move from subsistence farming to farming as a business and supply food for local, national, regional, and international and local markets

1.8.3 Value chain actors:

Actors in value chains include primary producers, processors, traders and service providers. They transform natural resources, raw materials and components into a finished product that is delivered to the end customer. The value chain concept is rooted in the organization of different actors and how they interact in their institutional environment

1.8.4 Value chain:

The value chain is a series of activities a product/service must pass through until it serves its final purpose of solving a customer need. In each phase of value chain the product/service gains some value. If a phase is malfunctioning the chain will break down and the mission of generating value for the customer will not be accomplished.

1.8.5 Firms:

Firms are defined as entities which purchase specific agricultural product from farmers for processing or marketing purposes.

1.8.6 Relationship:

Partnership among different person or institution, with a purpose of helping each other in their daily activity. This relationship can be guided by a written or oral contract (Frederick and Roy, 2003).

1.8.7 Farm:

The farm will be used as an area of land that is used for growing Rice in order to sell it to the firm.

1.8.8 Cooperative:

The definition of RCA (2011) was used to explain a cooperative as an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise, according to internationally recognized co-operative values and principles.

1.8.9 Food security:

Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and preferences for an active and healthy life (WFP, 1012).

1.8.10 Contract farming:

Contract farming is defined as a pre-negotiated agreement of production of agricultural produce between a farmer and a firm. The terms of contract shall include commitment on the part of producer to deliver a specified variety, quality and quantity of produce at specified time, place and price. In return, firm in most cases provides inputs, extension services and influence production decisions.

1.8.11 Smallholder farmers:

In developing countries smallholder farmers are the ones holding a land smaller than two hectares (Prowse, 2008). Their integration in global value chains is important step towards poverty reduction.

1.9 Structure of the thesis

This thesis report is made of four chapters which are introduction, literature review and conceptual framework, methodology, results/data processing/analysis, and discussions. The report is ended by conclusions and recommendations.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This part present general information on agribusiness ,value chaine terms and showing deeply the agribusiness conceptual and theoretical review, empirical review(Related case studies), Research gap and conceptual framework). It makes clear the meaning of key words dealing with the research topic.

2.1 Conceptual and theoretical review

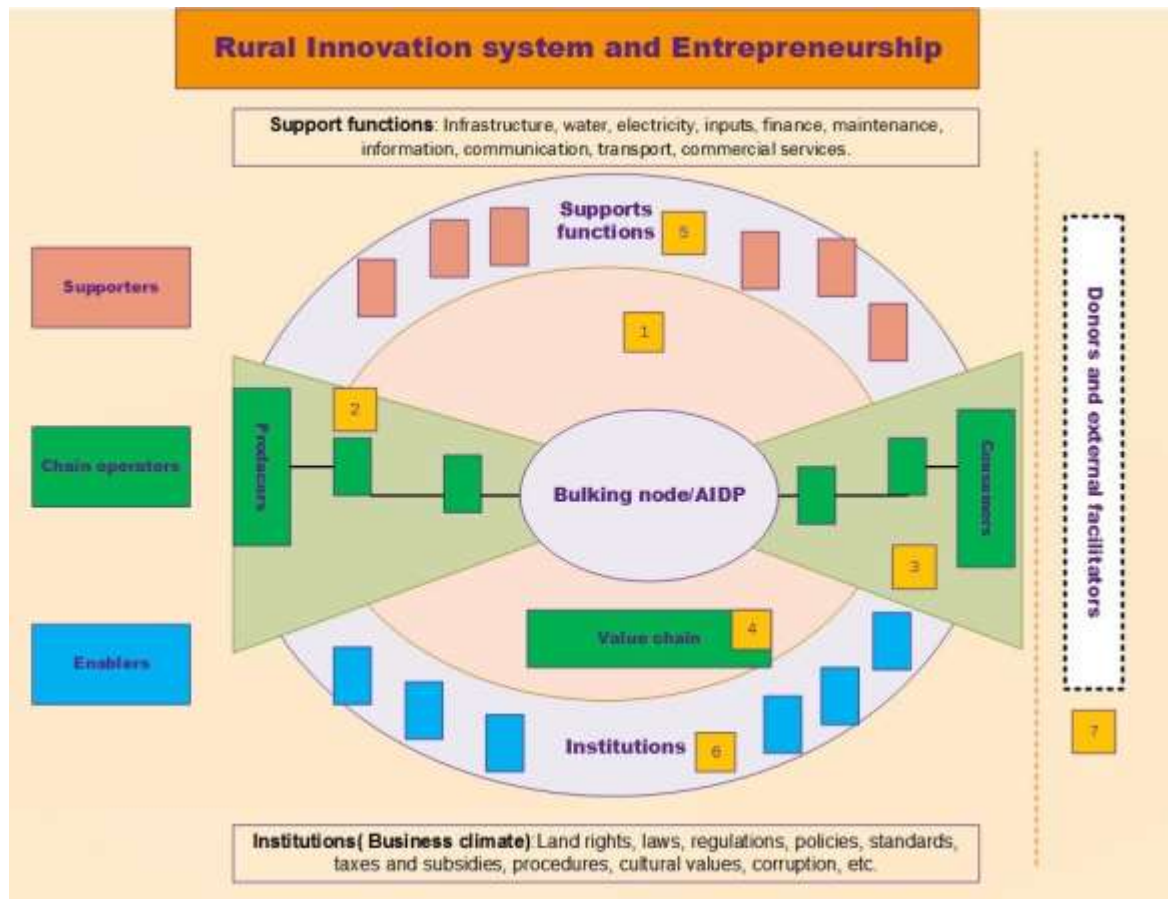
2.1.1. Agricultural value chain

Kaplinsky and Morris (2000) summarize value chain as a full series of activities which are necessary to convey a product or service from conception, through the different stages of production(including a combination of physical transformation and the inputs of different producer services), distribution to final consumer as well as final disposal after use.Agricultural value chain in developing countries faces various factors that may constrain its upgrading. Trienekens (2011) concurred some of them, such as scarcity of specialized abilities and difficult access to technology, market, physical infrastructures, inputs, information, resources and other services.

KIT (2008) specifies the main challenges that agricultural marketing in Africa usually encounters such as: prices volatility on the market of produces and inputs, weakness in market integration due to poor infrastructure, and limited access to financial services such as loans and insurance. Another challenge in agricultural chain that KIT (2008) emphasized also, is that various actors in the chain mistrust and seek to take advantage of each other.

2.1.1.1 Rural innovation systems and entrepreneurship (RISE)

Figure 1: RISE Model



Source: Schrader (2012)

As indicated by Schrader (2012), RISE is a conceptual framework that guides work on promoting farmer entrepreneurship. It incorporates approaches and concepts of value chain development. It also categorizes chain actors into three distinguished groups which are: chain operators, chain supporters and chain enablers/Influencers.

2.1.1.2 Firm-Farm relationship

The figure 5 describes relations between farm-firm based on 7 challenge areas indicated as follows. This framework was adapted after arriving to the field and describing the business case.

A. Production risks

Agriculture sector always encounters several risks leading to poor agricultural harvest. Agricultural risk is connected with negative effects that come from poorly expectable biological, climatic and price variables. Amongst these variables are climatic conditions and natural hazards (pests and diseases, floods and drought) which are beyond control of agricultural producers. In addition, hardships in change of both input and out prices are prevailing issues in production.

World Bank (2005) and Roll et al. (2006) classifies agricultural risks as follows: agriculture is often limited by high volatility of production results or production risk. Different from other entrepreneurs, it is very difficult for farmers to forecast with certainty the quantity of produce they will get due to external factors like weather conditions, pests and diseases. Besides external factors, farmers may also be stuck by difficulties occurred during harvesting and collecting that can result to yield losses. Market risks and fluctuating prices of agricultural inputs and outputs are also limiting factors for production.

B. Farmer Group functioning

According to RCA (2013) a cooperative is established by farmers in reaction to unfavorable market conditions which is a common problem for them. This might be a problem related to the marketing of crops resulting in low farm gate prices, availability and accessibility of inputs such as fertilizers and seeds, value addition, quality, and access to cheap credits. Therefore, by forming a cooperative initiative, rise their household income and reinforce the economic situation of their farm.

Cooperatives are formed to do something better than individuals could do for themselves or through a non-cooperative form of business. The main objective of cooperative, is to develop market power in order to sell products at higher prices or enter new markets. Usually many cooperative are formed to obtain and deliver inputs such as seed, feed, fertilizer, and petroleum more economically. Therefore, in cooperative, members ensure availability of needed services or pool risk. Furthermore, acting together, members can take advantage of economies of scale or develop bargaining power (OSU, 2004). In such functioning, the cooperative tries to fulfill members 'needs at the minimum possible cost. Contrariwise, some cooperative in Rwanda are characterized by poor management and weak leadership. Democracy and transparency principles are still issues to overcome.

C. Quality standards

In Rwandan agribusiness most of firms and farmers might not meet quality standards due to limited financial capacity, low skills and insufficient hygiene. TAS, 2007 and Codex, 2008 highlighted all activities related to harvesting, postharvest handling and transportation should be hygienically practiced in order to prevent any contaminations which will be dangerous to the consumers.

EU (2007), TAS (2007), Barrett and Anthon (2008), and Carmona (2011), indicated that commercial Rice should be supplied fresh to the consumer after post-harvest technologies. They classify Rice standards according to eight following indicators: quality of Rice, provisions concerning size, provisions concerning tolerances, provisions concerning presentation, provisions concerning marking and labeling, provision concerning packaging and presentation, and provisions concerning contaminants and pesticide residues. In addition, Rice might be classified in four commercial types: Round, ribbed, oblong or elongated, and cherry and cocktail Rice.

D. Contract farming

Different authors explain contract farming as a pre-negotiated agreement of production of agricultural produce that exist between a producer and buyer. The terms of agreement shall include commitment on the part of producer to deliver specified variety, quality and quantity of produce at specified time, place and price. In return, buyer may provide inputs, extension services and influence production decisions (Asokan 2005, 2007 and Begum 2005).

Prowse (2012) mentioned that agricultural produce under contract may be a field crop, horticultural crop, livestock or animal products. Generally, the buyer in contract farming stands in place of a processor, exporter marketing firm, input or service provider. However, most studies on contract farming focus on either advantages or criticism of contract farming. Most of the studies on contract farming focus on either advantages or criticism of contract farming. A limited number on studies have stated the case of continuity or break up of contract relationships.

Contract farming can be defined as a system where a private sector firm provides inputs to the farmers such as agricultural micro credits, seeds, pesticides and fertilizers in exchange for exclusive purchasing rights for the resulting crop yield. According to the WDR 2008, contract farming enables smallholder farmers to participate in a new high value product markets and improves quality standards, thus increasing and stabilizing farmers' incomes. EATON AND SHEPHERD (2001)

defines also contract farming as a partnership between agribusiness and farmers. The contract farming necessitates a long term commitment for both sides in order to be sustainable and successful.

Nevertheless, there are also risks with contract farming. Such risks can be reduced if a more attention is paid on strengthening market-oriented producer organizations and creating mechanisms for solving disputes that may arise between farmers and firms.

1. Risks of contract farming

In most cases the success of this kind of contracts is not stable either due to opportunistic behaviour of farmers or firms. Contracts have failed in many cases due to conflicts arising out of price, produce quality, farmers selling the produce in open markets when market price is high and firms failing to procure during times of low prices(Singh, 2004,Guo et al., 2007). Companies failed to buy contracted produce from farmers when they had over contracted acreage and crop yields were good (Singh, 2005).

In addition, searching, screening, and training farmers who are willing to produce for contracts involves money and time. It is economically reasonable for companies to continue contracts with same set of farmers as firms can save working capital involved in searching, screening, bargaining and training new set of farmers. Furthermore, old farmers would have acquired experience in production and transactions which will help in reducing transaction cost for the company.

Hongdong, Robert and Jianhua (2005) reported that trust and transparency are an important source of contract failure. Late payment for crop produce, lack of financial capacity for production, shortage of water for irrigation, unpredictable power supply and difficulty to meet quality requirements have been found to be on top of constraints faced by contract farmers.

Even though the arguments in favour of contract farming are convincing, Chirwa et al (2005) stated five key risks for smallholder farmers such as : loss of autonomy and control over farm enterprises, smallholder farmers face also considerable production risks if the technology available is inadequate or if the firm's price predictions are inaccurate. Third, the firm's exclusive purchase rights can depress producers' prices, and/or lead to late or partial payments. This may lead pull the producers in chronic indebtedness. Fourth, contracts may be oral or, if written, are not always in clear language (and conditions can be manipulated). Fifth, the vital gender dimension to smallholder farming often

means that the intra-household distribution labour/income is often altered to the detriment of women's interests.

Also, there are risks that may be observed for firms. Smallholder farmers often seek to profit from the inputs and produce by side selling. For instance, they may sell the fertilizers and pesticides for cash, or the harvest (to obtain faster access to capital, to seek higher prices, or just to avoid repaying the firm). The limited literacy and education of some small farmers may also increase risks for the firms. There is increased transaction costs for the firms to join dispersed smallholder population.

2. Opportunities for farmers and firms

It is logical to promote contract farming. Following the failure of international commodity agreements and the liberalisation of national markets, agricultural value chains have become increasingly buyer-driven and vertical integrated. In such environment, contract farming offers best of both small and large farm production system (Birhanu and Gabre-madhin, 2007). Smallholder farmers are often the most efficient agricultural producers and they have advantages over large farms in terms of reduced labour-related transaction costs (especially supervising and motivating workers).

However, smallholder farmers often suffer from capital constraints, and they lack capacity to adopt technological innovations. Contract farming can overcome these difficulties and can deliver benefits typically associated with large-farm production systems, including increased output with reduced input costs. Moreover, firms have a comparative advantage in market and technological knowledge, as well as in product traceability and quality.

Basing on poverty-reduction perspective, contracting with smallholder farmers can yield more interests for all contracting parties. Normally small farms are owned and operated by poor people who often use local labour and usually spend their income on local products and services (MINAGRI, 2011).

In addition, contract farming offers clear opportunities for smallholder farmers because it allows them to achieve to reliable market, inputs and production services. It can also stimulate the transfer of technology and skills and help farmers to deal with quality standards issues. On the other hand, Eaton and Shepherd (2001) says that there are clear benefits for firms in the sense that contract farming helps to improve supply quality and quantity, and transfers and production risks on farmers. In this regards, contract farming can increase firm's profits from the value chain, improve its

governance. Also, where access to land is still a big problem, it can overcome those constraints. For instance, firms may find it difficult to obtain a land, or may run the risks of expropriation to get it.

Moreover, Sriboonchitta and Wiboonpoongse (2008) concurred that contract farming delivered farmers with an secure market, stable income, access to firms' services, ease of credit and technical knowledge, and it provides agro-industrial firms with an assured supply of good quality raw material at less fixed investment and low cost.

According to Eaton and Shepherd (2001) , contract farming has been in existence for so many years ago as approach to organize the commercial agricultural production for both small and large scale farmers. The farmers and firms might be linked with each other by 5 probable farming contract model but this report focuses on only one model applicable to the business case; centralized model, nucleus estate model, multipartite model, intermediary model and informal model.

Informal model

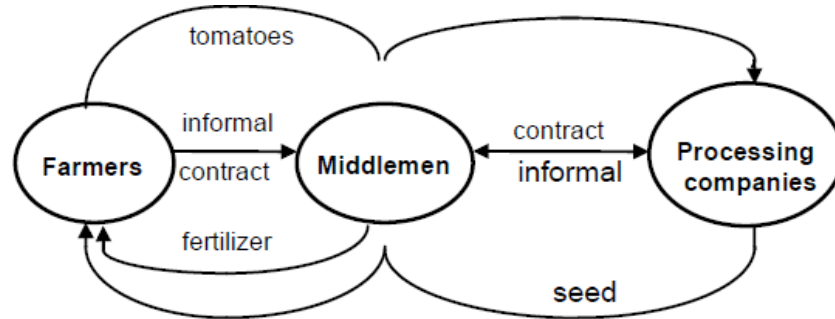
This model of contract is mostly observed in developing countries where it is applied for individual entrepreneurs or small companies. They make a simple, and informal production contracts with farmers on seasonal basis. It is mainly applicable for crops like tropical fruits, fresh vegetables, watermelon, etc. These crops frequently necessitate a minimal amount of processing. Also, inputs are frequently limited to the provision of seeds, fertilizers, pesticides, and technical support limited to grading and quality control stuffs.

Eaton and Shepherd (2001) and, found that the success of informal model relies on the availability of supporting services which are mostly to be delivered by government organizations. In addition, individual investors often are not financially strong enough to provide inputs for farmers. Therefore, they must either rely on government supports (extension services, provision of inputs, etc.) or develop a kind of arrangements whereby micro-finance institutions provide loans to farmers against the security of a contract with the investor.

This is considered as an informal multipartite contract. This kind of contract is the most temporary and speculative of all contract farming models, it has high risks of default by both company and farmer. The figure 6 illustrates contractual relations between companies and farmers.

Therefore, it is very important that arrangements concluded between companies are back up by law even though in many countries, the delay and inefficiency of legal systems is the challenge for legal action.

Figure 2: Informal model of contract farming



Source: Eaton and Shepherd (2001), Sriboonchitta and Wiboonpoongse (2008)

E. Market and prices

Previous research found that small-scale farmers are always wondering on what they can produce with limited marketing opportunities, which in most cases complicate the diversification into new crops. Eaton and Shepherd (2001), found that farmers are not motivated to cultivate unless they are sure of the market of their crop. Companies or processors also will not invest in projects unless they are assured that the projected produces can be regularly produced by farmers.

Only contract farming can offer adequate solution by guaranteeing market to the farmers and assuring consistent supply to the company. In addition, in case the outlets for the same crops are available, farmers may benefit from contract farming in the sense that it is not necessary for them to search for and negotiate with local and international traders, and project sponsors usually arrange transport for their produces from the farm gate.

SIDO (2009) also said that processors need to ensure timely purchases from farmers in order to prevent Rice produce, to get damaged by the sun after harvest awaiting transport from processor. It was also noted that, the better is explore the option of arranging some payments advances for farmers before the harvest. This would help to prevent premature harvests done by the farmers in order to get fast cash.

2.1.2 Agribusiness development

2.1.2.1 The importance of agribusiness

Agribusiness denotes the collective business activities that are performed from farm to fork. It covers the supply of agricultural inputs, the production and transformation of agricultural products and their distribution to final consumers. Agribusiness is one of the main generators of employment and income worldwide.

Agribusiness is characterized by raw materials that are mostly perishable, variable in quality and not regularly available. The sector is subject to stringent regulatory controls on consumer safety, product quality and environmental protection. Traditional production and distribution methods are being replaced by more closely coordinated and better planned linkages between agribusiness firms, farmers, retailers and others in the supply chains.

These are the central issues addressed by FAO's Agribusiness Development Programme, which advises on policies and strategies to improve agribusiness competitiveness, including fostering better coordination and linkages among business partners. It also produces training materials, in particular for small farmers and for managers of agro-processing enterprises who need technical, managerial and business planning training.

2.1.2.2 Agribusiness linkages

Strengthening farm-agribusiness linkages is vital for agribusiness development. Successful linkages lead to adding value in agricultural sectors, they can help to create employment and increase income levels. Small farmers cannot remain only producers of foodstuffs but have to take on the additional role of entrepreneurs in order to improve their livelihoods and move beyond subsistence farming. Further, agribusiness companies are in need of reliable domestic raw material supplies to improve their international competitiveness.

The linkage initiative concentrates on how to develop and reinforce equitable and efficient linkages between all players along the food value chain. The main work of FAO is to create an awareness of the importance of farm-agribusiness linkages and to develop guidelines for policymakers and planners on how to formulate strategic programmes and overall strategies that would assist in building and maintaining successful farm-agribusiness linkage programmes.

2.1.2.3 Agribusiness Linkages studies

Strengthening the relationships between producers and processors as well as between producers and traders can be promoted by international support organization such as FAO. In order to bring benefits to both actors, stronger and more trusting relationships are essential. These can benefit both in terms of risk reduction and cost savings through better production planning and business management.

2.1.2.4 Agricultural finance and investment

Increasing finance and investment to rural areas is a vital part of addressing food security and poverty reduction. Rural finance encompasses the range of financial services offered and used in rural areas by people of all income levels. It includes agricultural finance, which is dedicated to financing agricultural related activities such as input supply, production, distribution, wholesale, processing and marketing. Agricultural value chain finance takes account of those inter-linked processes from farm to consumer and uses them to increase efficiency and lower risk in lending. Finally, microfinance provides financial services for poor and low income people by offering smaller loans and savings services, while accepting a wider variety of assets as collateral.

A number of factors continue to thwart the development of vibrant financial markets in the rural areas of most countries. The higher transaction costs associated with dispersed populations and inadequate infrastructure, along with the particular needs and higher risk factors inherent in agriculture result in an under-provision of financial services in rural areas. Further, where services are available, products are often designed without consideration for the needs and capacities of rural households and agricultural producers.

The inability of households and enterprises to access capital on competitive terms to undertake profitable investments, or take advantage of market opportunities, means that incomes and growth are lower than they to need be. Without financial products and services to insure against risk, rural households and enterprises may even retreat from profitable projects for which they have adequate liquidity. The absence of competitive savings instruments and other financial services in rural areas leads to less productive forms of savings that cut further into households' scarce liquidity and dampen local growth prospects.

Expansion of rural financial services can create a win-win scenario that will promote growth while also helping reduce poverty. Given the high proportion of poor populations that live in rural areas, the growing income inequality between urban and rural markets, and concerns for food security and population vulnerability in rural communities, many development agencies are returning their attention to rural financial deepening as part of a strategy to stimulate rural private sector development.

New approaches, technologies and forms of investment are occurring. FAO is working on research and development of agricultural investment funds, investment promotion, guarantee funds and information communication technology to increase the level of investment while lowering the risks to investors.

The rural and agricultural finance specialists in the FAO Rural Infrastructure and Agro-Industries Division are dedicated to promoting improvement in rural financial services and agribusiness investment in developing and transition countries. Details of the work and publications can be found here. A much greater range of information and resources relating to rural finance and investment can be found in the Rural Finance Learning Centre which is managed by the FAO Rural Finance specialists.

2.1.2.5 Contract farming

Contracts, formal or otherwise, are one of the main instruments utilized to coordinate transactions in agri-food value chains. Contracts have, in particular, been used as a mechanism of linking farmers and processors, reducing the uncertainties of transactions that take place in open markets, where price, quality and quantity are largely unpredictable.

If a processor needs a regular supply of agricultural raw materials, within a planned delivery schedule and following strict quality standards, he or she may use contracts with farmers to ensure that his or her procurement specifications are better met. Farmers, on the other hand, may look for contracts with processors as a way to guarantee a market for their output or to facilitate access to finance and technology.

Although contracts are not free of potential disadvantages for the contracting partners, if properly designed and enforced, they can play a significant role in agribusiness development. FAO has been

working with contract farming issues through the activities of its three technical groups - management, marketing and finance.

2.1.3 Agriculture in Rwanda

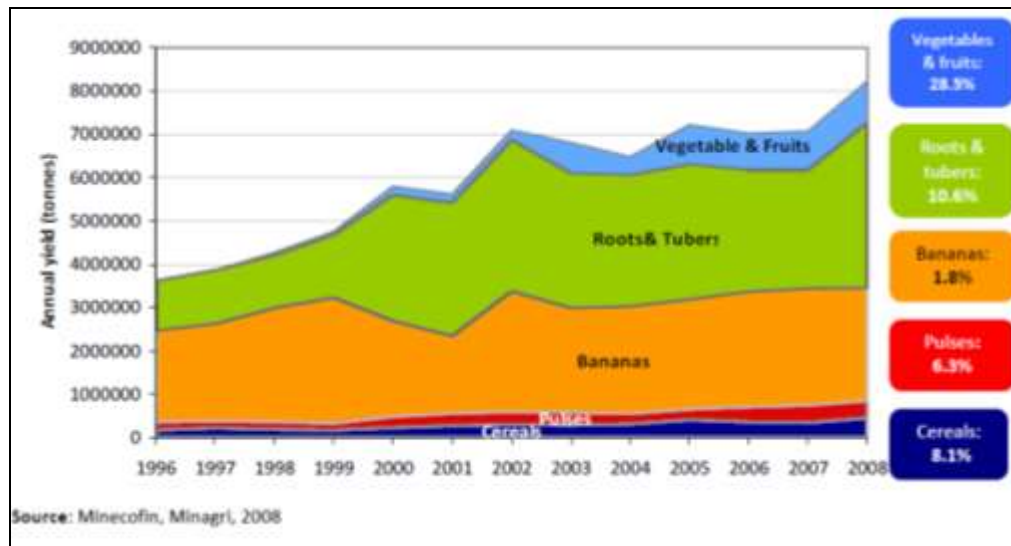
Agricultural sector is very important in Rwandan economy, it is a source of employment for around 90 per cent of the population, 91 per cent of the food consumed in the country is provided by this sector whereas its contribution on GDP is estimated at 36 per cent (IPAR, 2009). Nevertheless, agricultural sector faces various challenges due to climatic change as consequences of global warming which reduces the productivity. Still there is potential to develop the sector using modern practices of farming in order to increase both productivity and quality of products, development of value addition, and initiatives of export oriented agriculture.

In Rwandan agriculture, food crops come forward in production with rate of 90% by which 66% is consumed by producers and the increase in food crop production is not balancing with population growth (FAO, 2006).

In addition, there is little value addition lead agriculture with only 2% of enterprises in agro-processing sector (IPAR, 2009). This is because of insufficiency: of financial means, entrepreneurial spirit, marketing skills, transport infrastructure, and technology.

Despite a significant role of agricultural sector in national economy(GDP), agricultural production is still largely based on subsistence farming in which food crops take a larger portion of production. Food crops in Rwanda are distinguished in five categories (cereals, pulses, banana, roots& tubers, and vegetables& fruits).

Available data shown a significant increment in Rwanda for these categories of crops from 1996 to 2008 as shown in figure 1 below.

Figure 3: growth in food yields, 1996-2008

Moreover, production of food crops has strong importance in agricultural management. Although coffee is most important crop for export produced by peasant farmers, its priority in agricultural management at household level is very little. Also tea is another export crop after coffee, it is produced at large scale for tea factories in western and Northern provinces.

2.1.3.1 Growing seasons in Rwanda

According to WFP (2006), Rwanda has two rain seasons (A and B seasons) - the big rainy season (B) from mid-February up to May and the smaller rainy season (A) starting with mid- September to mid-December. A dry season or season C starts from the beginning of June to the beginning of September. This season is usually used for planting in marshlands (see figure 2).

Therefore, the rainfall and temperatures vary in different parts of the country. Generally drier and warmer climate is observed in the interior and east whereas there heavier rain and lower average temperatures in the north and west. Nyamiyaga sector has also such seasons.

Figure 4: Rwanda seasonal calendar

Seasonal calendar											
Season B (long rains)						Season A (short rains)					
Planting*			Harvesting			Planting			Harvesting		
Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec*	Jan
				Planting			Harvesting				
Season C (marshlands)											

Source: WFP, 2006

Rwandan climate is conditioned by this landscape: the further to the west, the lower the altitude, the warmer the temperature, and the lesser the precipitations (MINAGRI, 2008). The rainfall between June and August is much less than that in other months in the whole country. The period of cultivation can be divided into two-the first growing season which starts from September to January (season A), and the second from February to June (Season). Therefore, as for relationship between altitude and agriculture, most suitable zone for agricultural production is situated between 1500m and 1700m.

2.1.3.2 Rice production in Rwanda

Rwanda is a mountainous country. As a result, the temperatures are generally low. Annual average temperatures range from 15 to 25 degree centigrade. Temperatures are much lower in lowlands producing areas. Low temperature is therefore a serious abiotic constraint for rice production. Rice with indica features are the most susceptible with incidence ranging from extended vegetative stage, to failure to flower to poor partial / total grain filling failure to poor panicle exertion. Susceptibility to low temperature is most severe following late planting leading to coincidence of booting and flowering stage with extreme low temperature of May-June and November-December.

Insufficient availability of water in rice fields is also a very limiting production constraint. It is very prominent in all rice production schemes where there are no dams provided, and during the dry periods in nearly (99 %) all schemes. Blast (leaf and panicle) and Bacterial blight (mainly panicle blight) are the major diseases in all rice ecologies of Rwanda. Pathogen evolution is so fast that within 3 to 4 growing seasons most grown varieties become susceptible to the extent of causing total crop failure.

This applies to germplasm of all sources (IRRI, WARDA, Old Chinese japonica varieties and those bred in the region). Rice smuts and RYMV often appear but with negligible incidence. Attempts by farmers to control these diseases using chemical (benlate, tilt, fongorene, etc) does not appear to be successful. Besides, there is no research undertaken in this area. Diopsisthoracica is the main rice insect pest in Rwanda. It is severe from transplanting to the beginning of tillering stage.

Growers widely use insecticides (sumicombi) for control and we have also noticed genetic variation (resistance / susceptibility) among varieties. This pest is severe in rice schemes where rice is at various growing stages as a result of the common practice of planting at different dates/ periods. Green hoppers have also become very common in all rice schemes. They however look different from Asian types by their whitish body color. Further, stem borers are often seen with negligible severity and cause white head.

2.1.3.3 Rice production and food security

Rice production has importance on four dimensions of food security, availability, utilization, accessibility and stability.

Table 1:Rice Production and consumption 2018-2012

Year	Cultivated area(Ha)	Yield	Production paddy(MT)	Production Milled rice (MT)	Imports	Annual consumption
2008	12,000	5.2	62,400	40,560	17,925	60,825
2009	14,000	5.5	81,200	52,780	31,660	84,440
2010	12,186	5.5	70,680	45,942	44,545	90,482
2011	14,200	5.2	73,840	47,996	45,231	93,227
2012	15,615	5.5	85,882.5	55,823.6	48,284	104,107

Source: www.rab.gov.rw/spip.php?article 29

2.2 Empirical review (Related case studies)

Research done by FAO showed that as product transformations and transactions take place along a chain of interrelated activities from farm to fork, value is added successively. The term "value chain"

has thus been used by FAO to characterize this interconnected, coordinated set of links and linkages that take place as products move along a continuum between primary production and the consumer.

Agrifood production, processing and distribution worldwide are increasingly being organized into tightly aligned value chains, where the flows of inputs, products, information and financial resources are closely coordinated among farmers, processors, retailers and other economic actors. Supporting the creation and upgrading of agri-food value chains is an integral part of FAO's normative and field work.

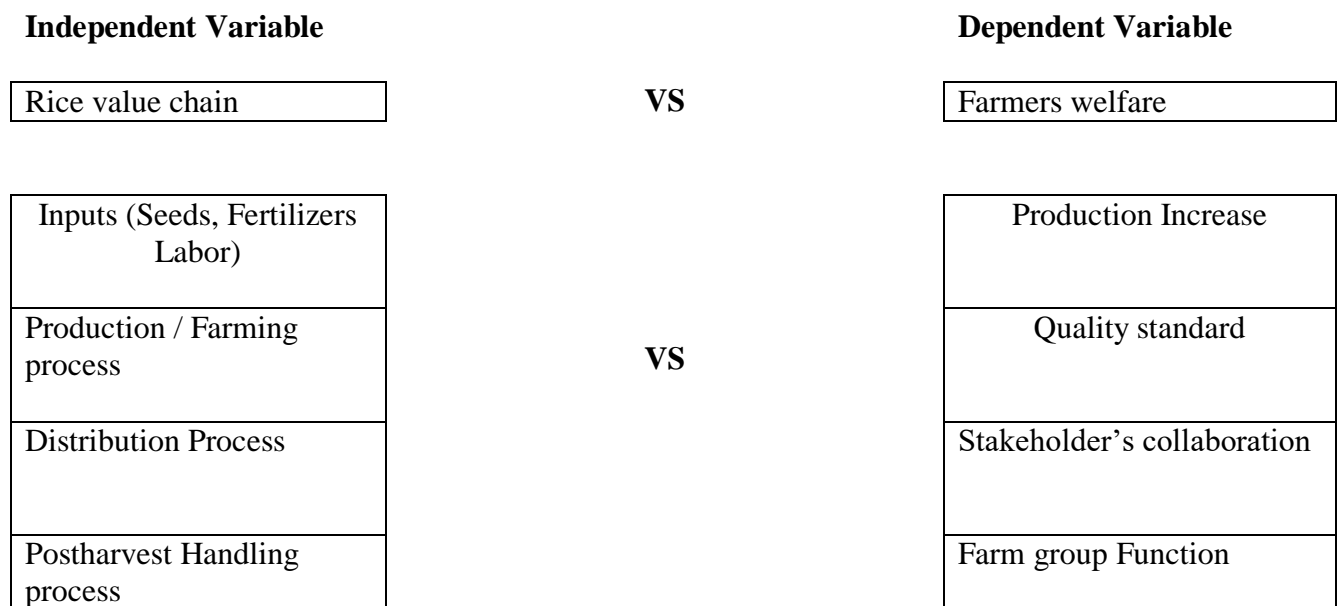
FAO results demonstrated that chain analysis can be an important tool in enhancing the performance of agricultural, food and fibre systems. By revealing strengths and weaknesses, the analysis helps chain stakeholders and policy-makers to delineate corrective measures and to unleash the development of areas and activities where the potential for growth is identified. When properly conducted, it can also help create a shared vision among chain participants regarding challenges and opportunities, thus facilitating the development of collaborative relationships. Agrifood chain analysis is also used for other related purposes. These include the promotion of enterprise development, the enhancement of food quality and safety, the quantitative measurement of value addition, the promotion of coordinated linkages among producers, processors and retailers and the improvement of an individual firm's competitive position in the market place, to name a few.

2.3 Research Gap

The research done by FAO was related to the analysis of value chain by enhancing tools that can improve the performance of agricultural and food system throughout revealing strengths and weaknesses among the stakeholders but it didn't clearly for each crops cluster, examine the structure of agribusiness cluster, analyze the level of agriculture production for each agribusiness cluster area, analyze the contribution of Agribusiness Cluster to the welfare of farmers and to set up the best strategies that can improve the performance agribusiness for each crops and in the specific area(growing location). That is why the study on Promotion of agribusiness cluster in rice value chain and its impact on farmer's welfare in Rwanda, a case of mukunguri agribusiness cluster (nyamiyaga sector, kamonyi district) was conducted especially for the rice value chain

2.4. Conceptual Framework

The study intends to adopt the mapping value chain that reflects Rwanda's Rice value chain. This mapping of value chain was chosen to be used for the research as it demonstrates all the activities carried out along the chain. Each activity starting with input supplies up to delivery to the consumer, involves many players ranging from input providers to processors of rice paddy and other rice products and finally the distributors and sellers who bring the output to consumers. The interaction of players in the activities facilitated the analysis and demonstrated by the nature of Rice value chain and its implication for agribusiness in Rwanda.



Inputs (Improved seeds, fertilizers, labor): The acquisition of input materials used like seeds, fertilizers, labor was facilitated by the actors (RAB and ETG) where RAB provided the basic seeds, trainings in good agriculture practices including Rice growing, field cooperative management, post-harvest handling, as well as organizing study tours and workshops.

Production: Farming is carried out by the small farmers who organized themselves into a cooperative. MRPIC assists this cooperative in improving the quantity and quality of their production by providing capacity building through workshops, field practices, study tours and inspecting and certified the seeds

Postharvest handling: Apart from capacity building, MRPIC also assisted the cooperative by possessing Rice.

Distribution: The distribution channel of the rice paddy and rice final product of covered by buyer and MRPIC which transports the rice in a professional manner to ensure that the quality of rice is maintained

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research design

This study covers the concepts on rice agribusiness and how they contribute to the social economic of farmers. In the process, the researcher reviewed relevant literatures by various writers and scholars on the thematic areas of this study. Empirical studies on the subject were also scanned in the process of backing up the study and identifying the research gaps to be bridged by the study in the end. The case study organization operates in Case of Mukunguri Agribusiness Cluster (Nyamiyaga sector, Kamonyi District) and therefore the researcher intends to distribute questionnaires to respondents located in Mukunguri Agribusiness Cluster

In order to make this research more rivalry, effective and meaningful, different methods and approaches in data collection, data analysis and interpretation (Triangulation) were used.

The researcher used both primary and secondary sources of data. In primary data, the questionnaires, focus groups and interviews was used. Some of questionnaires was translated in Kinyarwanda in order to facilitate the communication between the respondents and the researcher due to the fact that some of the respondents were unable to answer in English. With secondary data, data collection, books, reports, journals and websites about agriculture cooperatives and agribusiness was also used.

To have en enough information reflecting the population, the research followed the rules of sample selection in order to have representative sample. Before administrating questionnaire(starting survey) ,the researcher responsible searched research assistants who were benefited induction course just to be sure that all research assistants have the same meaning on the questionnaire and the same capacity to collect the needed and important information relating to research topic.

After training of research Assistants, in collaboration with Research responsible together, pilot studies was conducted. These studies was very important techniques because it allowed to assess the feasibility of the questionnaire research and to see whether the information required could be collected, and to observe the impact of the project to the farmer's beneficiaries.

The questionnaire prepared was coded in order to facilitate data entry and data analysis with required software.

3.1.1 Desk study

The research started for a desk study to read appropriate literature related to the research questions. The main purpose of the desk study was to collect secondary data which are useful to explain theories and concepts related to the rice agribusiness cluster development , rice value chain and conceptual framework. The outcome of the desk study (secondary data) was reported in the chapter two of literature review.

The secondary data were collected through literature review by using the latest scientific books, specialized journals, PhD thesis (electronic and hard copies), internet web sites and local reports. Three following steps were used

3.1.2 Identification of indicators and formulation of statements

The information from business case report was useful to formulate statement indicators for each challenge area. The statements were prior translated in Kinyarwanda language, and tested for 2 respondents to check their clarity and possibility for answering before being scored both by firm, rice value chain actors and farmers.

3.1.3 Field research

The primary data were collected from MRPIC LTD, rice value chain actors and COOPRORIZ ABAHUZABIKORWA rice farmers' cooperative working in Mukunguri marshland.

The questionnaire and participatory focus groups approach were used to develop a strategy for Rice value chain development by assessing of relationship among COOPRORIZ ABAHUZABIKORWA rice farmers, MRPIC LTD processing company and other involved actors

Furthermore, questionnaire was also helpful in finding primary data for analyzing of the kind of promotion of Agribusiness Cluster in Rice value chain and it impact on farmer's social economic development based in Nyamiyaga sector, Kamonyi District in Rwanda.

3.2 The population of the study

This research covered all the geographical area where the Rice co-operative members and rice value chain actors reside.

The population for this study included the following elements:

- (i) 2565 co-operative members and leaders of the COOPRORIZ ABAHUZABIKORWA rice co-operatives;
- (ii) 13 Rice value chain actors and other stakeholders
- (iii) 22 staff of the MRPIC LTD (Mukunguri Rice Promotion and Investment Company).

Out of this direct population of research, the research team included also (in target population) local (Government) leaders at sector and district levels as well as non-cooperative members within the study area.

3.3 Sampling

This part shows the sample procedures that were used in research. It shows how the sample size was selected and sampling techniques. As we could not reach all population study, we required to use the population representative sample in order to collect quantitative data, interview and focus group discussion in order to collect qualitative data.

3.3.1 Sample size selection

As SONIA R.W (1975:15) stated, samples are selected and studied instead of the entire population because it saves time, labor and money. Therefore from the population shown above, the researcher will use the formula developed by Cochran (1990:138) to come up with the sample size of ninety three beneficiaries. All these are shown below herewith.

Sample size:

By random sampling technique, the sample size was Ninety three beneficiaries of whom ninety of them managed to answer the questionnaires and this figure has been got by using the following formula developed by Cochran (1990:138).

$$\begin{aligned}
 nc &= \frac{n}{1 + \frac{n}{N}} \\
 &= \frac{n}{\frac{N+n}{N}} \\
 &= \frac{nxN}{N+n} \\
 nc &= \frac{96 \times 2600}{2600 + 96} \\
 &= 92.6 \\
 &\approx \mathbf{93}
 \end{aligned}$$

Description:

N: Size of population

n: Sample size for an infinite universe which corresponds to 96.

nc: Size of the corrected sample.

Table 2: Study sample size

Category of Respondents	Beneficiaries	Total Number of Respondents
Farmers	1 Cooperative	81
Company and Cooperative	Staff	6
District and sector staff	Agronomists	2
Mukunguri Value chain actors	Actors	4
Total		93

Source: Own research, 2015

93 farmers were randomly selected from 2600 members of COOPRORIZ ABAHUZABIKORWA rice cooperative, value chain actors, company staff, district and sector agronomists. Specifically, 6 (4men and 2 woman) staff members of MRPIC LTD and cooperative, 2 Agronomists (Nyamiyaga sector and Kamonyi district level) and 4 persons involved in Mukunguri rice value chain actors were strategically selected to be part of the interview, focus group team and respond questionnaires as well as cooperatives members.

3.3.2 Sampling techniques

The sampling of respondents for this study was generally a combination of ‘purposive’ and ‘random’ sampling. The study employed purposive sampling where key officials were requested to give ‘official’ views on the rice Agribusiness cluster, its successes and limitations. This was the case when the views of local authorities and non-cooperative members.

Probability sampling and non-probability sampling techniques was used to gather all necessary information for the rice agribusiness achievement and impact. Through non-probability sampling techniques, the researcher was based on focus groups and interviews where for the probability sampling techniques researcher focused on random sampling techniques and stratified sampling techniques. The stratification of the sampling was used to design and to improve the efficiency of the sample design and ensure a sufficient sample size for the major geographic domains of analysis.

The sampling frame for this research was stratified by the rice co-operatives. The stratification was based on cooperatives members list from general assemble, zones and small groups .Moreover ,this list helped to pick randomly the members in which was administrated the questionnaire.

3.4 Data collection techniques and tools

The data collection was done by means of self-administration of questionnaire by farmers, rice value chain actors and firm staff in the presence of the researcher after explaining the way which the statements should be scored in order to get reliable data.

To have an enough and important information on the rice agribusiness cluster, qualitative and quantitative approaches was be taken on consideration. The qualitative approach helped to get general information which was useful in preparation of questionnaire and during data interpretation. It is in this process that we arrived to capture the success stories of the agribusiness cluster development by conducting in depth interviews and focus group discussion.

The quantitative approach helped to have measurable data by using questionnaires which relevant data necessary for measuring the achievements and the measure of the change during the period of project implementation.

3.4.1 Data collection (instruments, procedures)

The researcher collected two types of Data; Primary and secondary data. For this thesis, the following methods was used in collecting data from various sources:

(i) Documentary Review

The research went through several documents dealing with agribusiness cluster development in order to acquaint itself with the various dimensions of the rice business

(ii) Plenary Meetings

During every field visit, a plenary meeting was held which bring together members, leaders and staff of the respective co-operative. These meetings provided opportunity to explain the purpose of the visits and the study.

During these meetings, only general issues concerning the rice agribusiness cluster and the co-operative members performance was discussed. They revealed some of the important behavioral attributes such as the ability (and courage) of some members to articulate issues of their concern without fear of their leaders; and even the visitors they had never met before.

After this plenary that participants was grouped according to their designations in the co-operative; i.e. members (ordinary), board of directors, supervisory committee and employees.

Thereafter,each group have been met separately for further in-depth focus group discussions and interviews. This approach sometimes helped to cross-check some data obtained from one group.

(iii) Focus Group Discussions

The focus group discussions (FGD) mainly guided by a pre-set guide of general and specific questions which were considered relevant to each group. For each co-operative, therefore, four group discussion sessions washelded.

(iv) Interviews

The referred guide was used in conducting in-depth interviews with members of the specific groups. In most cases, the questions and respondents was picked randomly and answered orally only.

(v) Questionnaire

As interview was not all sufficient in helping obtain required information, it was important to use structured questionnaire with closed questions which will be made up of two parts; the English and version and the Kinyarwanda version for the few beneficiaries who were unable to communicate in English.

(vi)End of Research Results Review Workshop

After the field visits, a plenary feedback workshop was held at UGAMA's headquarters, in Gitarama, Muhanga district. The workshop participants were composed by 'strategic' representatives from each of the four co-operatives. The representation included at least one member from each of the four focal groups (members, board, supervisory committee and staff) identified during the visits.

This workshop provided an opportunity for:

- ✓ to provide feedback on what had gathered from the field;
- ✓ The participants (representatives from the rice agribusiness stakeholders) to put right whatever might have been misreported;

3.5 Validity and reliability tests

Kamonyi District, especially Mukunguri marsh land has potentials for rice productivity during 2 agricultural seasons when recommended inputs (seeds, fertilizers and pesticides) are available. During the harvesting time rice prices fall down whereas the yield doesn't last more than two months. Nevertheless, MRPIC LTD as a processing company needs a constant rice yield which can allow it to be operational all year round for effective investment and improvement of farmers' income in the area.

However, MRPIC LTD and COOPRORIZ ABAHUZABIKORWA rice farmers are concerned by irregularities in rice production due to seasonal hazards (floods and drought) leading to the demotivation of farmers, and stakeholders working in rice value chain such as inputs suppliers, and financial institutions. These constraints deteriorate business relations between farmers and other involved stakeholders. There is no published research that has been conducted in regards to the promotion of agribusiness cluster and its impact on the rice production farmers in Mukunguri. These justify therefore, the relevance of undertaking the research in that area.

3.6 Data processing

After the description of business case among MRPIC LTD, rice value chain actors and COOPRORIZ ABAHUZABIKORWA rice farmers' cooperative, it was a better occasion to reflect on their business case in order to see together what are the key challenges, problems, issues and opportunities that are mostly raised by participants. Later on, a report on the business case was

produced and shared with the same persons who attended interview. Next to the report, the business case was analyzed with SWOT.

Data entry and preparation of debriefing report

The data collected were entered into Excel workbook. Before starting the data entry, the questionnaires were numbered according to the side in which respondent belongs.

Focus group discussion for debriefing meeting and further analysis

After producing a debriefing report from survey results, a feedback session took place to discuss about findings towards appropriate recommendations to solve the issues found.

3.7 Methods of data analysis

As earlier mentioned, the collection data was analyzed and interpreted according to the objectives, and then results presented in form of tables. To help data analysis and interpretation Excel software was used

3.7.1 Editing

This is the process whereby errors associated with the completed interviews and questionnaires was identified and eliminated wherever possible.

Editing was therefore a task which carried out both in the field and at home after every interview and questionnaire responses. This was done to check the correlation between the questions and the answers. In this case, unnecessary information obtained was ignored or sorted out during verification.

3.7.2 Coding

Coding was the procedure by which data was categorized. It involves specifying the alternative categories or classes into which the responses are to be placed and assigning code numbers to the classes.

Coding was used in order to classify answers to questions into meaningful categories thus being able to bring out their essential patterns.

3.7.3 Tabulation.

Tabulation helped to put data into some kind of statistical tables such as, diagram, percentages and frequency tables showing the number of occurrence of responses to particular questions. This contributed a lot to the ease of data analysis and interpretation.

All these (editing, coding and tabulating) assisted to classify data into a meaningful form of information in order to drive an essential pattern in the responses and reduce data from unmanageable details to a summary form.

3.8 Limitation/delimitations

Time allocated to this study was not enough. Finance problem constituted also a challenge to this study. To handle these issues, this research was limited to Mukunguri Agribusiness Cluster (Nyamiyaga sector, Kamonyi).

The second challenge study was constrained by lack of statistical data related to value chain analysis for most of the crops.

The third challenge relates to the scope and duration of the study. The period allocated to this assignment was too short given the fact that the study was so comprehensive.

The fourth challenge is limited knowledge among the farmers and traders on the value chain analysis. Most of the farmers and traders do not keep information or statistical data on who supplies them with input and who buys their produces. The information on the value chain is a bit scattered and un-coordinated.

3.9 Ethical considerations

Before the study was carried out, the research proposal was reviewed by the University committee to ascertain its moral and ethical standing. The researcher then obtained an informed consent from all the respondents and participants in this study. Strict adherence to confidentiality about the information that was obtained from respondents was observed. Some respondents were referred to using pseudo names while others were referred to by their real names and titles because of their roles and responsibilities in rice agribusiness cluster and since the respondents represent the views of the larger population, findings were generalized and not linked to a particular participant.

CHAPTER 4: RESEARCH FINDINGS

4.0. Introduction

In collecting data related to the Promotion of Agribusiness Cluster in Rice value chain and its impact on Farmer's Social Economic development in Rwanda, a variety of ways have been used. Those ways included secondary data analysis, field observation, interview and questionnaires. In this chapter, the results were presented, analyzed and interpreted according to the objectives of the study. After analysis of data, the percentage was calculated and interpreted.

4.1 Demographic characteristics of respondents

4.1.1 Response rate

This table revealed the findings related to the number of questionnaires distributed, completed and returned.

Table 3: Response rate

Number of questionnaires	Distributed	Returned	Response rate
Total	93	93	100

Source: Primary data, 2015

According to Table 3, all 93 questionnaires were distributed and all of them were completed and returned to researcher. It means this research has high accuracy to lead to the objectives. For the staff of MRPIC LTD and cooperative, Kamonyi district and Nyamiyaga sector Agronomists and persons involved in Mukunguri rice value chain, the questionnaires have been completed by interview and focus group discussion.

4.1.2 Age

The age of respondents play a big role in analyzing results of every research. That is why this issue has been considered during this research. The data presented in this paragraph revealed the age of respondents who had been part of Mukunguri agribusiness cluster development. To facilitate analysis, the age has been grouped in different categories. The following table illustrates the situation related to the age of respondents.

Table 4: Age of respondents

Age	Number	Percentage (%)
< 20	0	0.0
20-30	2	2.2
31-40	18	19.4
41-50	45	48.4
51-60	20	21.5
>60	8	8.6
Total	93	100.0

Source:Primary data, 2015.

The table 4 shows that the high concentration of respondents (48.4 %) belongs in category of 41 to 50. The biggest concentration was in this range, it is because of many active population (farmers) are concentrated in this category of age. Approximately 21.5 % of respondents surveyed fall within the 51-60 age category, 19.4 % are between 31-40 years old, only 2.2 % are on the range of 20-30 years old and 8.6 % are aged above 60.

4.1.3 Gender

All projects and business need to take into consideration the issue of gender balance. That is why the below table has helped to capture the relevant information about the distribution of male and female who had involved in the Mukunguri agribusiness cluster.

Table 5: Gender of respondents

Gender	Frequency	Percentage (%)
Male	42	45.1
Female	51	54.9
Total	93	100.0

Source: Primary data, 2015

According to the Table 5; 54.9 % of 93 respondents are female and 45.1 % of respondents are male. The greater part of respondents (54.9%) is female because in general Government of Rwanda encourages females to participate in activities generating income like agriculture. In addition to that, the genocide has killed male than female reason why in many projects the number of female is greater than the number of male.

4.1.4 Level of education

The results presented in Table 6 show the level of education of respondents. This information is very important in order to estimate the reliability of responses given by the respondents.

Table 6: Level of schooling

Level of schooling	Frequency	Percentage (%)
No educated	4	4.3
Primary	53	57.0
Vocational training	18	19.4
Secondary	4	4.3
University	14	15.1
Total	93	100

Source: Primary data, 2015

According to the respondents, the best part of respondents (57.0%) has finished primary education as their highest education level. 4.3 % out 93 respondents were uneducated. Those who had done vocational training and post-secondary were respectively 19.4 % and 15.1 % of respondents. This information shows that the respondents had reasonable education to provide consistent information. In general, the people who finish secondary education and post-secondary education are not interesting in agriculture activities. 10 respondents found in this category were the staff of the company and cooperative, value chain actors, Kamonyi district and Nyamiyaga sector staff.

4.1.5 Marital status.

Agriculture business are done by different level of population whether married or not. However the ownership varies depending on type of farmer. For this reason our wanted to show the marital status of respondents. The results presented and analyzed in table 7 are gathered from data collected in different beneficiaries who had participated in the Mukunguri agribusiness cluster.

Table 7: Marital status of respondents

Marital status	Number	Percentage (%)
Single	11	11.8
Married	51	54.8
Divorced	1	1.1
Widows/widowers	27	29.0
Single mother	3	3.2
Total	93	100.0

Source: Primary data, 2015

From Table 7; the majority (54.8%) of respondents indicated that as the time of the study they were married. The rest (45.2%) were either of the following: single, divorced, lost spouse or single mothers. In agriculture activity, we find a low number of young populations because sometimes they are at school or they are not interested in agriculture activities. In addition the government of Rwanda encourages the youth to create other activities different from agriculture. For this reason a big number of respondents were married and at mature stage (see the Table 7).

4.2 Presentation of core findings

This part show the relationship and the typical structure MRPIC LTD, COOPRORIZ ABAHUZABIKORWA cooperative and other value chain actors involved in mukunguri agribusiness cluster development.

4.2.1. Rice business case

This study analyzed rice business case that links Agency for Investment, Production and Distribution MRPIC LTD as a marketing and processing company and COOPRORIZ ABAHUZABIKORWA rice farmers living in Nyamiyaga sector in Kamonyi district, Southern Province.

Previously the case was between rice farmers and another processing company called Kabuye which is based in Kigali city. The company had contract farming with rice farmers 10 years ago. The company used to buy rices from COOPRORIZ ABAHUZABIKORWA cooperative for processing them in rice paste. Its relationship with rice growers has become gradually ineffective which led into failure to continue the business with farmers. The poor relationship with the farmers was characterized by delay in payment (more than 6 months), low price, low capacity to take and violating contract agreements.

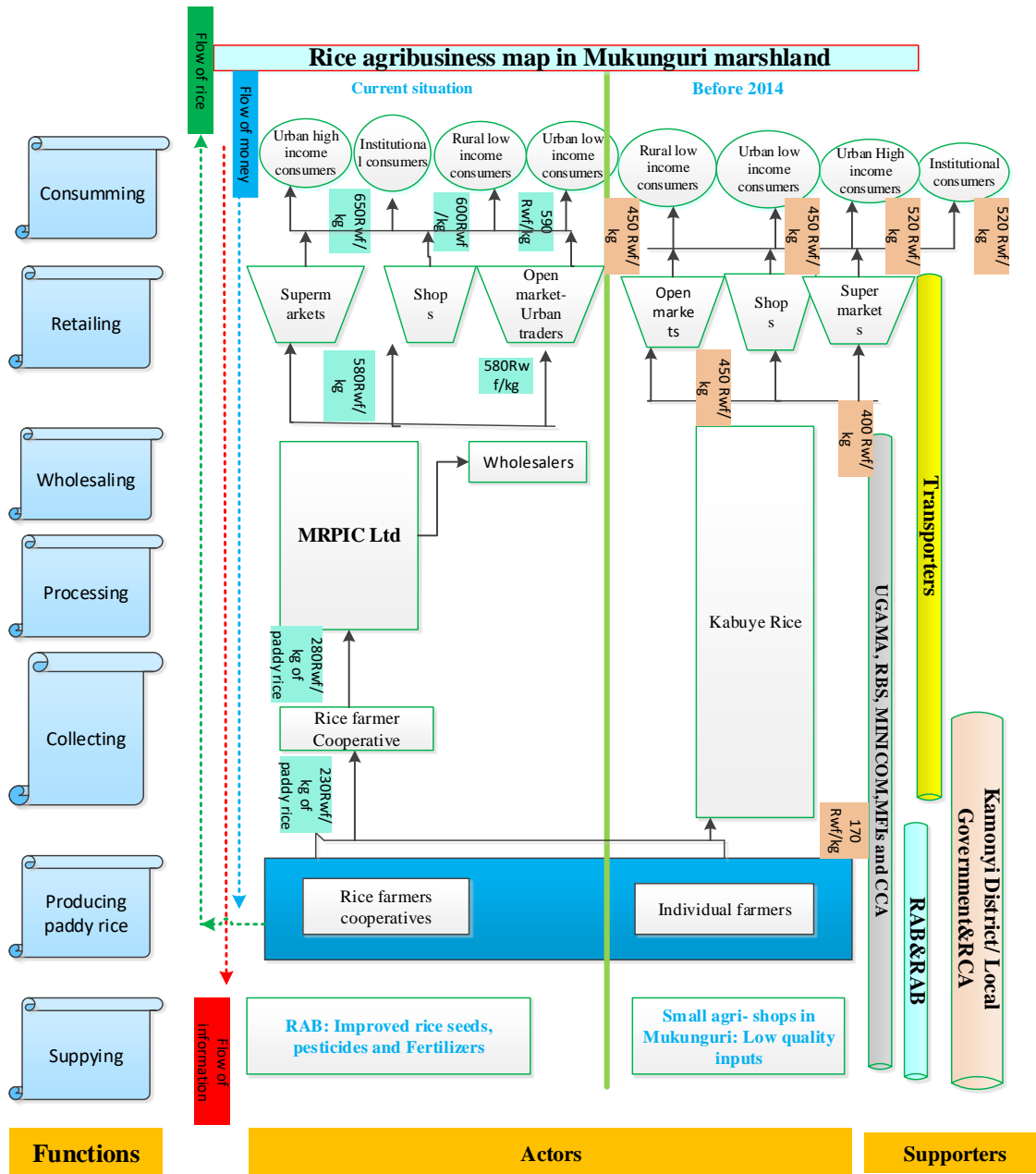
After that in 2012, MRPIC LTD as a new company came in business relation to support rice farmers and develop rice value chain by promoting the chain through processing and marketing. MRPIC LTD was set up by the local NGO called UGAMA with support of Agrihub through IPER and DFATD through CCA to fulfill the missing function in within the chain. The company aims to make rice value chain operational. Currently, the rice value chain in Nyamiyaga is totally different from how it was during KABUYE time. Therefore, MRPIC LTD wants to make a difference of two value chains.

Figure 6 shows the rice agribusiness cluster in the past (during KABUYE moments) and the current value chain.

4.2.2. Description of Mukunguri rice agribusiness cluster

The figure 6 visualizes the rice agribusiness cluster in Mukunguri marshland before and currently.

Figure 5:Rice agribusiness map in Mukunguri marshland



Source: Primary data, 2015

This figure shows that before 2014, the rice value chain was composed by: agri-shops as inputs suppliers, rice farmers as producers of paddy rice, and KABUYE s.a in collecting, processing and wholesaling function,. The supermarkets, shops, open market and urban traders in retailing whereas in consuming are urban high and low income consumers, rural low income consumers and institutional consumers. In supporting function were RSSP, UGAMA, MFIs(CAF ISONGA,KCB and BPR), Kamonyi district, and transporters.

Current situation, value chain actors as well as supporters have changed. MRPIC LTD is currently negotiating with cooperatives and individual farmers to establish a contract farming which will

determine their business partnership in Rice value chain. Currently, farmers are still in producing function, 1100 out of 2750 farmers are females. Which is different from before 2014, where 76 out of 206 farmers were females.

Before and after 2012, both men and women participate in rice value chain in mukunguri. Women are mostly involved in producing activities such as sowing, weeding and harvesting. Men are mostly involved in pests and disease control (spraying chemicals) and marketing. There is no actor in processing now except MRPIC LTD who is tending to start in near future. Cooperatives zones and cooperatives as structured organ are in collecting of rice produced by farmers, while wholesalers in Kigali, Muhanga and Kamonyi districts and others individual sellers are in wholesaling. Retailers and consumers remain the same excluding supermarkets in retailing and urban high income consumers at consuming level.

4.2.2.1. Value shares:

Before, KABUYE.s.a was buying 80% of rice produced in Mukunguri marshland and the rest of produce was bought by rural and travelling traders. Farmers also used to sell small quantity of production to their neighbours. Currently, KABUYE s.a is no longer buying the rice from the farmers, and therefore about 100% of the production is bought by MRPIC LTD. The figure 7 shows how the rice values were shared between chain actors during KABUYE time whereas the figure 8 shows the current value shares.

Table 8: Chain actors, prices and value shares before and after 2014

Chain actors	Value shares before 2014		Current value shares	
	Shares		Shares	
	Retail price	Added value	Retail price	Added value
Farmers	170	20	230	40
Collection			280	50
Processing	400	230	580	300
Wholesalers	450	150	590	10
Retailers	497	47	613	23

Source: Primary data, 2015

Value shares of chain actors before 2014

It clearly comes out that the wholesaler (KABUYE) was taking the biggest (230 frw/kg) parts of rice value shares than other actors. It is presumed that that portion is related to the variables costs invested rice processing activities such as transporting, processing, and packaging. The farmer were

receiving 20 rwf/kg and retails takes 47 frw/kg . Therefore, this farmers share is still very low considering the efforts and inputs spent on rice production.

Value shares of chain actors after 2014:

After that KABUYE s.a had stopped to deal with rice farmers, the number of farmers as well as land area covered by rice were increased. Thetable8 of current rice value chain map shows that about 100% of the current rice produce in Mukunguri is sold. According to the table 8 the farmer receives 40 frw/Kg of non-processed rice. MRPIC LTD wants to increase the income earned by farmer by increase the unit price on farm gate as it will be operating nearby the farmer. The transport cost will be lower than for the former company which may increase the revenue for the farmers.

4.2.2.2. Consumers of rice produced in Mukunguri

The following table analyses the level of rice consumption, it shows if the rice produced in the area is consumed locally or on the other important markets

Table 9: Rice consumption

Statement	Rice consumption characteristics (%)
Locally	5
Other markets	95

According to the results, less than 5% of the rice produced in Mukunguri is consumed locally whereas about 95% of produce is sold to provincial and national markets where urban low and high income consumers buy rice for home consumption. Institution consumers such as schools, prisons and restaurants buy rice for various meal preparations.

4.2.2.3 Food security analysis

Rice produced in Mukunguri is considered as a food crop, where 20% is used for household consumption and 80 % for the market. As analyzed a big part of produce is sold for earning the income needed by farmers to afford a variety of other crops that they don't produce or other basic needs(accessibility). Therefore, both rice farmers and MRPIC LTD are doing all their bests to restart the chain is sustainable way so that rice yield can be available consistently. This will make rice available at all time which indicates food stability.

4.2.3 Description of MRPIC LTD

MRPIC LTD as a business has been initiated to facilitate vulnerable people to increase their income level by minimizing yield loss. Because in that time, farmers were suffering from production and marketing issues for rice crop. It was created with mission to find solutions on issues that rice farmers come across in rice value chain.

MRPIC LTD is a processing and marketing company based in Nyamiyaga sector nearby rice cooperative farmers called COOPRORIZ ABAHUZABIKORWA. The company started its operations in July 2012 by promoting rice production in the area. Up to now, the company was processing 100% of rice in Nyamiyaga into two local products which are: white rice and rice animal feed).

It has been created by individual investor, organizations rice individual farmers and cooperatives with a mission to handle the problem of loss of rice yield in the area and to increase rice value in the area. It is also registered as a Limited (Ltd) company.

The company has permanent contract farming with rice farmers in order to produce rice that it will use as raw material to make its final products.



Picture of MRPIC LTD rice factory buildings and white rice produced

4.2.4 Description of COOPRORIZ ABAHUZABIKORWA rice farmers

COOPRORIZ ABAHUZABIKORWA is rice farmers' cooperative working in Mukunguri marshland in Nyamiyaga sector. It has 2750 members (1750 women and 1100 men). It is legally recognized by Rwanda Cooperative Agency (RCA).

COOPRORIZ ABAHUZABIKORWA cooperative has all organizational structures as required by RCA: General assembly, new board of directors (previous board was removed by members), auditing committee, and advisory council. Members are familiar with rice production and know how producing activities are carried out. They know also that their land has potentials for rice production. *“Rice is our crop, all these houses you see were constructed by the money from rice. If weather conditions went well and inputs are available, a farmer can get one million, 2 million, Of Rwandan francs”* they said. Currently, the numbers of farmers who planted rice and covered area were increased due to the promotion of rice agribusiness cluster in the area.

4.2.5. Identification of challenge areas

From business case description through focus group discussion with rice farmers, company and cooperative staff, mukunguri value chain actors representative and local government representative, the following were identified as 9 challenge areas in rice value chain in Nyamiyaga sector. We realized that the majority of challenge areas are in perspectives because the business is not really started yet, it is still in starting preparations. Both the farmer and the company have a new ambition to change a lot of things in the chain, reason why most of identified areas are in projection:

4.2.5.1 Production

According to the findings farmers come across with several challenges in rice production. The core issue for this area is directly linked to weather conditions where floods were put on the top of limiting factors of rice production in the marshland. In short conversation we had we some farmers in rice field, one farmer said *“In 2012 planted rice and 50 % of surface cultivated has been destroyed by floods.*He got a half of production as he was expecting. Such situation is used to happen in Mukunguri marshland and destroy enormously rice yield in which farmers have had invested a lot of money and efforts

This a very bad situation for rice farmers in Mukunguri marshland because it demotivates farmers and bring them insolvency situation towards financials. It would be better if farmers were insured against poor harvest resulted from natural hazards but this service is still unknown by the farmers.

4.2.5.2. Productivity

Under this challenge area both farmer and firm agreed that floods, pests and diseases, lack of appropriate inputs come forwards in factors limiting rice productivity in Nyamiyaga area because farmers are not able to solve these issues themselves. Some of these challenges are unpredictable and needs very strong strategies that are beyond of farmers and company capacities. So far, irrigation and drainage infrastructures are not yet constructed in Mukunguri marshland. This increases risks for farmers who always invest their efforts and money such situations. This also reduce the motivation of someone else who may think to support farmers in that area. Both firm and farmers know that there is potential for rice and nowadays they have a look on MINAGRI through RSSP project to solve this problem. By the way they are still all fearful to invest without intervention of supporters and influencers in the chain.

4.2.5.3 Farmer group functioning

Both firm and farmers agreed that COOPRORIZ ABAHUZABIKORWARice farmers' has limited financial capacity for buying totally the farmers production up on harvesting. In different conversations we had with farmers, the said that when the farmers delivered their production to cooperative, it can take two months of payment. It was noticed that the MRPIC LTD has no enough as financial means to purchase the farmers production up on reception

4.2.5.4 Stakeholder collaboration

Lack of the formal stakeholder collaboration has been identified as one of main challenges in rice value chain in Nyamiyaga sector. This situation has been encountered with actors who were investing in inputs supply where some times there is a delay in inputs supplying. In addition, farmers are in need to get embedded services (extension services, micro-credits, agricultural insurance, irrigation and drainage facilities, etc.).

4.2.5.5 Quality standards

Rice products are mostly used for human consumption, for that reason quality standards have to be taken into account during the whole chain in order to prevent injuries the consumers' health. Therefore, during our field study we noticed that both rice farmers and the company staff don't have enough skills about quality and standards required by RBS. Apart from knowledge gap, the company has not yet started RBS product certificate.

Generally, it has been found that quality/standards issues in rice value chain are mainly linked to the knowledge gap lack of appropriate equipment for farmers and firm, and lack hygienic techniques for rice preparation in the farm.

4.2.6. Identification of perspectives areas

4.2.6.1 Perspectives for company functioning

The research findings showed that all areas related to the perspectives were highly appreciated by both firm and farmers, but the company seemed to be more positive than farmers. This is because the company has ambition to make a difference from the functioning of former companies who failed to establish a good firm-farm relationship during past years.

The processing plant will operate nearby farmers in rural area which is totally different from other companies. I will be very easy for the company to know and understand farmers because they will be always together whereas former companies were operating in capital city which has realities different from rural area realities. The company will also facilitate farmers to get inputs and other required embedded services (trainings, credits, insurance, etc.).

In addition, the fact that the processing plant will operate in Nyamiyaga sector, it will increase economy of Nyamiyaga inhabitants and its neighbours because of employment creation and increased traffic in the area.

4.2.6.2 Contractual perspectives

Once all procedures related to the installation of rice processing will be completed, the company will be engaged in contract farming with the farmers where all farmers' views will be considered in contract preparation. The majority of respondents (for firm and farm sides) said that they will benefit

from written and clear contract farming. A seasonal contract farming was highly appreciated by both sides because rice is a seasonal crop which doesn't require binding contracts. The company will be clear about the quantity and quality of rice yield it will take from farmers. The contract will be between farmer and firm, not firm-cooperative in order to minimize risks of resisting to loan repayment for some farmers. The farmers will be paid through their own bank.

4.2.6.3 Perspectives on prices and marketing

The research findings showed that farmers are happy to be consulted during prices fixing. This will increase the chance for them to get compensative price than before. The company will not work in monopoly but it will establish a strong partnership with other buy in order to ensure that farmers' yield loss is reduced. The farmers will be totally and timely paid according to the contract farming. Also, the rice processed in Nyamiyaga will be sold even outside the country such as Burundi, DRC and Uganda.

4.2.6.6 Production perspectives

In order to ensure the continuity and profitability of processing activities, the rice production will be increased as much as possible. During our field activities, both farmers and firm mentioned that Nyamiyaga and other neighbor sectors have potentials for rice productivity. The rice will then be grown 2 times a year(during season A and season B).

For that reasons, the company ,cooperative and other involved stakeholders(Actors and supporters) will make sure that recommended and affordable inputs are available for farmers. Rice farmers will be trained about production of marketable rice. In addition, farmers will be facilitated to obtain agricultural insurance (micro insurance) against production risks such as floods and drought.

The company will also mobilize as many as possible stakeholders so that they could restore the trust to the farmers and provide again embedded services with the aim of increasing rice production and profitability in Nyamiyaga sector.

4.2.7 SWOT analysis of rice business case between MRPIC LTD and COOPRORIZ

ABAHUZABIKORWA cooperative

The following table shows the information collected to evaluate the strengths, opportunities, weakness and threats of rice agribusiness where our research was conducted

Table 9: SWOT analysis of rice agribusiness case in Mukunguri

Strengths	Opportunities
<ul style="list-style-type: none"> ○ Willingness of farmers and firm ○ Familiarity for rice production ○ The firm is based in the same area ○ The firm has trained staff on processing ○ Legal recognition of both firm and cooperative ○ Cooperative has its own house ○ The firm has its own plot for processing plant ○ The firm has well equipped office ○ Processing plant in rural area ○ Strong management of farmer cooperative and firm ○ Strong collaboration of stakeholders 	<ul style="list-style-type: none"> ○ Potentials for rice productivity ○ Fertile soil ○ High demand of rice ○ Rice may be grown all year ○ Possibility of 2 cropping seasons ○ Local universities are interested by the chain ○ The processing plant is be constructed nearby farmers in rural area ○ Existence of electricity in Nyamiyaga
Weaknesses	Threats
<ul style="list-style-type: none"> ○ Low level of trust each other ○ Insufficiency of technical skills for farmers ○ Slight accountability for members ○ Lack of skills about cooperative functioning and management ○ Reduced motivation for the farmers ○ The firm is afraid to invest before availability of rice yield ○ Reliance on rainfall 	<ul style="list-style-type: none"> ○ Floods ○ Pests and diseases ○ Drought ○ Climatic variability ○ Lack of enough drying infrastructures

Source: Primary data, 2015

The results of swot analysis results as shown above are very important for agribusiness planners, value chain actors and any other services providers in the future if it were taken into consideration

4.2.8 Evaluation of business case between MRPIC LTD and COOPRORIZ

ABAHUZABIKORWA Cooperative

The survey was carried out on 9 challenge areas which are listed in table 10, the overall results are compiled in table 11. After presentation and analysis of challenge areas in general, the findings for each challenge area were also presented and analyzed by the use of a table compiling the overall median scores (from F-F respondents) for each statement under a specific challenge area

Table 10: challenge areas in rice case-Rwanda

Challenge areas	
1	Production
2	Productivity
3	Farmer group functioning
4	Stakeholder collaboration
5	Quality standards
6	Perspectives for company functioning
7	Contractual perspectives
8	Perspectives on prices and marketing
9	Perspectives on production

The table shown the response on the nine statements identified while conducting our research and in the followed parts the each statement was also analyzed separately

Table 11: Average scores per challenge area

Overall results	Median scores per challenge area									Median all areas
	1	2	3	4	5	6	7	8	9	
Challenge areas										
Farmers' scores	1.0	3.0	1.0	1.0	1.0	3.0	3.0	3.0	3.0	3.0
Company scores	0.0	2.0	2.0	1.0	2.0	3.0	3.0	3.0	2.0	2.0
Median firm-farm per challenge area	0.5	2.5	1.5	1.0	1.5	3.0	3.0	3.0	2.5	2.5
Median overall score (all challenge areas)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Difference farmers - median F-F score	0.5	0.5	-0.5	0.0	-0.5	0.0	0.0	0.0	0.5	0.5
Difference Company - median F-F score	-0.5	-0.5	0.5	0.0	0.5	0.0	0.0	0.0	-0.5	-0.5
Diff farmers median-company median	1.0	1.0	-1.0	0.0	-1.0	0.0	0.0	0.0	1.0	

Source: Primary data, 2015

The average median score for the firm-farmer relationship for all the challenge areas was positive at 2.5. Meaning the respondents are satisfied with the cooperative performance for all challenge areas.

The adjustments could be made to lift the level of satisfaction to the final stage. Generally, the farmers had very high median scores (3) than the firm for challenge areas 1, 2 and 9. While the firm scored below the farmer median at 2, it means the satisfaction of the respondents is not optimal. Therefore, improvement of the cooperative performance is not obligatory, but advisable in order to increase satisfaction among members.

The firm has higher scores (2) than the farmers (1) on areas of quality standards and farmers group functioning. It means for the firm, the satisfaction of the respondents is not optimal and the improvement is not obligatory, but advisable in order to increase satisfaction among members; for the farmers, respondents disagree with the statements, which means that the aspect of cooperative performance was unsatisfactory and there is an urge for improvement or change.

Both the farmers and the firm give a very low score (1) for area of ‘stakeholder collaboration’, caused by the disagreement of the respondents with the statements. Meaning that the aspect of cooperative performance was unsatisfactory and there is an urge for improvement or change.

4.2.8.1. Challenge area “Production”

The challenge area of production has 9 key indicators listed in table 12 below. The overall findings for this challenge area are summarized in table 13 below.

Table 12: Key indicators of challenge area 1

Statements challenge area “Rice production”	
1.1	Recommended pesticides and fungicides are available
1.2	Recommended pesticides and fungicides are affordable
1.3	Improved rice seeds are available
1.4	Improved rice seeds are affordable
1.5	Rice grown in Mukunguri marshland are tolerant for diseases
1.6	Rice grown in Mukunguri marshland are insured against any cause of poor yield
1.7	Yield is increasing in Mukunguri marshland
1.8	Farmers are able to calculate production costs for a kg of rice
1.9	Farmers get quick feedback for problems they have for rice production

This table shows and presents the responses on the rice production as the challenge area:

Table 13: Overall findings on challenge area 1

Challenge area 1	Median scores per statement									Average-median area score
	1	2	3	4	5	6	7	8	9	
Statements										
Farmers' scores	1.0	1.0	0.0	1.0	1.0	0.0	2.0	0.0	1.0	1.0
Company scores	1.0	0.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0
Median firm-farmer statement score	1.0	0.5	0.0	0.5	1.5	0.0	2.0	0.0	0.5	0.5
Median firm-farmer area score	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Difference farmers - median F-F score	0.0	0.5	0.0	0.5	-0.5	0.0	0.0	0.0	0.5	0.5
Difference Company - median F-F score	0.0	-0.5	0.0	-0.5	0.5	0.0	0.0	0.0	-0.5	-0.5
Diff farmers median-company median	0.0	1.0	0.0	1.0	-1.0	0.0	0.0	0.0	1.0	

Source: Primary data, 20155

The average median score for the challenge area of production is very low (0.5), caused by the disagreement of the respondents with the statements. Meaning that the aspect of the cooperative still need to increase the productivity and there is an urge for improvement or change.

In the areas of ‘5’, it clearly comes out that the farmers are not as positive as the firm about the statements saying “rice grown in Mukunguri are tolerant for diseases”. The company gives the lowest score for areas 2, 4 and 9, caused by the disagreement of the respondents with the statements. Meaning that the aspect of the cooperative performance was unsatisfactory and there is an urge for improvement or change. It can be observed that in this area the level of agreement is not very high. There are at least 3 statements for which the farmers give a far higher score than the Company. This means that farmers are more concerned than the company about this challenge area. But the firm and farm have the same positive understanding on the statement 7 with score 3.

In addition, both firm and farm totally disagree with these statements: 1,2,3,4,6,8 and 9. These indicate that rice farmers needs improved seeds and agricultural insurance. Besides of those services, farmers have also gaps in calculation of production cost for rice crop.

4.2.8.2 Challenge area “Productivity”

The challenge area of productivity has 9 key indicators listed in table 14 below. The overall findings for this challenge area are summarized in table 15 below.

Table 14: Key indicators of challenge area 2

Statements challenge area “Productivity”	
2.1	Mukunguri marshland has potentials for rice production
2.2	Rice are grown in Mukunguri marshland all year around
2.3	There are appropriate measures to control floods in Mukunguri marshland
2.4	Farmers are satisfied by the yield they get
2.5	Rice have a significant impact on socio-economic situation on people who dwell Nyamiyaga area.
2.6	All rice diseases in the marshland are controlled
2.7	All farmers grow high yielding varieties available in Rwanda
2.8	Farmers earn more money from rice than other crops

This table shows and presents the responses on the rice productivity as the challenge area:

Table 15: Overall findings on challenge area 2

Challenge area 2	Median scores per statement								Average- median area score	
	1	2	3	4	5	6	7	8		
Statements										
Farmers' scores	3.0	1.0	3.0		2.0	3.0	2.0	2.0	1.0	2.0
Company scores	3.0	2.0	3.0		2.0	3.0	2.0	2.0	1.0	2.0
Median firm-farmer statement score	3.0	1.5	3.0		2.0	3.0	2.0	2.0	1.0	2.0
Median firm-farmer area score	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Difference farmers - median F-F score	0.0	-0.5	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Difference Company - median F-F score	0.0	0.5	0.0		0.0	0.0	0.0	0.0	0.0	0.0
<i>Diff. farmers median-company median</i>	0.0	-1.0	0.0		0.0	0.0	0.0	0.0	0.0	

Source: Primary data, 2015

The average median score for the challenge area of productivity is positive (2), the satisfaction of respondents is not optimal for this challenge area. Therefore, an improvement of the cooperative performance is not obligatory, but advisable in order to increase satisfaction among members.

In the area of '2', it clearly comes out that the farmers are not satisfied by th2 statement it is indicated by a very low score (1), caused by the disagreement of the respondents with the statements. It means that the aspect of the cooperative performance was unsatisfactory and there is an urge for improvement or change.

Whereas the satisfaction of company is not optimal. Therefore, improvement on this statement is necessary to meet the needs and wishes of the respondents. On the other side, the company gives the lowest score (1) for area 4 which shows the disagreement of the respondents with the statement, while farmers have a positive score on the statement which means that the satisfaction of respondents is not optimal. Therefore, for the company view, improvement of the cooperatives performance is not obligatory on this statements, but advisable in order to increase satisfaction among members. The farmers view on this statement meaning that the aspect of the cooperative performance was unsatisfactory and there is an urge for improvement or change.

In addition, both farmers and the company have a very low score on statement 9, caused by the disagreement of the respondents with the statement. This means that the aspect of the cooperative performance was unsatisfactory and there is an urge for improvement or change. According to various conversations with farmers, ricees can easily adapt on hillside but the problem that farmers have so far is easy access to improved inputs (rice seeds, fertilizers and pesticides). It can be

observed that in this area, the level of agreement is very high. There are 7 statements for which the farmers and firm feel the same.

4.2.8.3 Challenge area “Farmer group functioning”

The challenge area of farmer group functioning has 9 key indicators listed in table 16 below. The overall findings for this challenge area are summarized in table 17 below.

Table 16: Key indicators of challenge area 3

Statements challenge area “Farmer group functioning”	
3.1	Farmers are organized in cooperative
3.2	Farmers know advantages of working in cooperative
3.3	Farmers prefer to work as individuals than organised in cooperative
3.4	Members are aware on what is going on in cooperative
3.5	Coopertive leaders fullfil all responsibilities assigned by members
3.6	There is a transparency in cooperative management and fonctionning
3.7	The cooperative structures are set democratically and equally
3.8	Cooperative leaders represent common interests of members.
3.9	All farmers have common goal

This table shows and presents the responses on the farmer group functioning as the challenge area:

Table 17: Overall findings on challenge area 3

Challenge area 3	Median scores per statement									Average- median area score
	1	2	3	4	5	6	7	8	9	
Statements										
Farmers' scores	2.0	2.0	1.0	1.0	1.0	1.0	2.0	2.0	3.0	1.0
Company scores	2.0	2.0	1.0	1.0	0.0	1.0	2.0	2.0	1.0	1.0
Median firm-farmer statement score	2.0	2.0	1.0	1.0	0.5	1.0	2.0	2.0	2.0	1.0
Median firm-farmer area score	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Difference farmers - Median F-F score	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	-0.5	0.0
Difference Company - Median F-F score	0.0	0.0	0.0	0.0	-0.5	0.0	0.0	0.0	0.5	0.0
<i>Diff. farmers median-company median</i>	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	-1.0	

Source: Primary data, 2015

The average median score for the challenge area of productivity is very low (1) comparatively to the need of company, caused by the disagreement of the respondents with the statements. It means that the aspect of the cooperative performance was unsatisfactory and there is an urge for improvement or change.

In the area of ‘5, it clearly comes out that the firm disagrees with the statement. It means that the aspect of the cooperative performance was unsatisfactory and there is an urge for improvement or

change. Whereas the farmers disagreed with statement 9 with a very high score (0). These two statements showed that there is no problem in cooperative functioning, management and membership. Member themselves and leaders understand very well the why of cooperative. Concluding, it can be observed that in this area the level of agreement is very high. Both firm and farmer gave more or less the same score on the majority of statements.

4.2.8.4 Challenge area “Stakeholder collaboration”

The challenge area of stakeholder collaboration has 9 key indicators listed in table 18 below. The overall findings for this challenge area are summarized in table 19 below.

Table 18: Key indicators of challenge area 4

Statements challenge area “Stakeholder collaboration”	
4.1	We have enough stakeholders providing embedded services for rice crop
4.2	Farmers get extension services for rice production
4.3	Famers use properly received inputs
4.4	Rice farmers are familiar to work with microfinance institutions
4.5	MFIs are willing to provide credits for rice production
4.6	A lot of stakeholders are happy to work with rice farmers when there are floods in the marshland
4.7	It is easy for stakeholder to work with individual farmers than organized farmers
4.8	It is easy for individual farmer to obtain stakeholders than being in cooperative
4.9	Farmers know the destination of their ricees after sale

This table shows and presents the responses on the stakeholder’s collaboration as the challenge area:

Table 19: Overall findings on challenge area 4

Challenge area 4	Median scores per statement									Average-median area score
	1	2	3	4	5	6	7	8	9	
Statements										
Farmers' scores	0.0	0.0	2.0	2.0	2.0	0.0	0.0	1.0	1.0	1.0
Company scores	1.0	0.0	2.0	2.0	1.0	0.0	0.0	0.0	1.0	1.0
Median firm-farmer statement score	0.5	0.0	2.0	2.0	1.5	0.0	0.0	0.5	1.0	1.0
Median firm-farmer area score	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Difference farmers - median F-F score	-0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0
Difference Company - median F-F score	0.5	0.0	0.0	0.0	-0.5	0.0	0.0	-0.5	0.0	0.0
<i>Diff. farmers median-company median</i>	-1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	

Source: Primary data, 2015

The average median score for the challenge area of stakeholder collaboration is very low (1), caused by the disagreement of the respondents with the statements. It means that the aspect of the cooperative performance was unsatisfactory and there is an urge for improvement or change.

In the area of ‘1, 2, 6, 7, 8 and 9’, it clearly comes out that both the farmers and firm are not positive, with very low scores (0 and 1), caused by the disagreement of the respondents with the statements. Meaning that the aspect of the cooperative performance was unsatisfactory and there is an urge for improvement or change.

It can be observed that in this area the level of agreement is high. On the statements 5 and 8 the farmers give a far higher score than the Company. Farmers have been demotivated to work with MFI’s because they don’t have a loans on the time they want it and MFI’s are fear with on cooperative functioning due to the mismanagement that characterized COOPRORIZ ABAHUZABIKORWA cooperative during a couple of 5 past years. In contrast, a lot of stakeholders prefer to work with organized farmers for successful and sustainable results. Rice farmers in mukunguri marshland need therefore to be organized in order to improve their relations with various stakeholders involved in rice value chain.

4.2.8.5 Challenge area “Quality standards”

The challenge area of quality standards has 9 key indicators listed in table 20 below. The overall findings for this challenge area are summarized in table 21 below.

Table 20: Key indicators of challenge area 5

Statements challenge area “Quality standards”	
5.1	I understand the quality standards required for rice crop
5.2	It is easy for farmers to follow quality standards conditions
5.3	Farmers have yield collection centers
5.4	Farmers always keep hygienically yield collecting centers
5.5	All farmers use the same variety of rice
5.6	All farmers use recommended pesticides, fungicides chemicals and fertilizers
5.7	Recommended pesticides, fungicides and fertilizers are available
5.8	Farmer is able to buy by her/himself recommended pesticides, fungicides and fertilizers
5.9	Farmers understand preventive methods for consequences caused by improper use of pesticides

This table shows and presents the responses on the quality standards as the challenge area:

Table 21: Overall findings on challenge area 5

Challenge area 5	Median scores per statement									Average- median area score
	1	2	3	4	5	6	7	8	9	
Statements										
Farmers' scores	1.0	1.0	2.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0
Company scores	1.0	2.0	3.0	2.0	2.0	2.0	0.0	0.0	0.0	2.0
Median firm-farmer statement score	1.0	1.5	2.5	1.5	2.0	1.5	0.5	0.5	0.5	1.5
Median firm-farmer area score	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
Difference farmers -median F-F score	0.0	-0.5	-0.5	-0.5	0.0	-0.5	0.5	0.5	0.5	-0.5
Difference Company - median F-F score	0.0	0.5	0.5	0.5	0.0	0.5	-0.5	-0.5	-0.5	2.0
<i>Diff. farmers median-company median</i>	0.0	-1.0	-1.0	-1.0	0.0	-1.0	1.0	1.0	1.0	

Source: Primary data, 2015

The average median score for the challenge area of quality standards is low (1.5), dissatisfaction of the respondents is present; therefore improvement is necessary to meet the needs and wishes of the respondents.

In the areas of '2, 4 and 6', it clearly comes out that the farmers have very low scores (1), caused by the disagreement of the respondents with the statements. It means that the aspect of the cooperative performance was unsatisfactory and there is an urge for improvement or change. Differently, the company has a positive score (2) on the same areas, which indicates that an improvement of the cooperative is not obligatory, but advisable in order to increase satisfaction among members.

In addition, for the area 3, F-F views are also different where the company fully agree with the statement and indicates a high level of satisfaction, while the farmers have a positive score which indicates that the satisfaction of respondents is not optimal. Therefore, improvement is not obligatory, but advisable in order to increase satisfaction among members.

The firm gives the lowest score (0) for statements 7, 8 and 9 whereas the farmers gave very low scores (1). However, it clearly comes out that farmers are more concerned by this challenge than the firm because the farmers are the one who are much more involved in producing activities (ploughing, applying various inputs, hygienic issues, etc.). Farmers need then to be careful as much as possible in order to supply/deliver the good quality of rice. Nonetheless, farmers reported that their knowledge/skills about quality standards is still very low.

It can be observed that in this area the level of agreement is high. Both firm and farmers feel that they are concerned by quality standards. The reason behind is that the farmers and even firm staff have never been trained before about quality standards. Therefore, this area need much more improvement for both sides.

4.2.8.6 Challenge area “Perspectives for company functioning”

The challenge area of perspectives for company functioning has 9 key indicators listed in table 22 below. The overall findings for this challenge area are summarized in table 23.

Table 22: Key indicators of challenge area 6

Statements challenge area “Perspectives for company functioning”	
6.1	It is advantageous for the company to work with individual farmer
6.2	It is advantageous for the company to work with organized farmers
6.3	Given the processing plant will operate nearby farmers, will increase economy of Nyamiyaga inhabitants and its neighbors
6.4	The processing company will get enough yield that can make it functional all year around
6.5	The company will facilitate farmers to know how to produce needed ricees
6.6	The company will facilitate the famers to get loans for rice production
6.7	The company will regularly inform the farmers about the functioning of rice processing plant
6.8	The processing plant will be a solution for current problems in rice marketing
6.9	The processing plant will be well equipped to process rice that meet quality standards

This table shows and presents the responses on the perspectives for company functioning as the challenge area:

Table 23: Overall findings on challenge area 6

Challenge area 6	Median scores per statement									Average-median area score
	1	2	3	4	5	6	7	8	9	
Statements										
Farmers' scores	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Company scores	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Median firm-farmer statement score	1.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Median firm-farmer area score	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Difference farmers - median F-F score	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Difference Company - median F-F score	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diff. farmers median-company median	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Source: Primary data, 2015

The average median score for the challenge area of perspectives on company functioning is very high (3), the average respondent fully agrees with the statement and indicates a high level of

satisfaction. Change or improvement is not needed. Because the company is still new, and therefore its plan is fresh and sounds well into the farmers ears.

It clearly comes out that both the farmers and firm totally agree with almost all statements indicating how the processing plant will operate. The exception is on statement 1, where the firm has a very low score (1), caused by the disagreement of the respondents with the statement. Meaning that the aspect of cooperative's performance was unsatisfactory and there is an urge for improvement or change. Unlike for the farmers who have a positive score (2), showing that the satisfaction of the respondents is not optimal. Therefore, the improvement of the cooperative performance is not obligatory, but advisable in order to increase satisfaction among members.

Concluding, it can be observed that in this area the level of agreement is very high. The firm and the farm have at least the same feeling about this perspective. They have to do all their bests to achieve it in sustainable manner.

4.2.8.7 Challenge area “Contractual perspectives”

The challenge area of perspectives for company functioning has 9 key indicators listed in table 24 below. The overall findings for this challenge area are summarized in table 25.

Table 24: Key indicators of challenge area 7

Statements challenge area “Contractual perspectives”	
7.1	A clear contract farming will be signed between farmers and the company
7.2	Farmers will have common understanding on elements of their contract and the company
7.3	The company and the farmers will be in closer collaboration to prepare contract farming
7.4	It is more advantageous to sign seasonal contract than long term contract
7.5	It is helpful that the government will intervene in contract farming implementation
7.6	Farmers will benefit from written and legal contract
7.7	The company will benefit from written and legal contract
7.8	Risks and losses will be equally shared between farmers and company in case of natural disasters
7.9	The company will buy all rice yield produced by the farmers

This table shows and presents the responses on the contractual perspectives as the challenge area:

Table 25: Overall findings on challenge area 7

Challenge area 7	Median scores per statement									Average- median area score
	1	2	3	4	5	6	7	8	9	
Statements										
Farmers' scores	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Company scores	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0	2.0	3.0
Median firm-farmer statement score	3.0	3.0	3.0	2.5	3.0	3.0	3.0	2.5	2.5	3.0
Median firm-farmer area score	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Difference farmers - median F-F score	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.5	0.0
Difference Company - median F-F score	0.0	0.0	0.0	-0.5	0.0	0.0	0.0	-0.5	-0.5	0.0
<i>diff farmers median-company median</i>	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	1.0	

Source: Primary data, 2015

The average median score for the challenge area of contractual perspectives is very high (3), the average respondent fully agrees with the statement and indicates a high level of satisfaction. Change or improvement is not needed. This will be a new occasion for both the firm and farmers to be linked in contract farming, so they are all willing to sign a contract that makes a difference from previous ones.

In more than half of statements for this area, it clearly comes out that both the farmers and the firm are satisfied (with 3 score) with the elements of contract farming which will link them each other. The farmers are more excited than the firm about these statements 4, 8, and 9, where they gave a very high score (3) indicating a high level of satisfaction whereas the firm gave a positive score indicating that the satisfaction of respondents is not optimal.

It very clear that farmers needs to honestly collaborate with the firm with whom they will seasonally sign clear contract and respect all its elements. They need to deal with a financially competent company which will be able to buy all their produce and/or facilitate them otherwise. They just wish to respect the entire contract for both sides during implementation time.

4.2.8.8 Challenge area “Perspectives on prices and marketing”

The challenge area of perspectives on prices and marketing has 9 key indicators listed in table 26 below. The overall findings for this challenge area are summarized in table 27below.

Table 26: Key indicators of challenge area 8

Statements challenge area “Perspectives on prices and marketing”	
8.1	The company will be clear with the quantity of rice that it will be able to buy from farmers
8.2	The company will inform the farmers on time the quality of needed rice
8.3	There will be other rice buyers in Nyamiyaga area
8.4	Farmers will be free to sell their rices to other buyers in case they are not satisfied with the price provided by the company
8.5	Farmers are hopeful to get better price for the company
8.6	Farmers will be paid timely
8.7	It is advantageous for farmers to be paid through cooperative
8.8	The proper marketing of rice will improve the economy of the whole district and neighbors
8.9	The rice processed in Nyamiyaga will be sold even outside the country

This table shows and presents the responses on the perspectives on prices and marketing as the challenge area:

Table 27: Overall findings on challenge area 8

Challenge area 8	Median scores per statement									Average-median area score
	1	2	3	4	5	6	7	8	9	
Statements										
Farmers' scores	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Company scores	2.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Median firm-farmer statement score	2.5	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Median firm-farmer area score	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Difference farmers - median F-F score	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Difference Company - median F-F score	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Diff farmers median-company median</i>	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Source: Primary data, 2015

The average median score for the challenge area of prices and marketing perspectives is very high (3), the average respondent fully agrees with the statement and indicates a high level of satisfaction.

Visual F-F scores on prices and marketing perspectives

On 8 statements out of 9, it clearly comes out that farmers and firm are very positive. This show their high satisfaction about the projection on prices and marketing modalities. It is a better goal to achieve for their future perspectives in order to come up with win-win situation within their transactions. From this, it is required by the firm to be clear with the quantity of rice that it will be able to buy from farmers. This would make the company trustworthy towards farmers. The company also has a positive view on this regards but its satisfaction is not optimal. Concluding, it can be observed that in this area the level of agreement is very high.

4.2.8.9 Challenge area “perspectives on production”

The challenge area of perspectives on prices and marketing has 9 key indicators listed in table 28 below. The overall findings for this challenge area are summarized in table 29 below.

Table 28: Key indicators of challenge area 9

Statements challenge area “perspectives on production”	
9.1	The yield in the marshland can be increased
9.3	Farmers will receive rice seeds on time
9.4	Farmers will receive pesticides, fungicide and fertilizers on time
9.5	Farmers will buy improved rice seeds for better prices
9.6	Farmers will buy recommended pesticides, fungicides and fertilizers for better prices
9.7	The stakeholders may restore the trust for farmers
9.8	In case the trust for the farmers will be restored by stakeholders, it will improve rice production
9.9	Taking insurance for rice production will help in preventing losses caused by floods

This table shows and presents the responses on the perspectives on the production as the challenge area:

Table 29: Overall findings on challenge area 9

Challenge area 9	Median cores per statement									Average- median area score
	1	2	3	4	5	6	7	8	9	
Statements										
Farmers' scores	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Company scores	3.0	3.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
Median firm-farmer statement score	3.0	3.0	3.0	3.0	2.5	2.5	3.0	3.0	3.0	3.0
median firm-farmer area score	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Difference farmers - median F-F score	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0
Difference Company - median F-F score	0.0	0.0	0.0	0.0	-0.5	-0.5	0.0	0.0	0.0	0.0
<i>Diff farmers median-company median</i>	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	

Source: Primary data, 2015

The average median score for the challenge area of production perspectives is very high (3), the average respondent fully agrees with the statement and indicates a high level of satisfaction.

On 7 statements out of 9, it clearly comes out that farmers and firm are very positive and have common view on the statements. This shows their high satisfaction about the projection on production. Farmers need to work in a conducive environment in order to increase rice yield as much as possible. Farmers wish to receive rice seeds, pesticides, fungicide and fertilizers on time. The firm wishes also timely and consistent rice yield that can enable it to operate all year around.

4.2.9. Results of debriefing session in focus group discussion

The session was needed as the farmers took opportunity to share and discuss with firm and other stakeholders. In that occasion, firm and farmers debated on 4 prevailing issues in the chain as shown by research results: Production, farmer group functioning, stakeholder collaboration and quality standards which were lowly scored by both sides. They identified areas on which they are able to find solutions themselves and areas on which they need other stakeholders to support (extension services, agricultural insurances, inputs distribution, irrigation systems, trainings, and micro credits). The table 30 shows in detail the responsibilities assigned on firm, farmers and supporters.

Firm and farmer agreed on perspectives areas which were highly scored by both sides. They agreed each other to do their bests to maintain the level of those areas in order to increase level of trust towards win-win situation between the firm and farmers. The firm is concerned by low and seasonal yield in order to expect to be operational all year round “the processing plant should not wait for the yield, the yield should wait for the processing plant instead” said by the company manager. The company promised the farmers to buy all the production which will be produced by the farmers. MRPIC LTD will make sure that there is no rice yield will be wasted anymore because it will always facilitate the farmers to find market for all their produce. The following are the pictures showing debriefing meeting event.

The debriefing exercise was very interesting for all participants as the farmers got opportunity to propose their own solutions for prevailing challenge areas in rice value chain. The Executive secretary of Nyamiyaga sector has highly appreciated the exercise in these words “*This is really a kind of research we want, a research which consider views of our people, and a research that gives a feedback to the respondents*”. CCA through UGAMA accepted to organise a stakeholders’ meeting which will gather all stakeholders (MINAGRI, RAB, MRPIC LTD, inputs Suppliers and some NGOs and financial institutions working in agricultural sector) involved in rice value chain to put together all their efforts so that rice value chain in Nyamiyaga area could be improved as soon as possible.

During this meeting we took occasion to collect additional information from the debate raised between participants after presentation of findings.

Table 30: Responsibilities of firm, farm and other supporters

Challenge areas	What MRPIC LTD accepted to do	What farmers accepted to do	What other stakeholders may help to solve
1. Production <ul style="list-style-type: none"> • Availability and affordability of recommended inputs • Calculation of production cost • Quick feedback on problems that farmers have on rice production 	<ul style="list-style-type: none"> -Negotiate with inputs suppliers to integrate farmers into voucher system - Look for expert 	Farmers are willing to join voucher system	<ul style="list-style-type: none"> -RAB can help to import inputs -Nyamiyaga sector Agronomist accepted to provide technical assistance
2. Productivity <ul style="list-style-type: none"> • Growing ricetwice a year • Diseases and pest control • Use of high yielding varieties • Increase the income from rice 	<ul style="list-style-type: none"> -Facilitation for inputs supply 	-Farmers will use their own lands to grow rice	<ul style="list-style-type: none"> - MINAGRI/RAB, ISAR may help to provide recommended inputs
3. Cooperative functioning <ul style="list-style-type: none"> • Awareness of members about what is going on in cooperative • Cooperative leaders fulfil all responsibilities assigned by members • Transparency in cooperative management and functioning • All members have common goals 	<ul style="list-style-type: none"> -Advocacy for trainings 	-Behaviour change	<ul style="list-style-type: none"> -RCA may build capacities of members about cooperative functioning, management, conflict resolution, cooperatives structures, book keeping and accounting in cooperatives
4. Stakeholder collaboration <ul style="list-style-type: none"> • Existence of stakeholders providing imbedded services • Farmers get extension services for rice production 	<ul style="list-style-type: none"> -Advocacy -Negotiate with MFIs to give cheap credits to the farmers -Advocacy for agricultural insurance -Always 	<ul style="list-style-type: none"> -Fair collaboration with stakeholders -Farmers will join Micro Ensure -Farmers accepted to work in cooperative 	<ul style="list-style-type: none"> -CCA and UGAMA accepted to organize a stakeholder workshop which help farmers obtain embedded services -RCA may help

<ul style="list-style-type: none"> • Willingness of MFIs to provide micro credits for rice production • A lot of stakeholders are happy to work with farmers when there are floods in marshland • It is easy for stakeholder to work with individual farmers • Farmers know the destination of their rice after sale 	<p>keeping farmers informed about marketing of rice</p> <p>-Look for expert in standards</p> <p>Organise training about standards\</p> <p>-Supervision</p> <p>-Facilitate farmers to obtain required variety for rice</p> <p>-Facilitate farmers to obtain inputs nearby the farmers</p>	<p>-Farmers will be active, and participating regularly in various meetings</p> <p>-Contribute in selection of variety</p> <p>Adaptation of the variety</p> <p>-Proper use of inputs</p>	<p>to build their capacity in this regard</p> <p>-Rwanda Bureau of standards will provide experts</p> <p>-RAB may facilitate provide improved seeds</p> <p>- Nyamiyaga sector Agronomist accepted to demonstrate how agricultural chemicals are used properly</p>
<p>5. Quality standards</p> <ul style="list-style-type: none"> • I understand the quality standards required for rice crop • It is easy for farmers to follow quality standards conditions • Farmers keep hygienically yield collecting centres • All farmers use the same variety of rice • All farmers use recommended pesticides, fungicides and fertilizers • Recommended pesticides, fungicides and fertilizers are available • Farmers is able to buy recommended pesticides, fungicides and fertilizers using own money • Farmers understand preventive methods for consequences caused by improper use of pesticides 			

Source: Primary data, 2015

4.2.10 Effect of Mukunguri agribusiness Cluster to the welfare of farmers

4.2.10.1 Level of increasing the cooperative rice growing area, production and Productivity

Success in agricultural production can also be attributed to increased cultivation area, productivity and total production. Part of the marshlands were prepared under the guidance of the Rural Sector Support Project (RSSP)- II. But other marshlands were expanded (created) by the co-operative members themselves after having learnt the skills from RSSP&UGAMA, and having been motivated by the performance of the CCA project which impelled them to increased agricultural production

Table 31: Level of increasing the cooperative rice growing area, production and Productivity

Year	Area(Ha)	Productivity(T/Ha)	Total Production(T)
2010	230	4	920
2011	300	4,2	1,260
2012	300	4	1,200
2013	452	6,7	3,028
2014	650	7,2	4,680

Source: Primary data, 2015

The cultivation land is a critical resource for the co-operatives for agribusiness development because agriculture remains their mainstay. Therefore, without adequate farm land, agricultural production will greatly be impaired. Consequently, this would affect the growth of the co-operative enterprise.

As a matter of fact, it was pointed out during this study that COOPRORIZ AbahuzaBikorwa, for instance, had a lot of pending applications of new members who could not be admitted for lack of adequate cultivation area. A member in such a co-operative must necessarily have a farm land.

The table below shows that during agribusiness cluster development, cooperative arrived to increase the working area, productivity and total production as follow:

- Area: From 230 hectares in 2009 to 650 hectares in 2013;
- Productivity: From 4 tons in 2009 to 7,2 tons by hectare in 2013;
- Total production: From 920 tons in 2009 to 4,680 tons in 2013.

4.2.10.2 Level of increasing of cooperatives turnover and income

With improved agricultural production practices, increased agricultural output (per hectare), increased farm land, it was likely that this would lead to increased turn over and income. Indeed, there are several indicators, as observed during this research, which suggest that there has been an increase even in income for individual members of the co-operatives as well as the co-operatives themselves as institutions.

Table 32: Level of increasing of cooperative turnover and income

Year	Turn over(RWF)	Income(RWF)
2010	184,000,000	9,200,000
2011	252,000,000	15,120,000
2012	252,000,000	20,160,000
2013	635,964,000	63,596,400
2014	1,076,400,000	107,640,000

Source: Primary data, 2015

However, it must be underlined here that this increase in income cannot be attributed solely to improved agricultural production practices, increased agricultural output (per hectare) and increased farm land. Further, increased agricultural output is not solely confined to rice.

Increase in income for the co-operative could also as well have been a result of their engagement in other agricultural as well as non-agricultural products. The study team eye-witnessed some non-agricultural activities being carried out by the co-operative such as inputs dealer and canteen. As mentioned by cooperative leaders and analysis cooperative financial statement done during research, 80 % of turnover and income comes from rice growing where 20 % comes from off farmers activities shown above.

With the results from table n^o32 show that the agribusiness development had positive impact on increasing cooperative turnover and income respectively from 184,000,000 to 1,076,400,000 rfw and from 9,200,000 rfw to 107,640,000 rfw

4.2.10.3 Rice business income generation

Different categories of rice business on income generation were analyzed to determine the primary, secondary and tertiary sources of income of cooperative members. Information on household income generation also allows for the examination of alternative sources of income apart from cooperative farming that may act to supplement the revenues of cooperative members. This section also allows for an analysis of what categories of household income generation need to be enhanced ensuring further financial security of cooperative members.

Categories of income generation included: cooperative activities, household farming, income from relatives, remittances, animal raising, shop keeping, manual labour, small businesses, handicrafts . Other sources of revenue were wide ranging and included credit/bank loans, loans from friends/family members, forestry, savings, donations, carpentry, selling of milk/eggs, sewing etc....

Table 33: Impact of rice business on income generation

Source of income	Respondents	Percentage (%)
Rice business activities	37	40
Household farming	28	30
Remittances	0	0.02
Animal raising	8	8.3
Shop keeping	0	0.1
Manual labour	3	3
Small businesses	4	4
Handicrafts	0	0.12
Other sources	13	14.46
	93	100

Source: Primary data, 2015

Table analysis revealed household farming and animal raising was the most significant source of income for rice business activity and household farming accounting respectively than 40% and 30.

Other sources of income that are noticeable are credit/bank loans, loans from friends/family members, forestry, savings, donations, carpentry, selling of milk/eggs, sewing etc have significance level evaluated at 14,46 %.

4.2.10.4 Finances and Income Distribution within the Household

89% of respondents indicated having a bank account and only 11% responded to having no bank account.

Respondents were asked if they noticed any significant changes in bank account activity within the past year. The majority indicated that changes in the account would appear with increases from money gained during harvesting periods but also would decrease from withdrawals for household repairs, buying livestock or other household expenses. Others indicated increases due to savings, loans and income generation activities. Many members responded that declines in their bank balance are common when prices are low as well as during the period when waiting for harvesting season to arrive.

Of members with a bank account, 64% share their accounts with their partners, 25% with a child, 1.8% with a brother or sister, 0.2% with their father, 1.5% with another family member or friend and the remaining 7.5% share their accounts with no one.

Members were asked who was responsible for finances in the family, 44% indicated both partners were jointly responsible (the mother and father), 24% indicated the female (mother), 28% indicated the male (father). The remaining households indicated that it was the single unwed male cooperative member responsible for finances or that the question was non applicable to them.

The majority of respondents commented that they do not have the ability to make decisions without their partner's consent (40%), 36% indicated yes, that they are able to buy without their partner's consent and 17% indicated that they are sometimes able to buy without their partners consent. This question is not relevant to those without partners. Results from this question however will need to be analyzed further as the initial question may have been misinterpreted. While some respondents interpreted this question as meaning that partners took decisions together, others equated the question with financial liberty to make one's own decision independently from the other partner.

The respondents were also asked about the division of income within their families. The majority of households indicated that revenues are shared and divided based on family needs and priorities and that decisions are made based on discussions between the mother and father. Others remarked that both partners use their common income to invest in other activities such as home agriculture. Some respondents (3%) however indicated that the husband monopolizes control over revenues and monetary decision making; among these respondents some commented that although income from the mother is divided, income from the father is not. Another response was that the husband often uses money to buy beer while the mother uses revenues for household needs.

It is important however to keep in mind the sensitivity of the above mentioned questions. Because both partners were present at the time of the interviews, the husband or wife may not have felt comfortable revealing their true feelings regarding the distribution of income within the household with the other partner present.

4.2.10.5 Scholarship payment of the children

Payment of scholarship of the children is one of the key indicators of socio-economic development of rice business respond. This research needed to collect data related to this indicator in order to show if there was been an improvement in payment of school fees before project and after project.

Table 34:Scholarship payment of children

Payment of scholarship	Before project		Current situation	
	Frequency	Percentage	Frequency	Percentage
For all children	13	14.3	37	39.7
Some children	34	36.5	40	42.9
No child	46	49.2	16	17.5
Total for all respondents	93	100	93	100

Source: Primary data, 2015

The Table 34 shows that before the project only 14.3% of respondents had capacity to pay the scholarship of all their children, 36.5% had capacity to pay for some of their children and 49.2% was not able to pay the scholarship of all children.

Significant improvement had been realized after the project where respondents who have the capacity of paying scholarship for all children had increased from 14.3% to 39.7%. Only 17.5% did not have capacity to pay scholarship for their children. This improvement is linked to the effort made by the beneficiaries of project to increase their agriculture production. However some families do not have enough land for tilling that is way some families were not able to pay scholarship for their children. Fortunately those children are assisted by government through ‘‘education for all’’ program. In rural area this program is accused to be law performance.

4.2.10.6 Adhesion to health insurance

None can say to be in welfare in termers of socio-economic development while he/she does not have access to health insurance. The research collected information related to adhesion to health

insurance in order to analyse this indicator and link it to economic development of beneficiaries of rice business case. The following table indicates the ability of respondent to pay health insurance.

Table 35: Ability to pay mutual health insurance.

Adhesion to health insurance	Before project		Current situation	
	Frequency	Percentage	Frequency	Percentage
Ability to pay health Insurance for all family	34	36.5	80	86.0
Inability to pay health Insurance	59	63.5	13	14.0
Total of respondents	93	100.0	93	100.0

Source: Primary data, 2015

From the table 35, before the project only 36.5% respondents reported that they had the ability to contribute for health insurance of their family. 63.5% could not pay any health insurance for their family. After the project immeasurable improvement had been achieved where the number of respondents who have the capacity to pay mutual insurance for the whole family had been increasing from 36.5% to 86 %. After project, we observe a decrease from 63.5% to 41.3% of families who are not able to pay themselves health insurance.

This change is related to the increase in agriculture production, organization into cooperative and much training that benefits the beneficiaries of the rice business.

4.2.10.7 Housing situation in project area

Development in rural area is sometimes characterized by building of new houses and owning of houses. The table 36 presents the evolution of this situation amid the respondents.

Table 36: Housing situation

Housing situation	Before the project		Current situation	
	Frequency	Percentage	Frequency	Percentage
Property owner	75	81	92	98.4
Hiring	18	19	1	1.6
Total	93	100	93	100

Source: Primary data, 2015

The Table 36 shows that before the project 81% of respondents had their own houses and after project we realized the improvement in housing where the house property owner had increased from

81% to 98.4%. We can easily say that the living conditions of households had been improved at the rate of 17.4%. The housing situation is an important indicator of development of the households. Through the rice business case, some farmers got the job and other got the new techniques of enhancing their production and as consequences the income for a household has increased. That is why this increase in owning houses is justified.

CHAPTER 5: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter concisely talks about Summary, conclusions and recommendations drawn from the study research.

The conclusion is made bearing in mind the specific objective of the study. The summary, conclusion and recommendations were thus made based on the specific objectives of the study.

5.1 Summary of findings

The findings of the research study were presented in relation to the objectives of the study. The data of the study was obtained from 93 respondents taken from the total population involved in the Mukunguri rice agribusiness cluster.

5.1.1 Findings related to the first objective.

In regard to the first objective of the study, which aims at examining the structure of Rice agribusiness cluster and value chain in Nyamiyaga sector;The research findings showed that before 2014, the rice value chain was composed by: agri-shops as inputs suppliers, rice farmers as producers of paddy rice, and KABUYE s.a in collecting ,processing and wholesaling function. The supermarkets, shops, open market and urban traders in retailing whereas in consuming are urban high and low income consumers, rural low income consumers and institutional consumers. In supporting function were RSSP, UGAMA, MFIs(CAF ISONGA,KCB and BPR), Kamonyi district, and transporters.

Nowadays, value chain actors as well as supporters have changed. MRPIC LTD is currently negotiating with cooperatives and individual farmers to establish a contract farming which will determine their business partnership in Rice value chain.

Cooperatives zones and cooperatives as structured organ involved in collecting of paddy rice produced, while wholesalers in Kigali, Muhanga and Kamonyi districts and others individual sellers are in wholesaling. Retailers and consumers remain the same excluding supermarkets in retailing and urban high income consumers at consuming level.

Following service providers are involved :RAB(inputs supply),CCA,UGAMA(organization and capacity building),RSSP(Technical support),MINICOM and RCA(Structure organization and

regulation), Banks and MFIs (Value chain financial support), RBS (Quality control standards), Kamonyi District authorities (Technical support)

5.1.2 Findings related to the second objective

The second objective aimed at analyzing the level of agriculture production in the Rice agribusiness cluster and value chain area.

The cultivation land is a critical resource for the agribusiness development because agriculture remains their mainstay. Therefore, without adequate farm land, agricultural production will greatly be impaired. Consequently, this would affect the growth of the co-operative enterprise.

The results showed that during agribusiness cluster development, cooperative arrived to increase the working area, productivity and total production as follow:

- Area: From 230 hectares in 2009 to 650 hectares in 2013;
- Productivity: From 4 tons in 2009 to 7,2 tons by hectare in 2013;
- Total production: From 920 tons in 2009 to 4,680 tons in 2013.

With improved agricultural production practices, increased agricultural output (per hectare), increased farm land, the agribusiness development had positive impact on increasing cooperative turnover and income respectively from 184,000,000 to 1,076,400,000 rfw and from 9,200,000 rfw to 107,640,000 rfw

5.1.3 Findings related to third objective

The third objective aimed at analyzing the contribution of Mukunguri Agribusiness Cluster development to the welfare of farmers.

Different categories of rice business on income generation were analyzed to determine the primary, secondary and tertiary sources of income of members and the sources of income apart from rice farming that may act to supplement the revenues of cooperative members.

The results revealed that household farming and animal raising was the most significant source of income for rice business activity and household farming accounting respectively than 40% and 30 %.

Other sources of income that are noticeable are credit/bank loans, loans from friends/family members, forestry, savings, donations, carpentry, selling of milk/eggs, sewing etc have significance level evaluated at 14,46 %.

For finances and Income Distribution within the Household:89% of respondents indicated having a bank account and only 11% responded to having no bank account.

Due to agribusiness promotion through capacity building of different service providers, members with a bank account, 64% share their accounts with their partners, 25% with a child, 1.8% with a brother or sister, 0.2% with their father, 1.5% with another family member or friend and the remaining 7.5% share their accounts with no one.

For the ability of respondent to pay of scholarship of the children, the results showed that before improving the rice business only 14.3% of respondents had capacity to pay the scholarship of all their children, 36.5% had capacity to pay for some of their children and 49.2% was not able to pay the scholarship of all children.

Significant improvement had been realized after the project where respondents who have the capacity of paying scholarship for all children had increased from 14.3% to 39.7%. Only 17.5% did not have capacity to pay scholarship for their children.

This improvement is linked to the effort made by the beneficiaries of rice business to increase their agriculture production.

For the capacity of members to have **adhesion to health insurance**, the results showed that, before the improving rice business only 36.5% respondents reported that they had the ability to contribute for health insurance of their family. 63.5% could not pay any health insurance for their family. After improving rice business immeasurable improvement had been achieved where the number of respondents who have the capacity to pay mutual insurance for the whole family had been increasing from 36.5% to 86 %.

For housing situation, the results showed that before improving rice business 81% of respondents had their own houses and after project we realized the improvement in housing where the house property owner had increased from 81% to 98.4%. This means that the living conditions of households had been improved at the rate of 17.4%.

5.1.4 Findings related to the fourth objectives.

The fourth objectives aimed at to set up the best strategies that can increase the performance of Mukunguri agribusiness and to examine what should be done to improve the business relationship COOPRORIZ ABAHUZABIKORWA rice farmers, MRPIC LTD processing company and other involved actors towards rice profitability and sales in Nyamiyaga sector

The survey was carried out on 9 challenge areas (Production, Productivity, Farmer group functioning, Stakeholder collaboration, Quality standards, Perspectives for company functioning, Contractual perspectives, Perspectives on prices and marketing and Perspectives on production). After presentation and analysis of challenge areas in general, the findings for each challenge area were also presented and analysed by the use of a table compiling the overall median scores (from F-F respondents) for each statement under a specific challenge area

The average median score for the firm-farmer relationship for all the challenge areas was positive at 2.5. Meaning the respondents are satisfied with the cooperative performance for all challenge areas.

The adjustments could be made to lift the level of satisfaction to the final stage. Generally, the farmers had very high median scores (3) than the firm for challenge areas 1, 2 and 9. While the firm scored below the farmer median at 2, it means the satisfaction of the respondents is not optimal. Therefore, improvement of the cooperative performance is not obligatory, but advisable in order to increase satisfaction among members.

The firm has higher scores (2) than the farmers (1) on areas of quality standards and farmers group functioning. It means for the firm, the satisfaction of the respondents is not optimal and the improvement is not obligatory, but advisable in order to increase satisfaction among members; for the farmers, respondents disagree with the statements, which mean that the aspect of cooperative performance was unsatisfactory and there is an urge for improvement or change.

Both the farmers and the firm give a very low score (1) for area of 'stakeholder collaboration', caused by the disagreement of the respondents with the statements. Meaning that the aspect of cooperative performance was unsatisfactory and there is an urge for improvement or change.

For the perspectives for company functioning, the research findings showed that all areas related to the perspectives were highly appreciated by both firm and farmers, but the company seemed to be more positive than farmers. This is because the company has ambition to make a difference from the

functioning of former companies who failed to establish a good firm-farm relationship during past years.

In addition, the fact that the processing plant will operate in Nyamiyaga sector, it will increase economy of Nyamiyaga inhabitants and its neighbors because of employment creation and increased traffic in the area.

For the contractual perspectives: The company accepts to be engaged on formal contract farming with the farmers where all farmers' views will be considered in contract preparation. The majority of respondents (for firm and farm sides) said that they will benefit from written and clear contract farming. Seasonal contract farming was highly appreciated by both sides because rice is a seasonal crop which doesn't require binding contracts. The company will be clear about the quantity and quality of rice yield it will take from farmers.

For the perspectives on prices and marketing, the research findings showed that farmers are happy to be consulted during prices fixing. This will increase the chance for them to get compensative price than before. The company will not work in monopoly but it will establish a strong partnership with other buy in order to ensure that farmers' yield loss is reduced. The farmers will be totally and timely paid according to the contract farming.

For the production perspectives, in order to ensure the continuity and profitability of processing activities, the farmers and other stakeholders accept that with their improvement effort, the rice production will be increased as much as possible.

For each season, the company ,cooperative and other involved stakeholders(Actors and supporters) accept to make sure that recommended and affordable inputs are available for farmers. Rice farmers will be trained about production of marketable rice. In addition, farmers will be facilitated to obtain agricultural insurance (micro insurance) against production risks such as floods and drought. The company will also mobilize as many as possible stakeholders and provide again embedded services with the aim of increasing rice production and profitability in Nyamiyaga sector.

5.2 Conclusions

The Mukunguri agribusiness cluster through the relationship between MRPIC LTD, different involved actors and COOPRORIZ ABAHUZABIKORWA rice farmers' cooperative seemed to be good and with more or less total agreement for many areas. But there are some areas which need

improvement in order to increase satisfaction among rice farmers, actors and the company. Even though they are still at a pioneering stage of business relations, the challenge areas related to perspectives got the highest scores from both firm and farmers which give the hopes for a brilliant development of Mukunguri agribusiness cluster in the future.

According to the results and discussion, current prevailing challenge areas in rice value chain in Mukunguri are floods, poor strong linkage of stake holders.

These are the challenges divided into category as production. Likewise, productivity, cooperative functioning (issues of mismanagement, membership and ownership), stakeholder collaboration and quality standards issues came up also as major challenges hindering rice value chain in Nyamiyaga sector. Therefore, after realizing the prevailing issues hindering rice production in Mukunguri through an assessment of the relationship between the MRPIC, actors and rice farmers and after analyzing strengths and opportunity in rice business case, CCA and UGAMA, on the demand of the participants in the debriefing meeting promised to organize in very near future, a stakeholders seminar in which the sustainable strategies to strengthen the rice value chain in Mukunguri will be taken.

The findings showed that in the agribusiness working area was one processing company within collecting and processing functions. Currently, farmers both men and women are in producing function, they collect their production on the help of cooperative which supply to MRPIC LTD for processing and supplying the final product to different wholesalers in the country. The retailers buy from wholesalers to supply consumers in rural and urban settlements.

The relationship between MRPIC LTD, different actors involved in rice value chain and COOPRORIZ ABAHUZABIKORWARice cooperative was accessed in participatory way and farmers took opportunity to express their views about company and actors relations, as well as asking more questions about the areas which were not clear to them. From the assessment, the company, actors and rice farmers come up with participatory conclusions and recommendations leading to the solution of issues raised.

They divided tasks to fulfill as chain actors and proposed other supports who may help to renovate the rice chain.

5.3 Recommendations

The following recommendations came out from a combination of the recommendations that were suggested by participants during the debriefing sessions and discussed in the previous section(s) of the document:

It will be better, if CCA and UGAMA put in action its promises in due time so that involved stakeholders are mobilized to provide embedded services to the farmers in Mukunguri marshland.

It will be interesting if CCA,UGAMA and MRPIC LTD could facilitate rice farmers to get trained as soon as possible, in rice production, quality standards, Post harvest technology, entrepreneurship, Business planning, marketing, cooperative management and functioning, and conflicts resolution.

It would also be better for MRPIC LTD and COOPRORIZ ABAHUZABIKORWA to overcome the barrier of fear and take advantage of new relationship with involved stakeholders with strong collaboration.

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- <http://www.fao.org/ag/ags/agricultural-finance-and-investment/financial-products-services/en/>
- www.rab.gov.rw/spip.php?article 29
- http://www.fao.org/ag/ags/agribusiness-development/value-chain training/en/?no_cache=1

ANNEXE : Questionnaires and Guidance questions for focus groups discussions and interview

For the respondent:

Please fill in the following information

Part I: Background Information

Name: _____

Sex: _____

Sector: _____ District: _____

Province _____

a) Please indicate which family member is registered in the respective cooperative:

Male _____ Female _____

b) Who is the head of household in your family (husband, wife, other?): _____

c) Please list your principal and secondary occupations: _____

d) Occupation of partner: _____

e) Please fill in the following charts for yourself and your partner:

AGE (please check)	
Under 18	
18-25	
26-30	
31-35	
36-40	
41-45	
46-50	
51-55	
56-60	
61-65	
EDUCATION LEVEL (please check)	
Of Coop Member	
Illiterate	
Primary	
Secondary- 1str cycle	
Secondary- 2 nd cycle	
Vocational Training Centre	
University	
Other: please specify	
71-75	

76-80
80 +

For company employees:

If you work for a company, please fill in the following questions. If you are finished you can start answering the statements on the next page. Thank you for your cooperation!

Characteristic respondent:	<i>What is the name of the company that you work for?</i>
Position respondent:	<i>What is your position in the company?</i>
Duration participation:	<i>How long do you work for this company?</i>

Part II: Structure of Rice agribusiness cluster and value chain in Nyamiyaga sector

Approaches of getting data: Focus groups discussions

Objectives:

- ✓ Gain a basic overview of the value chain to guide the full value chain analysis to be undertaken
- ✓ Identify constraints and possible solutions at different levels in the value chain;
- ✓ Visualize networks to get a better understanding of connections between actors and processes;
- ✓ Demonstrate interdependency between actors and processes in the value chain;
- ✓ Create awareness of actors to look beyond their own involvement into the value chain

Guidance questions:

- What are the core processes in the value chain?
- Who are the actors involved in these processes and what do they actually do?
- What are the flows of product, information and knowledge in the value chain?
- What is the volume of products, the number of actors and jobs?
- What types of relationships and linkages exist?
- What key constraints exist at various levels in the chain and what are potential solutions to those constraints?

We are now beginning with the statements. Please answer them to the best of your ability. Good luck!

Statements		Scores			
		0	1	2	3
		<i>Totally disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Totally agree</i>
		☹☹	☹	☺	☺☺
1	Rice production				
1.1	Recommended pesticides and fungicides are available				
1.2	Recommended pesticides and fungicides are affordable				
1.3	Improved Rice seeds are available				
1.4	Improved Rice seeds are affordable				
1.5	Rice grown in Mukunguri marshland are tolerant for diseases				
1.6	Rice grown in Mukunguri marshland are insured against any cause of yield loss				
1.7	There is increase of Rice productivity in Mukunguri marshland				
1.8	Farmers are able to estimate production costs per kg of Rice produced				
1.9	Farmers get quick feedback on problems encountered in Rice production				
2	Productivity				
2.1	Mukunguri marshland is suitable for Rice growing				
2.2	Rice are grown in Mukunguri marshland in all seasons of year				
2.3	There are appropriate measures to control floods in Mukunguri marshland				
2.4	Farmers are satisfied by the Rice yield				
2.5	All Rice diseases in the marshland are controlled				
2.6	All farmers grow high yielding Rice varieties available in Rwanda				
2.7	Rice is the most profitable crop among others				
3	Farmer group functioning				
3.1	Rice growers are organized in cooperatives				
3.2	Farmers know advantages of working in cooperative				
3.3	Farmers prefer to work as individuals than operating in cooperatives				
3.4	Members are aware on what is going on in cooperative				
3.5	Coopertive leaders fulfil all responsibilities assigned by members				
3.6	There is a transparency in cooperative management and functioning				
3.7	The cooperative structures are set democratically and equally				
3.8	Cooperative leaders represent common interests of members.				
3.9	All farmers have common goal				
4	Stakeholders collaboration				

4.1	We have enough stakeholders for Rice crop				
4.2	Farmers get extension services for Rice production				
4.3	Farmers use properly received inputs				
4.4	Rice farmers are familiar to work with microfinance institutions				
4.5	MFIs are willing to provide credits for Rice production				
4.6	Many stakeholders feel happy to work with Rice farmers when there are floods in the marshland				
4.7	It is easier for stakeholder to work with individual farmers than grouped farmers				
4.8	It is easier for individual farmer to obtain stakeholders than being in cooperative				
4.9	Farmers know the fate of their Rice after sale				
5	Quality standards				
5.1	I understand the quality standards required for Rice crop				
5.2	It is easy for farmers to implement quality standards applicable on Rice				
5.3	Farmers have yield collection centers				
5.4	Farmers always keep collection centers clean				
5.5	All farmers use the same variety of Rice				
5.6	All farmers use recommended pesticides, fungicides chemicals and fertilizers				
5.7	Recommended pesticides, fungicides and fertilizers are available				
5.8	Farmer is able to buy her/himself recommended pesticides, fungicides and fertilizers				
5.9	Farmers understand the danger associated with improper use of pesticides				
1.	Perspectives for company functioning				
	It is worthy for the company to work with individual farmer				
	It is worthy for the company to work with grouped farmers				
	The processing plant operating nearby farmers, will increase economy of Nyamiyaga inhabitants and its neighbors				
	There is certainty that the processing company will get enough yield to process				
	The company will facilitate farmers to know how to produce required Rice				
	The company will facilitate the farmers to get loans for Rice production				
	The company will regularly inform the farmers about the operations processing plant				
	The processing plant will be a solution for current problems in Rice marketing				
	The processing plant will be well equipped to process Rice that meet quality standards				
7.	Contractual perspectives				
	Clear agreements will be signed between farmers and the				

	company				
	Farmers will have clear understanding on key elements of the contract with the company				
	The company and the farmers will collaborate to prepare farming contract				
	short term contract is better than long term contract				
	It is helpful that the government get involved in the implementation of farming agreements				
	Farmers will benefit from written and legal contract				
	The company will benefit from written and legal contract				
	Risks and losses will be equally shared between farmers and company in case of natural disasters				
	The company will buy the whole Rice yield produced by the farmers				

Statements	Scores			
	0	1	2	3
	<i>Totally disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Totally agree</i>
	☹☹	☹	☺	☺☺
8.Perspectives on prices and marketing				
	The company will be clear with the quantity of Rice that it will be able to buy from farmers			
	The company will inform the farmers on time the quality of needed Rice			
	There will be other concurrent Rice buyers in Nyamiyaga			
	Farmers will be free to sell their Rice to other buyers in case they are not satisfied with the price provided by the company			
	Farmers expect to get better price from the company			
	Farmers will be paid timely based on the agreement statements			
	It is advantageous for farmers to be paid through cooperative			
	The proper marketing of Rice will improve the economy of the whole district and neighbors			
	The processed Rice in Nyamiyaga will be sold even outside the country			

9.The perspectives on production					
	The yield in the marshland can be increased				
	Farmers will receive Rice seeds on time				
	Farmers will receive pesticides, fungicide and fertilizers on time				
	Farmers will buy improved Rice seeds for reasonable prices				
	Farmers will buy recommended pesticides, fungicides and fertilizers reasonable prices				
	The stakeholders may restore the trust for farmers				
	Trusting farmers will lead to increased Rice production and its products				
	Insuring Rice crop will help in preventing loses caused by disasters like floods				

PARTI III: The level of agriculture production in the Rice agribusiness cluster and value chain area.

3.1. What were the rice growing area, production and Productivity?

Year	Area	Productivity	Total Production
2009			
2010			
2011			
2012			
2013			

3.2. What is the Rice expenses turn over and income gained in following years: 2009; 2010; 2011; 2012; 2013

Year	Expenses	Turn over	Income
2009			
2010			
2011			
2012			
2013			

PART IV: Contribution of Mukunguri Agribusiness Cluster development to the welfare of farmers.

4.1. Below please indicate your family's main sources of revenue ?

Source of Income	Please indicate whether this represents a source of family income (yes or no)
Cooperative Activities	
Household Farming	
Income from relatives (that live within your household)	
Remittances	
Alternative income generating activities outside the cooperative (please check all that apply) -Animal raising -Shop/boutique -La main d'œuvre -Petit commerce -Metier -Artisan OTHERS (pleaselist)	
Non-agricultural activity within the cooperative (apart from principal and secondary crops) (please check all that apply) -Artisan -Animal Raising -Soap making Other (please specify):	

4.2. How was your capacity to pay school fees for yours children before project and to date? (put V where you select to be true and X where it is false):

Number of children	Before project	To date
For all children		
Some children		
No child		

4.3. How was your capacity to pay health insurance before project and after project? (put V where you select to be true and X where it is false)

Ability to pay health insurance	Before project	To date
Insurance for all family		
Inability to pay health Insurance		

4.4. Do you have your own house?

Yes:

Non:

If yes when have owned your house?

- Before project
- After integrating agribusiness approach

4.5. Finance and Income Distribution to the members

a) Do you have a bank account? Yes or no

b) Do you notice any changes in your savings account from last year? Please describe.

c) If yes, is this bank account shared and with whom? Please check.

Partner _____

Other (please specify) _____

d) Who is responsible for finances in the family? Please check.

Male _____ Female _____ Both _____

e) Do you have the ability to buy without your partner's consensus? Please check.

Yes _____ No _____ Sometimes _____

f)How is income divided between family members (if it is divided)?

g)How are financial decisions made?

h)Do you have access to the income gained from agricultural production? (both household and coop)? Please check the most appropriate response.

Always _____ Often _____ Rarely _____ Never_____

Part V: Improving the business relationship COOPRORIZ ABAHUZABIKORWA rice farmers ,MRPIC processing company and other involved actors towards rice profitability and sales in Nyamiyaga sector

- a. What characterize current relationship that links rice farmers and MRPIC Ltd?
- b. What are the constraints faced by rice farmers and MRPIC Ltd?
- c. What are the production risks do farmers and MRPIC Ltd encounter?
- d. What are future perspectives to improve business relations between the firm and farmers?