

University of Applied Sciences



**VAN HALL
LARENSTEIN**
PART OF WAGENINGEN UR

Market linkage for maize in Rwanda: Case SOSOMA Industries and farmers' cooperative (KOTUKA)

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By

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Dedication

I'm dedicating my thesis to my Lovely girlfriend whom every day asked me about the progress of this program of study.

Abstract

Maize is new staple food for Rwandan community for home consumption as well as a good source of income for farmer's household and also maize is consumed as grains and flour. In Rwanda, maize ranks second to sorghum among cereals and third to all crops. It has been discovered that in rural areas especially in developing countries where small farmers are mostly located do not have access to high profitable market; on this way firm-farmer relationship has proven to facilitate each other in production development. Linkage to market is a key issue in firm-farmer relationship due to in Rwanda; farming covers a high percentage of population as livelihood activity. Maize production is sold general at local market; small numbers of farmers are grouped in associations or cooperatives where they can bargain the price with traders and maize factories like SOSOMA Industries. SOSOMA Industries is a commercial institution which produces different brands of flour from maize, soybeans and sorghum as raw materials. Agri-Hub Rwanda does not understand how SOSOMA industries perform in relationship with maize farmers in Kicukiro district; therefore there was a need to conduct an assessment on firm-farmer relationship as a result of contributing towards the commitment and improvement of relationship.

For the feasibility of this study, the research was carried out in Kicukiro district located in Kigali City of Rwanda in help of 2-2 Tango (tool for self-assessment of firm-farmer relations, which facilitate to have a quickly overview and to plan a forward step in agribusiness development). Interviews of 7 key informants and SWOT analysis was used in Business case description. Challenge areas were identified followed by statements formation; questionnaires were administered to 27 participants from farmers and firm scored the statements. Processing and analysis of data collected were done with the help of Microsoft Excel software and Value Chain Analysis using lenses of food security. Moreover, a desk study provided secondary information related to the topic of research.

The findings revealed that the current relationship was almost non-existent where it was based only on Public Tender. SOSOMA Industries used Public Tender as a way of fighting against risks. Mostly maize farmers are facing also several risks in their livelihood activities. The findings showed that other factors of relationship are applicable for both sides but independently; for SOSOMA Industries, issues of quality and payment modalities are respected. For KOTUKA different strategies post-harvest handling of production is done at cooperative level by hiring labours to sort maize as a way of reducing the major challenges of post-harvest losses. The linkage among stakeholders (KOTUKA, SOSOMA Industries, RAB, Local leaders and World Vision) is poor where each stakeholder works almost individual with minimum communication with other relevant stakeholders in the same sector.

The findings revealed that sign of good will for improvement of relations was observed from both sides when it came to future perspectives, these perspectives helped in developing action plans for improved collaboration in both parts. Both farmers and firms have accepted to collaborate on issues they both gave low scores, capitalize on ones they both scored high, and have face-to-face discussions on issues where their views differ if necessary with a third party as facilitator.

In an effort to improve relations between the farmers and firm, the study gave recommendations to KOTUKA and SOSOSMA Industries to strengthen their partnership by knowing their roles and responsibilities, importance of contracts and abiding to contract terms and advocacy. The study also recommended the increase of trainings to farmers and the staff to prevent production risks. Good relationship with other stakeholders also was recommended for Agri-Hub Rwanda in order to strength and to facilitate their relationship.

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List of Acronyms

CIAT	International Centre for Tropical Agriculture
CIP	Crop Intensification Programme
COMPETE	USAID Competitiveness and Trade Expansion Program
DUHAMIC-ADRI	Duharanire Amajyambere y'Icyaro (Association du Developement Rural Intégré)
EDPRS	Economic Development and Poverty Reduction Strategy
FAO	Food and Agriculture Organisation of the United Nations
FGD	Focus Group Discussion
GDP	Gross Domestic Product
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IMF	Institution de Microfinance
ISAR	Rwanda Agricultural Research Institute
ITA	International Institute for Tropical Agriculture
KOTUKA	Koperative Tuyiteho Kawa
MINAGRI	Ministry of Agriculture and Animal Resources
MINICOM	Ministry of Commerce
SOSOMA Industries	Soybeans, Sorghum and Maize Industries
NGO	Non- Government Organisation
NISR	National Institute of Statistics of Rwanda
PASTA II	Plan Stratégique pour la Transformation de l'Agriculture II
PHHS	USAID Post-Harvest Handling and Storage project
RAB	Rwanda Agricultural Board
RDO	Rwanda Development Organisation
SOSOMA	Soya, Sorghum and Maize
SWOT	Strengths, Weaknesses, Opportunities and Threats
UNDP	United Nation Development Programme
UNDP	United Nations Union des Development Program
USA	United States of America
USAID	United States Agency for International Development
WFP P4P	World Food Program purchase for Progress

1. Introduction

1.1. Background of the study

Rwanda is located in East Africa, bordered by Uganda in north, Burundi in south, Tanzania in east and Democratic Republic of Congo (DRC) in west. Rwanda is a narrow territory of 26,336 square kilometres mostly called country of one thousand hills or heart of Africa (PRIMATURE, 2011).

In Rwanda, population is located mostly in rural areas. Agriculture sector is the economic backbone of country, employing about 87 % of the working population, producing around 32% of GDP and generating about 80% of the total export revenues (NISR, 2011).

In the crop intensification program (CIP¹), cereals are more promoted and cultivated especially maize. Maize is new staple food for Rwandan community for home consumption as well as a good source of income for farmer household. Maize supplies 15% of global human protein requirements and 35% of protein requirements in Eastern and Southern Africa within 76% of carbohydrate; maize is consumed as grains and also as flour (World Bank, 2007).

Ngaboyisonga (2010) stated that in Rwanda, maize ranks second to sorghum among cereals and third to all crops, covering 10% of the total cultivated land after beans (25%) and banana (22%). It is produced on approximately 140,000 ha with a grain yield of 1.2 t/ha. It is currently grown in all Rwandan ecologies including lowlands with low rainfall (900-1450 m), mid-altitudes (1450-1700m) and highlands with altitude of less than 1700m (ISAR, 2010).

In the last three years the maize production had shown remarkable growth where production had tripled since 2007 to 2010; from 102,447 Mt to 318,000 Mt (NISR, 2011). Eastern province had shown a rapid growth in quantity produced; in this area, maize was introduced in intensive way after drought period of 2000, the rapid productivity was a result of CIP (MINAGRI, 2010). Most of maize farmers are producers for subsistence and sell the surplus as source of income for household activities.

Maize produced are marketed general at local market, small number of farmer are grouped in associations, cooperatives where they can bargain the price with traders or maize factories.

¹ Crop Intensification Program (CIP) is an agricultural development project launched by MINAGRI in 2007, as a pilot program with the main goals of increasing agricultural productivity in high-potential food crops and ensuring food security for all and self-sufficiency (MINAGRI, 2007).

Maize farmer's cooperatives or/and associations play important role in market and provision of inputs (Rutayisire, 2006).

Government of Rwanda (GOR) through the Ministry of Commerce has promoted agribusiness sector by introducing new policy which facilitates investors especially in Agriculture post-harvest technologies (small and large firm processors) to start their business. One of those firms is SOSOMA Industries (factory which is making flour by using a mixture of Soybean, sorghum and maize). Market linkage between farmer and firm was encouraged as a good way of facilitating the farmers to access the market (USAID, 2010).

1.2. Problem statement

However, reported by MINAGRI (2007) and Michael *et al.* (2008), generally main agricultural challenges in Rwanda are land scarcity, climatic hazards (flooding, drought in some area of country causing soil erosion), predominance of subsistence farming, weak connection to the market (limited market participation by producers) followed by lack of access to financial services, and low level of productivity mainly due to poor utilisation of intensification input (1.5% for improved seeds, 8kg of fertilisers/ ha/ year compared to 150-180 kg/ha in developed countries).

With Vision 2020² and EDPRS³, GOR has clearly prioritized the agriculture sector development as a means of reducing poverty, increasing livelihood in the rural areas and driving economic growth of Rwanda (MINAGRI, 2011). Staple foods are crucial issues because rural populations are disproportionately affected by food insecurity, and farmers mostly retain a portion of their production for household consumption. Staple crops are a useful rotation crop in a farmer's production system, and can contribute to household income.

GOR had introduced the National Post-Harvest Staple Crop Strategy (NPHSCS⁴) with the following aims:

- improving consumer access to safe and affordable food;

² Vision 2020: Government strategic program of 20 years started in 2000 aims to raise the Rwanda among the countries of average income by 2020. Agriculture has a fundamental place in "Vision 2020" post-harvest technologies and agricultural processing will be a key driver for growth of formal and informal country's economy (MINICOFIN, 2020).

³ EDPRS (Economic Development and Poverty Reduction Strategy) is Government short term program started in 2008-2012 with aim of promoting growth, rural development, human development and good governance (MINICOFIN, 2007).

⁴ National Post-Harvest Staple Crop Strategy (NPHSCS) is a Government policy framework that is assisting producers with strengthening the harvesting, post-harvest handling, trade, storage, and marketing within staple crop value chains in Rwanda (MINAGRI, 2011).

- to support the private sector to invest in strengthening the competitiveness of the staple crop value and supply chain;
- to improve efficiency and decrease marketing costs along the staple crop value chain
- and to enhance producers' access and linkages to the markets (MINAGRI, 2011).

It has been discovered that in rural areas especially in developing countries where small farmers are mostly located don't have access to high profitable market (Ellis, 2000; Agri-ProFocus, 2012) on this way firm-farmer relationship has proven to facilitate each other in production development by helping in: contract implementation, transparency, price determination, shared benefit and loss as shown in Figure 1.1.

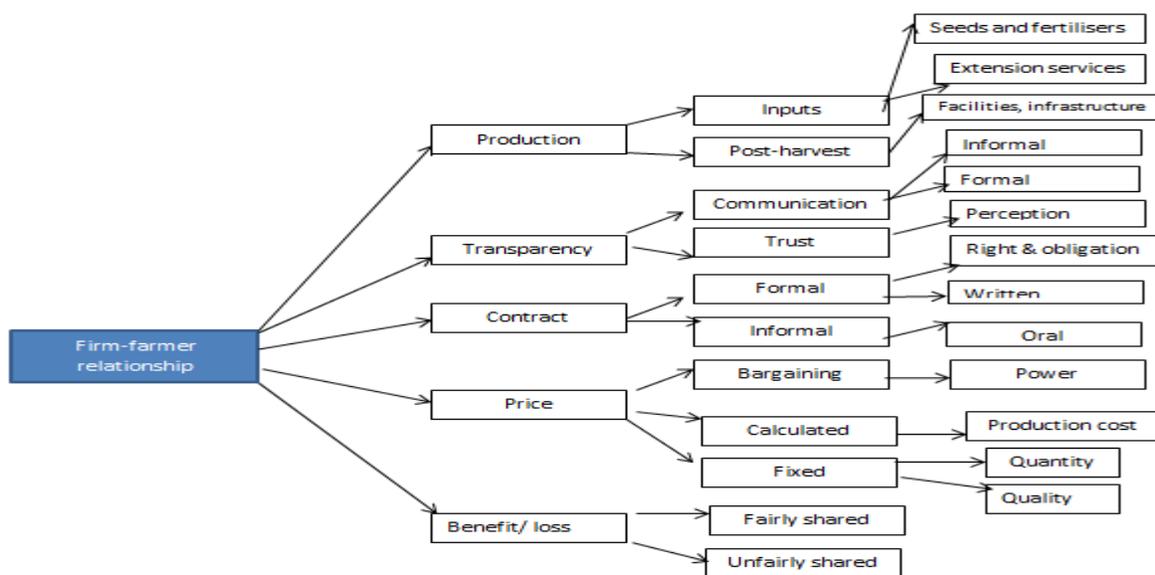


Figure 1.1. Operationalization of concept

Source: Adapted from CDI, 2012

Agri-Hub Rwanda is a unit of APF⁵ with the aims of to enhance coherent and demand-driven support to producer's organisations and their business partners, to increase market access for farmers and improve the quality of different agricultural products.

Agri-Hub Rwanda makes linkage between rural farmers' cooperatives with the firms such as MINIMEX, Rwanda Development Organisation (RDO) and SOSOMA Industries.

⁵ The Agri-ProFocus (APF) is a network of Dutch development and agricultural organisations, credit and training institutions, research institutions and government which is promoting farmer entrepreneurship in developing countries; it works at Dutch(based) level and at a developing country level, the latter in so-called Agri-Hubs (Agri-ProFocus, 2012).

Those aims take place mostly in production of rice, wheat, maize and cassava. Mostly participants are producer organisations, millers, input suppliers, finance institutions and business development service providers. The thematic focus of Agri-Hub Rwanda also is on inputs, rural financial support, producer organisation capacity development, gender and social inclusion (Agri-Hub Rwanda, 2012).

However, maize farmers with their small production are not able to satisfy the market demand in terms of quantity compared to neighbouring countries (World Bank, 2007) with significant postharvest losses (MINAGRI, 2011), addition to that the produced quantity is not good quality to be used by firms (Laan, 2011). At the other side SOSOMA Industries need maize for processing in terms of high quality and quantity in order to maximize the productivity.

Agri-Hub Rwanda does not understand how SOSOMA industries perform in relationship with maize farmers in Kicukiro District located in Kigali City of Rwanda; therefore there is a need to conduct an assessment on firm-farmer relationship.

1.3. Justification of the study

Linkage to market is a key issue in firm-farmer relationship due to in Rwanda farming covers a high percentage of population as livelihood. Mostly farmers are not linked to market and middleman pay low price with high transaction cost (KIT, 2010).

This research will be helpful to farmers where they will produce for market as well for firms due to the insurance of source of raw materials as a result of firm-farmer relationship improvement.

In addition to that this study will help in development of 2-2 tango tool ⁶ which is a self-assessment tool of firm-farmer relations. There are few researches that have been taken place in Rwanda in term of firm-farmer relationship on maize. The study will help other researchers in this domain.

The research will revolve on theories of firm-farmer relationship as a good way of integrating rural people in agribusiness and market information.

⁶ It is a tool for self-assessment of firm-farmer relations; it is practical and flexible, it can (must) be tailored to the specific business case at hand. First analysis of the business case is needed for identifying key challenges & indicators and preparing statements. The tool permits to have quick results, which can be visualized by easy to understand graphs. The self-assessment results facilitate communication between farmers and firm. The tool is of potential interest for external facilitators or researcher, which seek (or are asked) to facilitate the firm-farmers relation (Agri-ProFocus, 2012).

Firm-farmer relationship goes beyond the contract where the trust, transparency, production system, understanding on benefit and losses play an important role (CDI, 2012).

1.4. Research objective

The research has objective of assessing and analysing the relationship between SOSOMA Industries and maize producers of Kicukiro District located in Kigali City of Rwanda with aim of contributing towards the commitment and improvement of relationship.

1.5. Research question

Main research question

What are the factors affecting relationship between SOSOMA Industries and maize producers of Kicukiro District in Kigali City of Rwanda?

Research sub-questions

1. What is the current situation on relationship between firm and farmers?
2. Do farmers understand the functioning of maize farmers group (cooperatives or association)?
3. How does transparency between SOSOMA Industries and maize suppliers influence in public tender?
4. To what extend do farmers be aware about the quality of production needed by firm?
5. What are the coping strategies of maize farmers at household level in terms of income have an impact on maize?
6. Do SOSOMA Industries and maize farmers have the same perception about the potential use of contract?
7. What are the opportunities and constraints of firm and maize producers in relationship?

1.6. Definition of Concepts

Firm is a person or group of people who turn inputs into outputs. Mostly firm buys raw materials to be converted into end products (Sawyer, 1985). In this research SOSOMA Industries is specified to be a firm.

Directed smallholder farming: Where small-scale farmers are managed or organized by farmer cooperatives, government bodies, commodity agencies or/and the private sector. Directed contract farming requires a high level of management involvement in the farmer's production (RTI and IIRT, 2010).

Production: production is determined by the yield gotten by the farmer after harvest. Here the production in maize is estimated after harvest in terms of quantity and quality (RTI and IIRR, 2010).

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 (adopted from Frederick and Roy, 2003).

Market: a place where buyers and sellers meet. Suppliers offer their goods; consumers/ buyers look, compare and buy. The market can be centrally located in a village or region, in an area where people can come together at fixed times to buy and sell (RTI and IIRT, 2010).

2. Literature Review

2.1. General overview of Rwandan agriculture

2.1.1. Background information

Rwanda is highly populated with current population of 10,718,379 inhabitants it means 406 inhabitants/ square kilometres mostly located in rural areas and involved in agriculture sector for their livelihood. The country is characterised by a high rapid growth of population with growth rate of 2.9%. Arable land is 1,735,025 ha where 0.7 ha/ household is an average area of agriculture production (NISR, 2011).

Economy of Rwanda is based on Agriculture as other developing countries and remains in the poorest countries in the world, with about 60% of its population living on less than one US Dollar per day. Rwanda is ranked in poor countries on 166th among 187 countries in the global human development index ranking in 2011 (UNDP, 2011).

Agriculture of Rwanda is divided in cash crop (tea, coffee and pyrethrum) and food crop include mainly maize, sorghum, potatoes, bananas, cassava, beans, soya beans, yam and Taro ground-nuts and rice. The country also produces variety of fruits and vegetables such as avocados, mango, passion fruits, papaya, apples, pineapples and oranges. Big number of rural farmers made subsistence agriculture (direct to feed household members) and sell the surplus (World Bank, 2007; USAID, 2009).

Rwandan agriculture is still characterised by traditional methods and traditional tools like hoes and machetes. Agriculture is done in three agriculture seasons where totally depended on rainfall. Arable lands are located generally on hills, with small areas of marshlands used in third season. Rwanda has made remarkable development especially in Agriculture, after the genocide of 1994, where different assets had been destroyed by the war; like protection of soil erosion strategies, land consolidation program and increment in production (MINICOFIN, 2002).

GOR had made a development strategic program named Vision 2020; with objectives of poverty reduction, reduction of infant malnutrition, to be a food secure country and economic transformation of agrarian country to based knowledge with market oriented agriculture (MINICOFIN, 2002).

In order to contribute to the achievement of the Vision 2020, the GOR through MINAGRI has adopted different growth strategies such as stimulating productivity growth in staple food, scaling up sustainable development of land and water resources (irrigation and terracing), strengthening

research and extension systems, building capacity in producer organizations, promoting export growth and diversification, improving performance of agricultural markets and improving access to rural financial services (MINAGRI, 2007).

Different strategies have been taken place with farmers linked to the market such as agriculture cooperatives and trader companies, agro-processing factories, introduction microfinance institutions at rural local level as source of funds and an increase budget line of agriculture (MINAGRI, 2011; MINICOFIN and PRIMATURE, 2011).

Land consolidation policies and prioritizing certain high potential crops were also strategies of improving agriculture. Cereals, especially rice and maize, are among the high priorities for the government with 50% subsidies on fertiliser and seeds (MINAGRI, 2009). Figure 2.1 shows the increment in food crop production from 1998 up to 2010, mostly cereal have a rapid growth compared to other food commodities where the production was 50000 tons in 1998 and for 2010 was around 500000 tonnes.

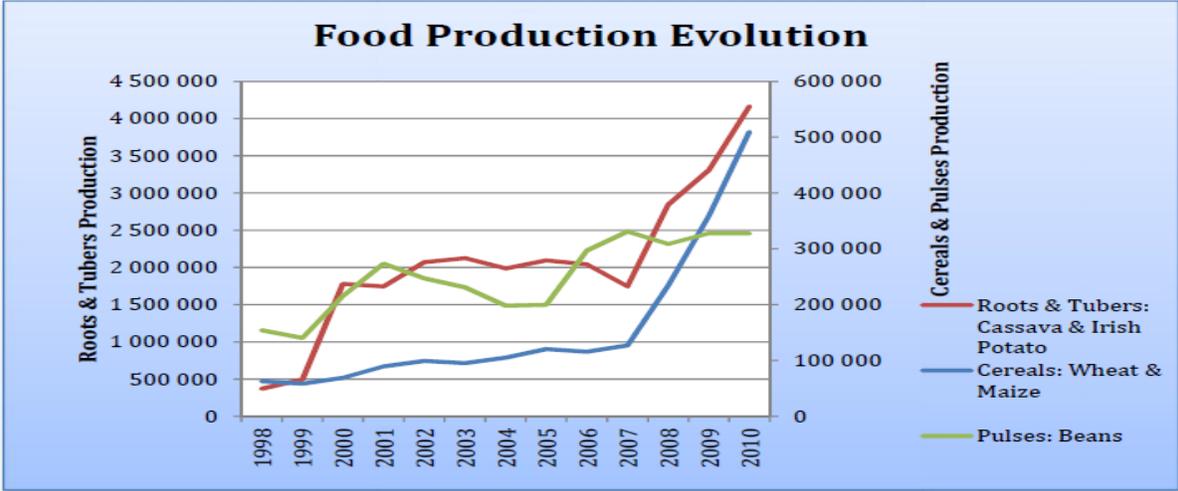


Figure 2.1. Rwandan Crop production growth in (Mt) from 1998-2010

Source: MINAGRI, 2011.

The Agriculture transformation program II commonly abbreviated as PSTAI⁷ hinges mainly on the following axes:

⁷ NPHSCS: National Post-Harvest Staple Crop Strategy is a policy framework that will assist with strengthening the harvesting, post-harvest handling, trade, storage, and marketing within staple crop value chains in Rwanda, within an effort to improve markets and linkages for farmers and reduce post-harvest losses (MINAGRI, 2004).

- Intensification and development of sustainable production systems: This involves demonstration to farmers and villagers the benefits of the soil fertility and technology to preserve soil.
- Support to the professionalization of the producers this involves strengthening the sector's social capital base, strengthens the entities in the sector charged with developing and disseminating new technologies and knowledge about the sector.
- Promotion of commodity chains and agribusiness development entails creating conducive environment for businesses and entrepreneurship with easy access to regional and international markets.
- Institutional development implies that the private sector will be the engine to drive the agricultural sector transformation; however the government should clearly define the framework in which the private sector should operate. The actions under this axis should involve crafting and incentives to induce the private sector to play important role in the agricultural development (MINAGRI, 2007).

2.1.2. Overview of maize production in Rwanda

Maize was introduced in Rwanda around 1957's, during the colonial period. The production had increased consistently since 1962, although the upward trends began to level off in the last decades; the decline was caused by long period of drought and population fails to produce (CMMYT, 1990).

Before 1996, maize was only important in highlands where it constituted the staple crop, but from 1996, it expanded in other ecologies of Rwanda especially in moist mid-altitudes. The shift of interest from other crops such as sweet potato to maize, were multiple uses and easy conservation of maize, and its ability to grow in diverse ecologies in Rwanda.

Furthermore, the encouragement to grow maize was to constitute cereal reserves to face unexpected hunger periods through the crop intensification program. Currently, maize is the leading cereal in Rwanda (Ngaboyisonga, 2010).

Maize produced in Rwanda mostly still lacks the quality required by the processing industry. Two major concerns are moisture content (<20%) and foreign matter (<15%) followed by high post-harvest losses up to 40% of production; the major causes are inadequate and/or insufficient drying and storing facilities at collection centers (USAID, 2010; UNDP, 2010 and Laan, 2011).

Rwandan maize production is still very low and cannot satisfy the market demand. Figure 2.2 shows the production of maize from 2003 to 2009 where there was an increment from 50000 tons up to around 300000 tons and maize importation was around 10000 tons up to almost 50000 tons.

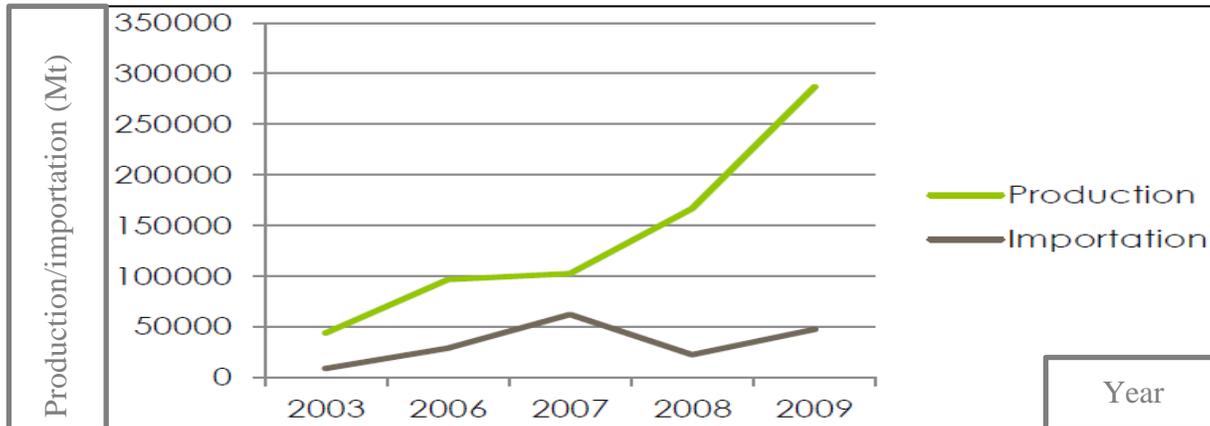


Figure 2.2. National production and importation of maize (Mt) in Rwanda

Source: NISR, 2011. Annual report 2010

2.1.3. Importance of maize

Production and consumption of maize

Maize (*Zea mays*) is a major staple food crop in Sub-Saharan Africa. Its importance is comparable to rice in Southeast Asia or wheat in Middle East. Maize is used largely for direct human consumption in many African countries, unfortunately with low productivity of 1-1.5 ton/ha (Hughes and Odu, 2001).

In Rwanda, maize is produced in many parts of the country the production was around 500000 tons in 2010; production is high especially in eastern province and northwest of country mainly due to agricultural policies and agro-climate factors.

Maize, mostly for poor farmers is consumed from flesh maize (maize cob) up to maize flour where the surplus is sold as the main source of income (USAID, 2010).

2.2. Firm farmers' relationships theories

2.2.1. Historical background of Firms farmers' relationships

The role of contract farming in developing countries has been a topic of interest and well recognized as a source of integrating poor farmer in development since 1970s (Prowse, 2012).

Critics of contract farming argued that large agribusiness firms use contracts to take advantage of cheap labour and transfer production risk to farmers. Another concern is that smallholders will be marginalized because companies will prefer to work with medium- and large-scale growers, thus exacerbating rural inequality (Glover and Kusterer, 1990)

Others authors are less pessimistic, seeing contract farming as a means to incorporate small farmers into growing markets for processed goods and export commodities. Mostly, the contracts often involve the provision of seed and fertilizer on credit, technical assistance, and a guaranteed price at harvest, this form of vertical coordination simultaneously removes a number of constraints on small-farm productivity, including risk and access to inputs, credit, and information. In this view, contract farming is an institutional solution to the problems of market failure in the markets for credit, insurance and information on market (Maxiwell and Devereux, 2001; Powse, 2012).

2.2.2. Contract in Firm farmers' relationship

Relationship in farming is 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 which is one parameter of relationship

In the developing countries, agriculture plays a significant role in leading economic development and covers the livelihood of many poor people. Globalization, expanding agribusiness and the shift in consumer tastes change the agricultural production pattern. Moreover, the effort of many government policies towards more market oriented solutions is playing a pivotal role in this shift. As market oriented production is expanding, it requires strengthened effective institutional arrangements. Smallholder farmers face difficulties in fully participating in this agricultural market oriented. To overcome that challenge firm-farm relationship was started (Ellis, 2000).

Firm-farmer relationship is justified by contract between them: FAO (2001) demonstrated that the contract farming can be defined as an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices.

The arrangement also invariably involves the firms in providing a degree of production support through, for example, the supply of inputs and the provision of technical advice. The basis of such arrangements is a commitment on the part of the farmer to provide a specific commodity in quantities and in quality standards determined by the firm; a commitment on the part of the firms to support the farmer's production and to purchase the commodity, the experience was in cash crop production in Latin America.

Defined by Prowse (2012), contract farming is a contractual arrangement for a fixed term between a farmer and a firm, agreed verbally or in writing before production began which provides resources to the farmer and/or specifies one or more conditions of production and guarantee the market to the farmer.

The relationship is possible if there is one or more organized farmer's cooperative with a supporting organization providing processing and/or trading services, technical assistance and training in partner with financial agency (USAID, 2010).

Well organised firm-farmer relationship is largely an issue because the necessary backward and forward market linkages are rarely in place: rural farmers and small-scale entrepreneurs lack both reliable and cost-efficient inputs such as extension advice, mechanization services, seeds, fertilizers and credit, and guaranteed and profitable markets for their output. Well-organized contract farming does, however, provide such linkages, and would appear to offer an important way in which smaller producers can farm in a commercial manner. Similarly, it also provides investors with the opportunity to guarantee a reliable source of supply, from the perspectives of both quantity and quality (FAO, 2001).

2.2.3. Models of contract farming

The way contract farming can be structured depends on the type of product, the intensity of vertical coordination between farmer and contractor, and the number of key stakeholders involved. Eaton and Shepherd (2001), in the FAO manual for contract farming and Prowse (2012), specified five models.

The centralized model: In this model of contract farming, the firm (processor and/or exporter) buys a product from a large number of small farmers with predetermined quantities and under strict quality control.

The firm is supposed to give technical support, inputs and has control over the production process. The involvement of the firm depends on the characteristics of the product, intensity of the risk and farmers' skills. Mainly products which need a high degree of processing can be contracted under this model such as dairy product, coffee, sugar cane, tea and others. This model is commonly practised in Africa: Cotton in Zambia, cacao in Kenya and Uganda and tobacco in Vietnam are some of the examples for which this model is practised (Lele, 1975).

The nucleus estate model: The model is a variant of the centralized model. In addition to collecting from farmers, the firm has its own production farm. The firm helps mainly to

demonstrate different technologies to the farmers and to secure supply throughout the year. It is mainly used for perennial crops but also applicable to other crops.

The multipartite model: This model involves legal bodies and private companies jointly participating with farmers as a joint venture. There is usually a separate organization which is responsible to supply input, technical support and management of production, processing and marketing. In this model the government often invests in contract farming through joint ventures with the private sector.

The informal model: In this case, small companies contract informally with farmers on a seasonal basis. Crops like fresh fruits and vegetables which usually require only a minimal amount of processing can be contracted under this model. The achievement of these companies depends on the government support since they are not investing in technical support. Sometimes farmers use this method to get credit from small traders. This means selling their crop before harvest. In this case, the price is usually lower than the normal market price.

The intermediary model: There is no direct linkage between the firm and farmers. There are middle men having a formal contract with a processing firm and informal contracts with farmers. As a result, it has several disadvantages in vertical coordination and in providing proper incentives. Theoretically, an agricultural product can be contracted by means of any of the models. However, certain products favour specific approaches based on the nature of product, farmers' skills, and other environmental and economic factors. The model used can also affect the socioeconomic impact on smallholders.

Critics of contract farming tend to emphasize the inequality of the relationship and the stronger position of firms with respect to that of farmers. Contract farming is viewed as essentially benefiting firms by enabling them to obtain cheap labour and to transfer risks to farmers (Kirsten and Sartorius, 2002).

However, this view contrasts with the increasing attention that contract farming is receiving in many countries, as evidence indicates that it represents a way of reducing uncertainty for both parties. Furthermore, it will inevitably prove difficult to maintain a relationship where benefits are unfairly distributed between firms and producers (Prowse, 2012).

Both social and physical distance among firms and farmers is often large. The establishment or the improvement of firm-farmer relationships requires that the two parties get the same understanding on business, which in most case is not the reality.

Reported by RTI (2006), most producers and traders operate in a climate of great uncertainty and encounter all sorts of risk. Traders search for commodities to buy, visit sellers, and negotiate deals individually. This is time-consuming. And because they are searching for products to sell, far away from markets, they do not know how much they should pay for a certain product, let alone how much it will fetch when sold in the market later. Most private traders have little working capital; they often rely mainly on their own funds, advances from wholesalers, acceptance by farmers of deferred payments and, at times of peak financing requirements and moneylenders.

Poor transport infrastructure means long, arduous trips that can jeopardize the quality of agricultural produce and livestock, and can translate to heavy losses for the trader. Many people tend to see traders as redundant. They think that traders take an unfair amount of profit, without adding value or providing services in return. Traders are accused of taking advantage of uninformed farmers: offering low prices, cheating on quality, swindling with weighing, not paying after taking products on credit and making price agreements with other traders procuring in the same region. Traders are also accused to take advantage of consumers.

There are some elements of truth in these accusations. In many situations traders do indeed coordinate amongst themselves to regulate the flow of trade in a particular marketplace. Furthermore, there are indeed traders who cheat to take advantage of farmers. But then again, many farmers swindle on quality, in other words, swindling traders are as much a problem to honest traders as they are to farmers (Koopmans, 2006).

2.3. Advantages and challenges on firm-farmer relationship using contract

Contract farming is found to be more profitable than independent production. Its major benefits come from a reduction in marketing and transaction costs, which are otherwise much higher in the open markets, however, changing dietary patterns towards high-value foods are putting pressure on small farms to diversify away from staples and derive gains from market-oriented, high-value agricultural production (BIRTHAL, 2008).

The prime advantage of a contractual agreement for farmers is that the firms will normally undertake to purchase all produce grown, within specified quality and quantity parameters. Contracts can also provide farmers with access to a wide range of managerial, technical and extension services that otherwise may be unobtainable. Farmers can use the contract agreement as collateral to arrange credit with a commercial bank in order to fund inputs (FAO, 2001).

Provision of inputs and production services: Many contractual arrangements involve considerable production support in addition to the supply of basic inputs such as seed and

fertilizer. Firms may also provide land preparation, field cultivation and harvesting as well as free training and extension (Prowse, 2012).

This is primarily to ensure that proper crop husbandry practices are followed in order to achieve projected yields and required qualities. Here firms ensure the quality consistency of raw materials. There is, however, a danger that such arrangements may lead to the farmer being little more than a labourer on his or her own land (FAO, 2001).

This was the case in cultivation of cotton in Benin where Government as firm was providing inputs and extension services to farmers with positive impact on productivity and quality of raw product of cotton (Makdissi and Wodon, 2004; Dorothea, 2006).

Access to credit: The majority of smallholder producers experience difficulties in obtaining credit for production inputs. With the collapse or restructuring of many agricultural development banks and the closure of many export crop marketing boards (particularly in Africa), where in the past supplied farmers with inputs on credit; difficulties have increased rather than decreased. Providing a contract in IMF can be used as a guarantee in order to obtain credit for small farmer; this leads to restriction of moneylender in the chain (RTI, 2010).

Introduction of appropriate technology and skill transfer: New techniques are often required to upgrade agricultural commodities for markets that demand high quality standards. New production techniques are often necessary to increase productivity as well as to ensure that the commodity meets market demands. However, small-scale farmers are frequently reluctant to adopt new technologies because of the possible risks and costs involved. They are more likely to accept new practices when they can rely on external resources for material and technological inputs. Challenges are when the technologies are not appropriated to the selected zone; both farmers and firms are in risk but farmers are more vulnerable due to their life depend on agriculture.

Private agribusiness is usually offer technology more diligently than government agricultural extension services because it has a direct economic interest in improving farmers' production in regards to market. Most of the larger firms prefer to provide their own extension rather than rely on government services (USAID, 2011).

The skills the farmer learns through contract farming may include record keeping, the efficient use of farm resources, improved methods of applying chemicals and fertilizers, knowledge of the importance of quality and the characteristics and demands of export markets. Farmers can gain

experience in carrying out field activities following a strict timetable imposed by the extension service such as ridging, fertilizing, transplanting, pest control (FAO, 2001; Bidogeza *et al.*, 2009).

Guaranteed and fixed pricing structures followed by access to reliable market: Small-scale farmers are often constrained in what they can produce by limited marketing opportunities. The returns farmers receive for their crops on the open market depend on the prevailing market prices as well as on their ability to negotiate with buyers. This can create considerable uncertainty which, to a certain extent, contract farming can overcome.

Frequently, firms indicate in advance the price(s) to be paid and these are specified in the agreement. On the other hand, some contracts are not based on fixed prices but are related to the market prices at the time of delivery. In these instances, the contracted farmer is clearly dependent on market volatility (Devereux and Maxell, 2001).

Even where there are existing outlets for the same crops, contract farming can offer significant advantages to farmers. They do not have to search for and negotiate with local and international buyers, and project firms usually organize transport for their crops, normally from the farm gate (USAID, 2010).

Increased risk due to unsuitable technology and crop incompatibility: Farmers entering new contract farming ventures should be prepared to balance the prospect of higher returns with the possibility of greater risk. Such risk is more likely when the agribusiness venture is introducing a new crop to the area. There may be production risks, particularly where prior field tests are inadequate, resulting in lower-than-expected yields for the farmers (Adel, Staveren and Brouwer, 2006; Brown, 2010).

Market risks may occur when the company's forecasts of market size or price levels are not accurate. Considerable problems can result if farmers perceive that the company is unwilling to share any of the risk, even if partly responsible for the losses which may be caused by drought or other natural disasters (Masozera and Andrew, 2010)

Corruption due to manipulation of quotas and quality specifications: Inefficient management can lead to production exceeding original targets. Firms may have unrealistic expectations of the market for their product or the market may collapse unexpectedly owing to transport problems, civil unrest, change in government policy or the arrival of a competitor; all those lead managers to reduce farmers' quotas.

Few contracts specify penalties in such circumstances. In some situations management may be tempted to manipulate quality standards in order to reduce purchases while appearing to honour the contract. Such practices will cause sponsor-farmer confrontation, especially if farmers have no method to dispute grading irregularities. The typical example was in USA, where the small farmers were forced to sign contract with farms and consolidate their plot (Williams, 2006).

Domination by monopolies: The monopoly of a single crop by firms can have a negative effect. Farmers do not have other alternative market choice and are very dependent to the firms. On the other hand, large-scale investments often require a monopoly in order to be viable. In order to protect farmers when there is only a single buyer for one commodity, the government should have some role in determining the prices paid. Tanzania maize case was example; where the parastatal company was a monopoly and was not able to sustain the demand in maize products in town (Devereux and Maxwell, 2001).

Indebtedness and overreliance on advances: Farmers can face considerable indebtedness if they are confronted with production problems, if the company provides poor technical advice, if there are significant changes in market conditions, or if the company fails to honour the contract (Devereux and Maxwell, 2001).

2.4. Maize firm -farm contract in Rwanda

Reported by USAID (2011), in Rwanda firm farmers are working together in relation with finance institution and NGO as facilitator in linkage as shown in Figure 2.3. The NGO plays an important role to initiate the farmers on the use of credit and to increase the relationship among the actors in the chain.

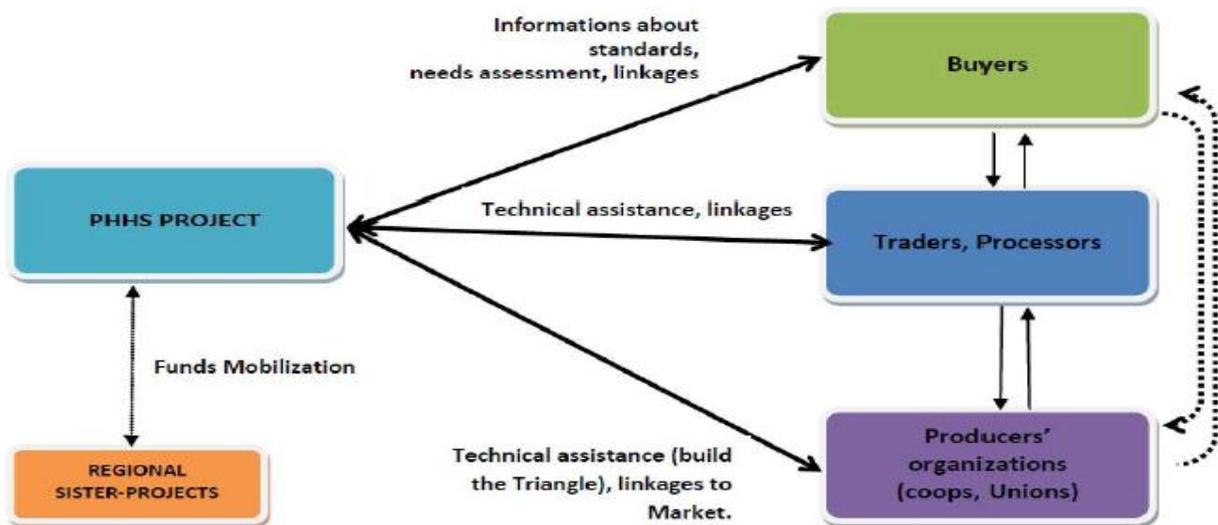


Figure 2. 3. Contract model between firm and farmer with linkage facilitator

Source: USAID, 2011. Contract model between firm and farmer with linkage facilitator

Here the linkage was done by NGO (Post Harvest Handling System Project: PHHS).

The above model has been applied in rice production where Caisse des Affaires Etrangères (CAF) Isonga has developed a variety of financial services for rice farmers and cooperative. To do this it received technical support from SNV (Netherlands Development Organisation) to develop its services, and from Terraffina Microfinance, which provide training and equity (RTI and IIRR, 2010).

The model also has taken place in maize value chain and in wheat production and has shown a positive impact on farmer linkage to market (USAID, 2011).

2.5. Description of Maize value chain mapping in Rwanda

Value chain in maize is compiled in three major operators: Input suppliers, actors, supporters and influencers of the chain.

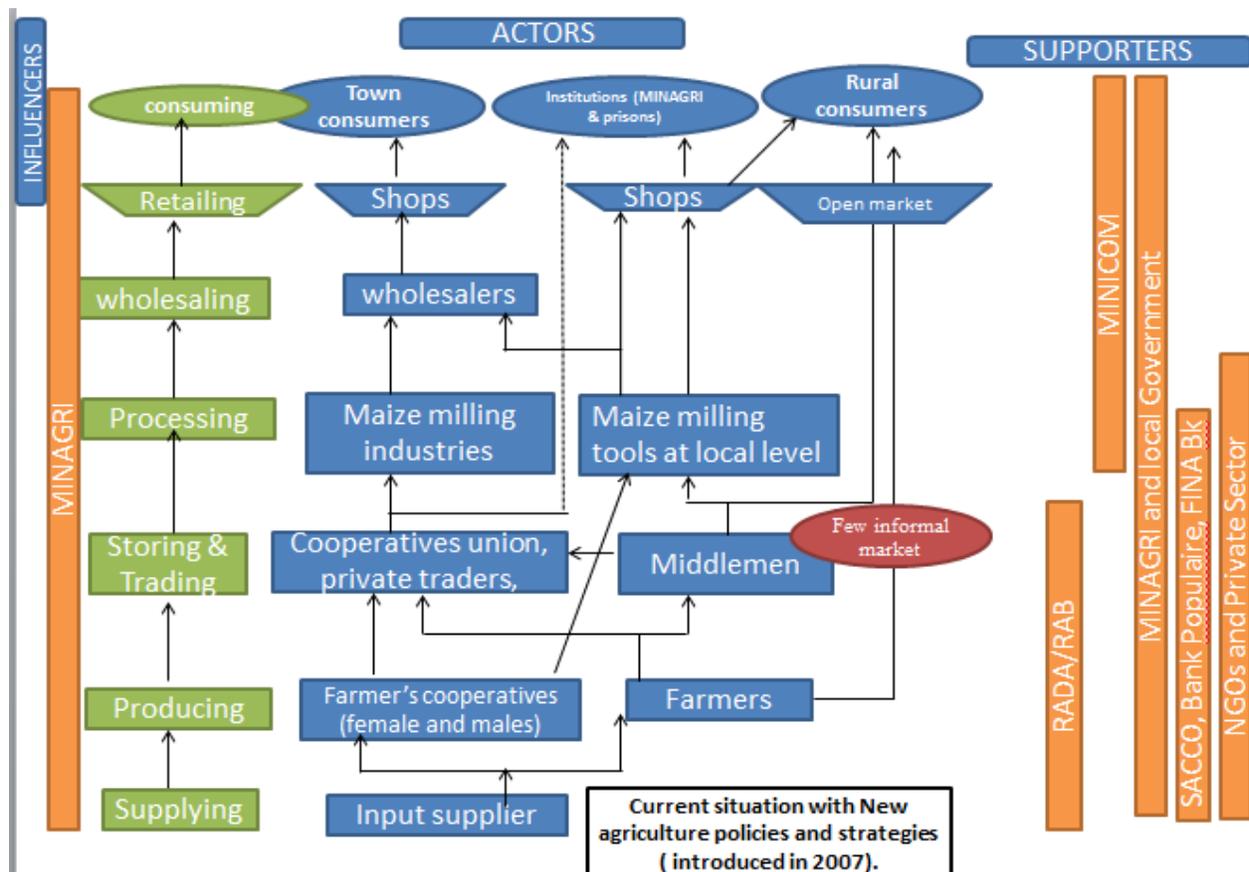


Figure 2. 4. Maize Value chain map in Rwanda

Source: Adopted from USAID, 2010

Reported by USAID (2010), maize value chain has the following operators:

2.5.1. Input suppliers

RAB provides especially improved seeds and fertilisers some time extension service to seed producers. Moreover RAB is responsible for irrigation and drainage when maize is cultivated in marshlands, sometime post-harvest facilities are also given. For this time RAB has adopted new way of using private sector companies as service providers in order to distribute inputs (seeds, fertilizers and pesticides) and extension services where needed.

2.5.2. Actors

Farmers or cooperative of farmers are the first link in the marketing chain. They are both producers and consumers.

Rural traders: Given the fragmented nature of production, rural traders play a vital role in collecting produce from farmers. They have contacts with farmers and move from farm to farm purchasing the small quantities farmers offer. They store the produce waiting to supply larger orders from traveling traders.

Traveling traders: Within producing areas traveling traders purchase maize from either farmers and/or rural traders and thereafter weigh and pack the maize. Normally, they traverse long distances and transportation is their main function.

Urban wholesale markets: Nyabugogo is the main wholesale market supplying Kigali Urban area. Several wholesale stores exist in this location and provide a stop centre for maize supplies from within and outside of Rwanda. These traders play an important role as they store and make the product available to the consumers when they need it.

Industrial Transformers: This chain of Selling directly to industries for transformation is less developed in the country because a big quantity of maize is sold in raw form. This implies that every farmer sells his own maize. The produced flour is sold to independent traders who in turn re-sell to various consumers, including major buyers in the country, such as; prisons, secondary schools, NGOs (WFP, GTZ and World Vision), supermarkets and independent retailers.

Retail markets: Distribution in urban areas is through retail markets mostly with stalls or small retail shops in the city neighbourhood.

Consumers: Maize is consumed as fresh maize dry grain and flour. Consumers are both rural farmers and urban people. Different institutions like prisons, schools, military camps are a big part of maize consumption. The last consumers are refugees and hungers assisted by WFP.

2.5.3. Supporters

Local government provides agronomist at farms level to give technical advices during maize cultivation and poste-harvest period.

Institut des Sciences Agronomiques du Rwanda (ISAR) provides new package of technologies through research on adaptability of new seeds (in term of soil requirement, inputs, productivity and resistance to diseases and drought) before multiplication done by RAB.

MINIMEX and WFP: MINIMEX as a milling factory not only is involved in post-harvesting activity but it also trains farmers and provides agronomists in order to produce good quality maize. All farmers assisted by MINIMEX have to sell their maize to it. WFP supports maize farmers not only by buying their maize at a good price but also by equipping post-harvest facilities for farmers' organisation.

Transporters: Transporters are mentioned in the chain as supporters by the role played in transporting maize between different actors. Most of time transporters are hired from districts in order to supply produces locally or to transit them to Nyabugogo main market.

2.5.4. Influencers

MINAGRI as policy maker is in charge of follow up on the implementation of policies from the supplier up to consumers and also as consumer due to, buys maize for country reserves for food security issues.

MINICOM is monitoring the commodity market from traders up to consumers.

2.6. SWOT analysis of Maize value chain in Rwanda

Mostly in Rwanda, maize production is concentrated in valley areas, many of which have been recently drained for crop production purposes and also on hillsides, usually with poor results. The production is done in three annual seasons as follow: Season A (starting from mid-September to mid-January, with maize harvest taking place in February-March), season B (falls from February to early June, with harvest taking place during July) and Season C (starteslate June to early September).

As mentioned above, maize is less adapted in high lands in Rwanda, where it is reported to require 6 to 8 months from sowing to the harvest of dry grain, as opposed to 4 months in warmer regions; it is also difficult to dry the grain down to required levels in high altitude sites (critics on quality). The long growing cycle and difficulties with drying at high elevations often result in farmers in these zones opting to harvest the fresh maize for sale (Rutayisire, 2006; MINAGRI, 2010).

Table 2.1 SWOT analysis of maize in Rwanda

Strengths	Weaknesses
<ul style="list-style-type: none"> • Demand in Rwanda far exceeds supply • GOR assistance (RAB provision of subsidized inputs) strong, resulting in high yields at present • Formation of strong farmer platform, cooperatives and associations. • Service providers in contract with MINAGRI • Soil erosion control measures overall country • Three agriculture seasons per year, intercropping of maize with other crops and crop rotation 	<ul style="list-style-type: none"> • Inadequate and insufficient of drying and storing facilities as a result of losses in value and in quantity • Price of Rwandan maize not competitive with that from Uganda and Tanzania • Good market for fresh maize makes it difficult to convince farmers to wait for harvest of dry product. • Period from sowing to harvest is extremely long (4-7 months), and drying of maize is difficult to required moisture level. • Drought can seriously reduce production, with resulting impacts on buyers, processors and farmers • Poor road infrastructure reduces price received by producer because transport costs are high • Illiteracy of poor farmers and difficult to adopt new technology in extension service as of poor quality.
Opportunities	Threats
<ul style="list-style-type: none"> • High demand of maize at market in rural and town areas. Significant trade opportunity with Food Program's Purchase for progress (WFP P4P), MINAGRI and Prisons. • Construct of new maize facilities: warehouses (storage) and cemented grounds for drying and roads for transportation • Banks: Intervention of SACCO, IMF, Banque Populaire in order to provide credit 	<ul style="list-style-type: none"> • Lower priced maize available from neighbouring countries • Lack of trust between producer organizations and buyers • Farmers discouraged by long period from sowing to harvest • Drought and swamplands needing further improvement • Increased production enhances likelihood of pest and disease outbreaks which could seriously reduce yields/supplies • Slowness of Government to respond to requests for assistance/intervention. • Land scarcity.

Source: Adopted from USAID, 2010; MINAGRI, 2012 and MINICOM, 2012

Involvement and common shared interest of private sectors, banks and NGOs such as World Vision and WFP different Micro financial Institutions Agricultural sector especially in maize will make a positive impact from production up to consumption as strength. High production cost of maize compared to the neighbouring countries limits Rwanda maize to regional and international market (Laan, 2011). Land scarcity also is a big issue no only in maize production but for purposes in general due over population.

3. Methodology

3.1. Study area: Description of research area

The research was taken place in Kigali City/ Rwanda precisely in Kicukiro district. Kicukiro district is boarded by Bugesera district, Nyarugenge district and Gasabo district. Kicukiro district with 166.7 km² is situated at the South-East of the Kigali City capital of Rwanda. Kicukiro district is divided into 10 sectors; the total population was about 250000 inhabitants. This district is mostly composed by rural areas where agricultural activities take place as a good source of livelihood. The climate is characterised by four seasons: two rainy seasons and two dry seasons repartees alternately in the following way: a small dry season: from December to February, a long rain season: from March to May, a big dry season: from June up September, a small season of rain: October, November, the average rainfall is between 900-1150mm (Kicukiro district, 2012). The farmers' cooperative and Industries are located in this district. KOTUKA⁸ combines farmers located in Kanombe sector with physical office in Busanza. SOSOMA Industries is located in Kagarama sector.

Farmers' cooperatives (KOTUKA) have been selected and Firm: SOSOMA Industries which is a factory that buys maize, soybeans and sorghum from different producers in Rwanda and outside the country. SOSOMA Industries produces a mixed flour of sorghum, soybeans and maize. The factory is situated in Kicukiro district, Kigali city. The choice of this company is due to it is the third biggest factory in Rwanda uses around 600tons of maize per year (USAID, 2010). Locations are shown on Map 3.1.

⁸ KOTUKA is farmer's cooperative (more explanation in section four in this Report, page 34.)

3.3 Desk study

Desk study was utilised to get data from existing literature that was necessary as the building block of this research before setting off for field work. The following sources of information were used: Scientific books, PhD thesis, scientific journals, and reports, unpublished documents from Rwandan Governmental Institutions and written materials from Internet. The literature review was used to link the findings with existing information providing answer to research questions.

3.4 Field study: Primary data collection

Field study was done using 2-2 tango tool⁹ (refer to section 1.3) in the following steps:

1. Business case analysis and introduction of participatory self-assessment of firm-farmer relation
2. Identifying indicators and formulating statements
3. Firm and farmers scoring the statements
4. Data entry, processing and preparation of graphs (Excel)
5. Preparing debriefing report and meeting(s)
6. Sharing and discussing self-assessment results
7. Conclusion and recommendations.

The following figure shows the implementation context of 2-2 tango tool.

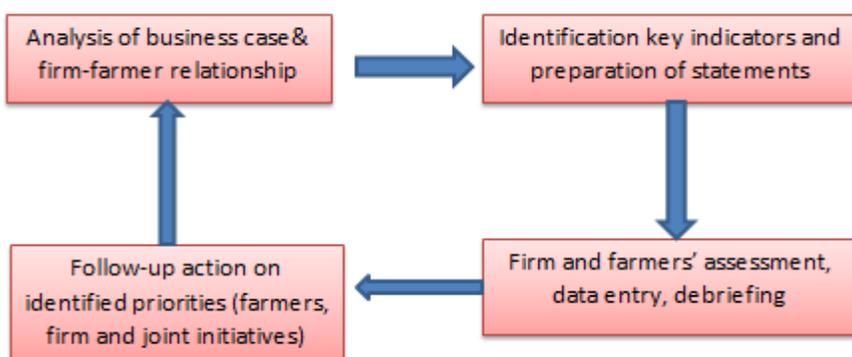


Figure 3 2: 2-2 Tango tool implementation

Source: CDI (2012)

⁹ It is a tool for self-assessment of firm-farmer relations; it is practical and flexible, it can (must) be tailored to the specific business case at hand. First analysis of the business case is needed for identifying key challenges & indicators and preparing statements. The tool permits to have quick results, which can be visualized by easy to understand graphs. The self-assessment results facilitate communication between farmers and firm. The tool is of potential interest for external facilitators or researcher, which seek (or are asked) to facilitate the firm-farmers relation (Agri-ProFocus, 2012).

3.4.1 Interview

This was helped in business case analysis, identification of challenges areas and formulating statements. The starting point was a short description of business case, based on company documents, internet search followed by interview. The checklist with challenge areas was been used for the interview (refer Annex 2). The first analysis of the business case permits to identify the main challenges or assessment areas. The researcher was conducted an interview with SOSOMA Industries’ leaders and farmers from cooperative (refer Table 3.1) in order to have an overview on business status of relationship and challenges.

Table 3. 1 Repartition of Respondents according to their status

Type of respondent	Number of respondent	Function	Gender		Source
			Male	Female	
Farmers from KOTUKA cooperative	4	Producers	2	2	KOTUKA Cooperative
Staff from SOSOMA Industries	3	Buyer/ Processor	2	1	SOSOMA Industries: tender officer, accountant, quality assurance Manager

Respondents from SOSOMA Industries were chosen according to their direct contact with farmers: Procurement officer is in charge of procuring raw materials from suppliers (farmers and commercial institutions). Accountant is in charge of invoice payment after receiving the produce of farmers. Quality manager is one who checks the quality and quantity of farmers supplied to the factory before reception.

Respondents from maize farmers: One male farmer was interviewed followed by one male from the leader of the farmer’s cooperative; men are interested in cash crops which generate income for households. Two female farmers were interviewed. Women were chosen due to before selling the produce; women take a portion for household consumption.

Description of agribusiness was done in help of literature and Interviews with respondents followed by SWOT analysis in order to know the challenges and opportunities faced by farmers and firm in maize sector.

3.4.2 Questionnaires

After identification of challenge areas from 3.4.1; statements was formulated according to the business case (challenges in business). The statements were been easy to be understood by respondents and written in local language (Kinyarwanda). Questionnaires were used; farmers and firm scored the statements (refer Annex 2 for questionnaires).

The scoring options were been very well explained to respondents; Smileys theory helped to explain the (0-3) Likert scale (Thomas, 2009). In order to capture perceptions of many people as possible, it was preferable to have individual scoring the statements (refer Table 3.2).

Table 3.2 Repartition of Respondents for questionnaires

Type of respondent	Number of respondent	Function	Gender		Source
			Male	Female	
Farmers from KOTUKA cooperative	20	Producers	13	7	KOTUKA Cooperative
Staff from SOSOMA Industries	7	Buyer/Processor	-	-	SOSOMA Industries: Procurement, accountant, processor engineer, quality assurance and store manager

Respondents from SOSOMA Industries were chosen depending to their direct contact with suppliers to fill the questionnaires: Procurement officer is in charge of procuring raw materials from suppliers (farmers and commercial institutions). Accountant is in charge of invoice payment after receiving the produce of farmers. Quality assurance manager is one who checks the quality and quantity of maize supplied to the factory before reception.

Store manager is in charge of keeping raw materials before entering in processing unit and after processing before selling the end products to traders. Processing engineer has deep information on processing according to their productivity (ratio between raw material and end product) in terms of humidity and foreign matters.

Respondents from maize farmers: Thirteen male farmers were interviewed including leaders of the farmer’s cooperatives; men are interested in cash crops which generate income for households. Seven women farmers were interviewed; women were chosen due to before selling the produce, women take a portion for household consumption and are much involved in post-harvest activities like sorting, winnowing and threshing of maize.

3.5 Data analysis

A prepared and predefined Excel workbook (dummy with hypothetical case and empty dummy) was used for data entry and automatic generation of graphs. The 2 graphs were been used; one showing the scores in percentage of each statement followed by the average of all statements. Another graph was showing the level of agreement between firm and farmers; those were done for each challenge area.

Debriefing and further analysis in focus group discussion

The researcher used the graph to prepare a debriefing report for each part. Debriefing was done in focus group discussion where the researcher shared the self-assessment results from questionnaires to actors separately (firms and farmers). The actors of issue (firm and farmers) were sharing their perception on challenge areas. Actors were explained the reason why some statements have low or high marks and suggested improvement needed. Each part was discussed and proposed a follow-up action for improvement.

Data from focus group discussion and observation supported the interpretation of data from the individual interviewees. The researcher made conclusion and recommendations on farm- farmer relationship improvement needed and ways of achievements.

4. Presentation of findings

4.1. Description of business case

4.1.1. Introduction on SOSOMA Industries

SOSOMA Industries was started in 2008 with starting capital of 226900000frw (around 378000\$¹⁰). It is a commercial company with Investor certificate No C/658/2009 and RC No 618/08/NYR. This company was started with different investors where 2269 shares held by 39 different stakeholders including DUHAMIC-ADRI¹¹ which is a NGO (SOSOMA Industries, 2010). The company produces different brands of flour as a result of different seeds such as maize, sorghum and soybeans. The production is based on following products: Sosoma quality n°1, Sosoma quality n°2, Sosoma fortified, maize, sorghum and soybean flours. The start of this company has been successful through the joint effort of the members of its Board of Directors, its staff and its stakeholders. Location of Company was explained early in Chapter 3. The company needs around 700tons of maize per year depending on client need.

4.1.1.1. Objectives of SOSOMA Industries

The company has objectives of promoting investment activities in agro-industrial sector, to sell different agriculture products and services related to that. The company in partner with its stakeholders will facilitate the agriculture investments and promotion of agricultural production by processing products with value addition.

Table 4.1 Achievements of the company in production in relation to maize as raw materials

	Production in year 2009		Production in year 2010	
	Quantity (kg)	Value (frw)	Quantity(kg)	Value (frw)
Maize sold as raw materials	617446	120403951	702186	94521351
Total production (different brand of flours)		698843493		754308618

Source: SOSOMA Industries (Annual report 2009 and 2010)

¹⁰ 1\$= 0.75€ = 600frw (refer to BNR currency exchange; www.bnr.rw)

¹¹ DUHAMIC-ADRI is a NGO started in 1980 with the objectives of rural developmental and promotion of marginalized peasants in rural areas and fight against the marginalization of rural areas; Stimulating the creation and consolidation of associations, cooperatives and farmer groups; enhancing the work of farmers' associations in initiating and encouraging the development of organizational structures as autonomous groups and international groups; Support for initiatives of rural development in various fields. Its growth development had made the starting of SOSOMA Industries as a unit to process target farmers' produce (DUHAMIC-ADRI, 2012).

4.1.1.2. Human resources

The company has 38 permanent workers with 22 females and 16 males; in addition to that the company hires 20 to 40 temporary workers depending on commands of clients. The daily management of the company is entrusted to the Managing Director appointed by the Board of directors. The company is composed by three departments, namely Production and quality control department, Sales and Marketing department, the last one is Administrative and financial Department. Most of them are qualified in their departments, credible and accountable on their responsibility. The company does not possess its own farms for agricultural activities. It relies on farmers supply (SOSOMA Industries, 2010).

Table 4.2 Financial statements from 2009 to 2010

Year	2009	2010
Turn-over (frw)	711993319	751712025
Operational and Production Cost (frw)	596640868	631547897
Profit / Loss (frw)	115352451	120164128

Source: SOSOMA Industries (Annual report 2009 and 2010)

Observations: The production increased and as a result, an increment on profits was also registered as shown on the table above. The company registered a growth on profits of 7.94% between 2009 and 2010.

4.1.2. Functioning of Company: challenges and opportunities

4.1.2.1. Partnership in Production and productivity

In collaboration with other government institutions, commercial Institutions, banks and NGO, SOSOMA Industries does as best as possible to meet its target objectives. SOSOMA Industries is a commercial entity (buys, process and sells) it needs agricultural raw materials to make the end products such as maize, sorghum and soybeans. SOSOMA Industries does not provide any services to farmers' cooperatives such as extension services, credit provision or agricultural inputs. In addition to that the company does not have its own farm for agricultural production.

4.1.2.2. Market and price

As reported by different respondents from the company, to purchase the raw materials for processing needed by company; SOSOMA Industries uses public tenders. Prospective suppliers submit their offers. Farmer's cooperatives also send their offers according to the quality and quantity needed by Company.

Sometimes, requested by DUHAMIC-ADRI, SOSOMA Industries can buy cooperative's produce but not under a contract but on temporarily agreement (exception case when farmers do not have any predicted market after harvesting period). SOSOMA Industries only serves a domestic market due to is lacking quality standard certificate issued by RBS (Rwanda Bureau of Standards). The most prominent local buyers are WFP (World Food Program), CAMERWA (cabinet Medical du Rwanda), CNLS (National Centre for AIDS) and local retailers.

As explained by different respondents from Company, SOSOMA Industries as a commercial entity cannot invest in farmer's agricultural services as a way of fighting against different agricultural risks such as climate change, low productivity, substitutes of products, competition with other buyers on market and fluctuation of price. Those factors influence SOSOMA Industries to use Public Tender as a way for procuring raw materials.

4.1.2.3 Quality and quantity

SOSOMA Industries face challenges of getting a reliable source of raw materials due to lack of trust from suppliers as a result of delivering poor quality produce, especially imported raw materials from outside the country and delay on agreement. Reported by the production unit, cases of poor quality supplies are particularly imported maize with high moisture content and high percentage of impurities (foreign matters). This requires an expensive labour for sorting, grading and drying. The insufficient storage capacity of the factory also prevents the company from storing high quantity of raw materials. Currently, company has three separate warehouses with a combined capacity to store 580tons of raw materials (maize, sorghum and soybeans).

As explained by the staff, temporary workers are hired depending on demand of the products; when the products are needed on market, they need extra manpower to satisfy the market in addition to that SOSOMA Industries' products have several competitors local and from outside the country.

Payment modalities: explained by respondents of SOSOMA Industries, when the farmers' cooperatives win the tender, the payment is done using bank account as soon as possible after delivery of raw materials (maize, sorghum and soybeans).

4.1.3 Information on KOTUKA (Farmers' cooperative located in Kicukiro district)

This cooperative was formed in 2009. Currently, it has 210 members with 120 females and 90 males. The physical address is located in Kanombe sector, Kicukiro district in Kigali City. It is a farmers' cooperative where farmers have consolidated their lands mostly for seed multiplication in partnership with RAB.

KOTUKA multiplies maize and soybeans seeds the first quality is sold to RAB as seeds and the second quality is sold to other buyers depending on availability of market. This cooperative does not have permanent and reliable market for their produce as a result of poor management of produce at farmer level.

KOTUKA has good collaboration with other partners, especially local government providing extension services, and World Vision helped them to obtain drying materials and funds for a warehouse which is under construction.

4.1.3.1 Functioning of farmers' cooperative: challenges and opportunities

Mostly KOTUKA's farmers work on seed multiplication (soybeans and maize) on land consolidation of 8 ha on agreement (verbal agreement) with RAB. KOTUKA collects the farmers' production after harvesting period. The raw materials of high quality are sold in RAB. As explained by the respondents, the market of RAB is not secured due to mostly is depended on quality without looking on other agricultural challenges followed by delay of payment after seed delivery; apart from that RAB refuses suddenly to buy their produce at final phase without other explanation. KOTUKA does not have warehouse; it hires a private local warehouse for post-harvest activities like sorting, grading, packaging, seed preservation and short time storage. Mostly farmers do not have skills on post-harvest activities. In partnership with World Vision, KOTUKA has a warehouse which is under construction.

Explained by Extension officer of KOTUKA, climatic hazards in this season was characterized by low rainfall as a cause of a sudden drought, last year the production was very good on consolidated lands located in Busanza marshlands, where the average production was 2.5 tons/ha, but for this season is very low.

Other challenge is delay of payments after delivery of raw materials and delay of agricultural inputs (seeds and fertilizers) and extension services provided by RAB. The payment can take more than 3 months after delivery; this has negative impact on farmer's livelihood activities like children schools, preparation of next season where farmers need money to buy organic fertilizers and to pay hired labours even to pay back the credit from MFI.

Provision of credit: KOTUKA in collaboration with local leaders and SAACO microfinance provides short term credit to cooperative's members for good agricultural practices, which is recovered when the production is sold.

4.1.4 Market linkage between SOSOMA Industries and KOTUKA

During the interviews, it had been observed that SOSOMA Industries uses public tender where different commercial institutions deposited their offers. Farmers' cooperative also brought their offers. In terms of relationship between farmers and firm it had been seen that it is based only on public tender.

Content of public tender: Referred to the Rwanda Public Procurement Authorities (RPPA, 2007); the public tender offered by SOSOMA Industries has the following information:

- Name of commodity to offer followed by specifications in terms of quantity and quality (moisture content less than 14%, foreign matter less than 10% and injured grains less than 15%).
- Each offer specifies the Price for the total quantity of commodity requested by SOSOMA Industries
- Delivery condition: After publication of winner in tender, the winner is informed with an official letter and can start immediately to deliver the commodity at the factory.
- The quality and quantity are checked by store manager and quality manager in order to ensure the quality specified in Tender. Selection of the winner: This is done by a procurement committee at factory, where the quality is the first issue followed by the price. The winner must provide the good quality at low price compare to other offers in that public tender.
- Payment modalities: payment takes place after commodity delivery, where the suppliers bring an invoice for payment specifying the amount of money to be paid and referred to the quantity and place.
- Public Tender must also specifies the way of conflict resolution

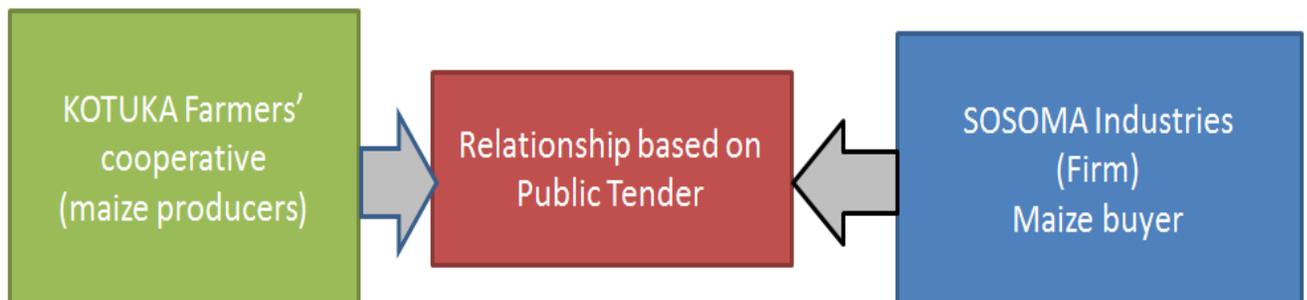


Figure 4.1 Current relationships between SOSOMA Industries and KOTUKA



Photo 4.1 Natural drying system using sun (Source: Researcher Phenias, 2012)



Photo 4.2 plot land of maize (Source: Researcher Phenias, 2012)



Photo 4.3 Farmers during scoring of statements (Source: Researcher Phenias, 2012)

Table 4.3 SWOT analysis of Maize crop between SOSOMA Industries and KOTUKA

Strength	Weakness
<ul style="list-style-type: none"> • Demand for both sides (KOTUKA for maize and SOSOMA Industries for flours) is high • Government assistance through RAB (provision of subsidised inputs) strong, resulting in high yields at present • Consolidated land of 8 hectares for seed multiplication as shown on photo 4.2. • Two agriculture seasons, intercropping and crop rotation where one season farmers cultivate soybeans and another cultivate maize (SOSOMA Industries can buy maize for one season and maize for other season). • Common understanding on their activities • For SOSOMA Industries; outside suppliers intervene when there is failure at local market. 	<ul style="list-style-type: none"> • Inadequate and insufficient drying materials at farmer's level as shown of photo 4.1. • Insufficient storing facilities as a result of limited quantity for firm • Price of Rwandan maize not competitive with that from Uganda and Tanzania • Good market for fresh maize makes it difficult to convince farmers to wait for harvest of dry product. • Difficulties for local farmers to meet the quality required by firm. • Lack of trust between farmers' groups and buyers • SOSOMA Industries lacks reliable permanent suppliers of raw materials • KOTUKA needs reliable buyers of their produce • Public Tender does not give favour to small farmers to get the market
Opportunities	Threads
<ul style="list-style-type: none"> • High demand of maize at market in rural and town areas. High potential opportunity of SOSOMA Industries to look for maize farmers and maize farmers can get reliable market • Role of Agri-Hub Rwanda as facilitator • Collaboration with Banks: SACCO for farmers' cooperative. • Under construction of warehouse for KOTUKA 	<ul style="list-style-type: none"> • Drought hazards can seriously reduce production, with resulting impacts on processors and farmers • Lower priced maize available from neighbouring countries • Drought and swamplands needing further improvement • Increased production enhances likelihood of pest and disease outbreaks which could seriously reduce yields/supplies • Land scarcity.

Table 4.4 Common challenges between SOSOMA Industries and KOTUKA cooperative

No	Risk	SOSOMA industries	KOTUKA cooperative
1	Market	Raw materials are coming from different producers without continuous and permanent suppliers: fluctuation in market	Lack of guaranteed market of their production: fluctuation of market. Predicted buyers are not trustable.
2	Prices	Prices are determined by the suppliers during Tender submission depends on quality demand: quality driven	Prices are volatiles and are determined by the buyers at market place: cost driven
3	Quality	Factory is quality driven entity, the sold raw materials must be of good quality: most of time expensive.	To meet the quality requested by buyers is an issue: challenges to compete with big suppliers
4	Delay of inputs	SOSOMA Industries does not provide any extension services or inputs to farmers	Inputs provided by RAB most of time come late and have bad impact on production
5	Delay of payment modalities	Payment by bank account as soon as possible after raw materials delivery	Delay in next season preparation, followed looking for another alternative market: RAB does not pay on time
6	Climate risks	Bad season causes low production: raw materials are very expensive, sometime importation take place as a result of bad quality of raw materials.	Low production followed by low income per household
7	Losses in quality and quantity	Maize from wholesalers and outside the country has high percentage of foreign matter and moisture content: requires time and manpower for sorting.	Poor post-harvest facilities. Some buyers promise to buy the production and refuse at the end, this increase high losses caused by pests during storage in inadequate facilities. Farmers are forced to sell their produce after harvest mostly due to poor post-harvest knowledge and facilities.
8	Public Tender	Use of tender as a way of getting raw materials risk of bad quality or quantity delivery not conformed to the sample provided in tender and delay and mistrust	Difficult to compete with strong raw materials' suppliers

4.2 Data processing and findings

Data has been processed and presented according to the challenge areas revealed in business case description. The findings are as follows:

4.2.1 Challenge area 1: Production and productivity

Challenge area of production and productivity is compiled by 9 statements talking about inputs needed by maize farmers; the following figure shows scores of firm and farmers and average of all statements in this challenge area. High scores than average show the positive agreement. The average score is the mean of all statements. Low scores than average show the negative agreement on statements.

The numbers represent the following statements:

Table 4.5 Statements of production and productivity

1	Maize farmers are able to buy maize seeds
2	Maize seeds are available at right time
3	Farmers know utilization of Maize seeds
4	Sufficient maize seeds are available
5	Sufficient fertilizer are available
6	Fertilizers are available at right time (stability)
7	Fertilizers are accessible/ affordable to farmers (price)
8	Farmers use of fertilizers (in field) as recommended by agronomists
9	Farmers' yields are increasing

In the challenge area of production and productivity, it clearly comes out that the farmers are not positive about many statements mostly on statement 6 with percentage scores of 33%.

The company gives the lowest score of 33.3% for statement 6 (stability of fertilisers to farmers) and high score of 55.6% on statement 9 (increasing of farmers' yields). The farmers give low score of 33.3% on statement 1(ability of maize farmers to buy seeds) and high score of 85% on statement 4 (availability of sufficient maize seeds).

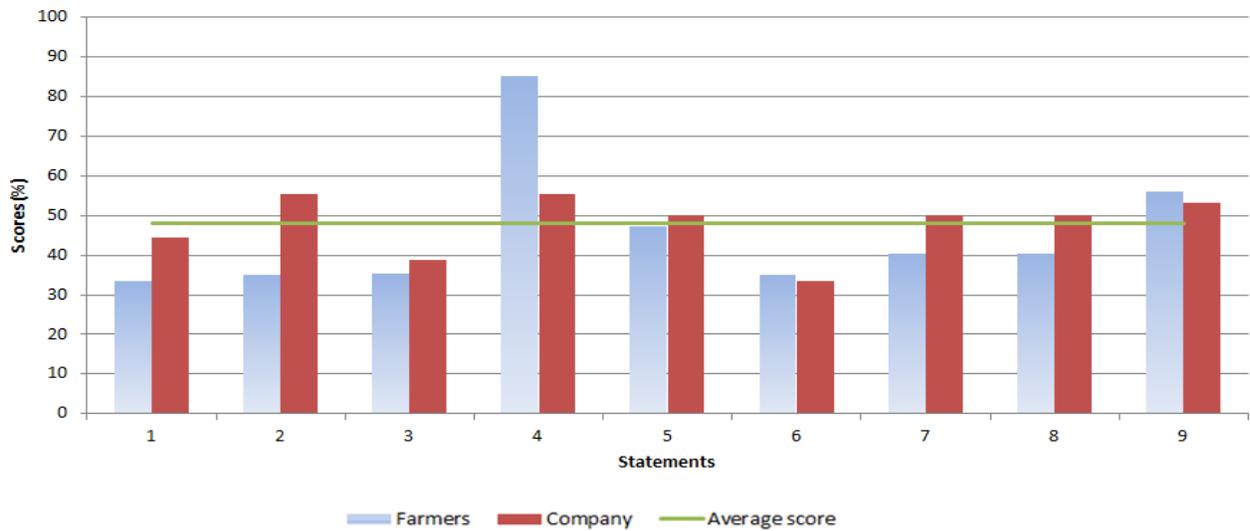


Figure 4.2 Scores on production and productivity

Concerning the level of agreement, it can be observed that in this area the difference is not very high except statements 4 (availability of sufficient maize seeds) with level of difference of 15% and statement 2 (availability of sufficient maize seeds at right time) with difference of 10% compared to the average score. All statements firm and farmers do not have common agreement.

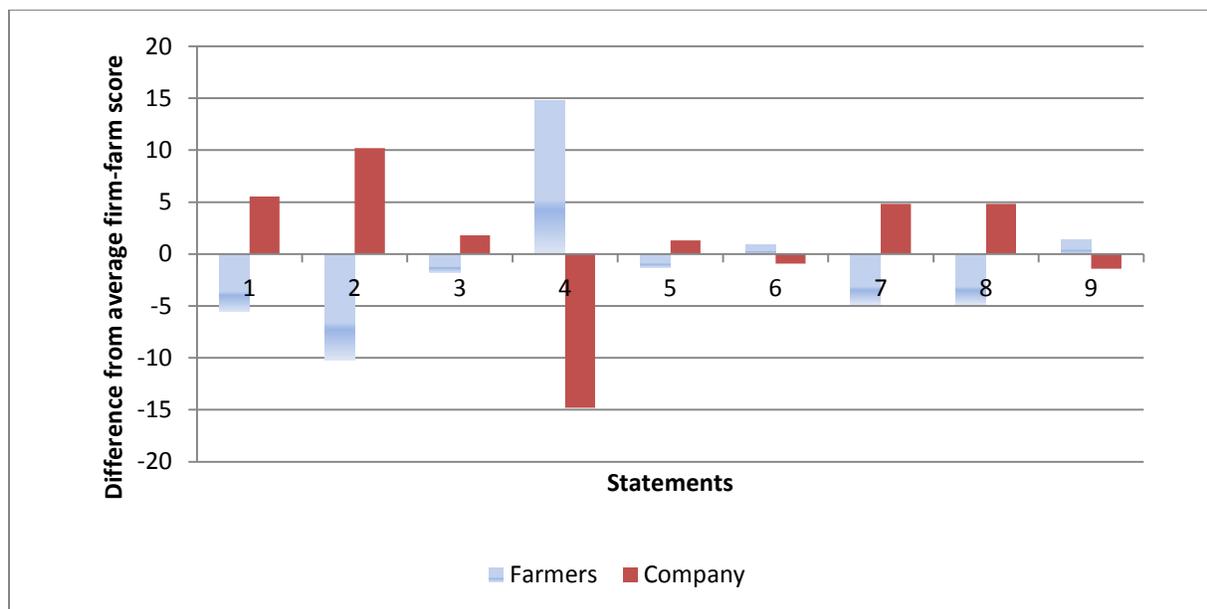


Figure 4.3 Level of agreement on production and productivity

4.2.2 Challenge area 2: Post-harvest

Challenge area of Post-harvest is compiled by 7 statements talking about facilities used harvesting of maize needed by maize farmers; the following figure shows scores of firm and farmers and average of all statements in this challenge area. High scores than average show the positive agreement. The average score of 40% is the mean of all statements. Low scores than average show the negative agreement on statements.

Where numbers represent the following statements:

Table 4.6 Statements of post-harvest

1	Post-harvest Pesticides are available
2	Farmers get the recommended pesticides at right time
3	Pesticides are accessible/affordable to farmers
4	Drying surface is adequate to farmers
5	Warehouse is sufficient
6	Warehouse is adequate
7	I know the production cost of 1kg of maize

In the challenge area of post-harvest, it clearly comes out that the company gave the lowest score of 45% for statement 3 (accessibility of pesticide to farmers) and high score of 67% for statement 1 (availability of post-harvest pesticides). The low score is 22% for farmers on statement 6 (adequate warehouse) and high score is 40% for statement 2 (recommended pesticides).

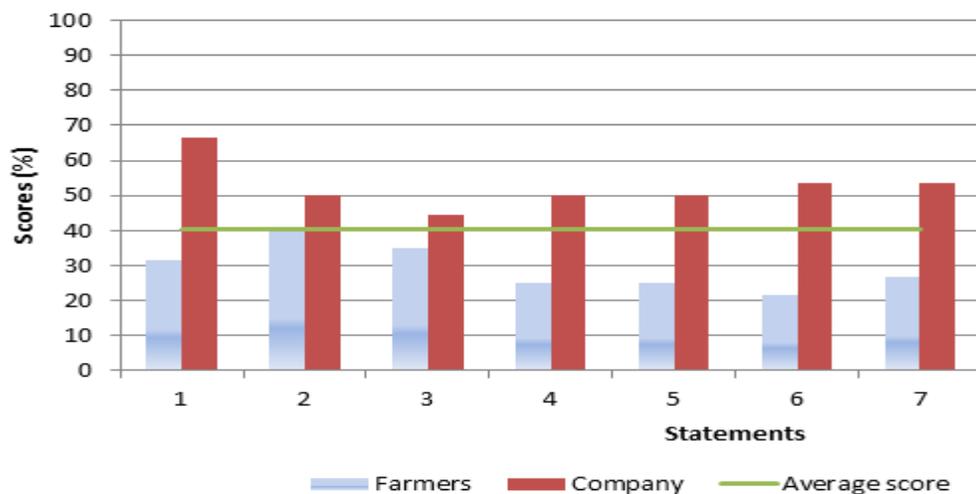


Figure 4.4 Scores on post-harvest

Concerning the level of agreement, it can be observed that in this area the level of agreement is very low in general; where the high difference is 22% for statement 1 (availability of pesticides)

and small difference is 5% on statement 3 (accessibility to farmers) compared to the average score. All statements firm and farmers do not have common agreement.

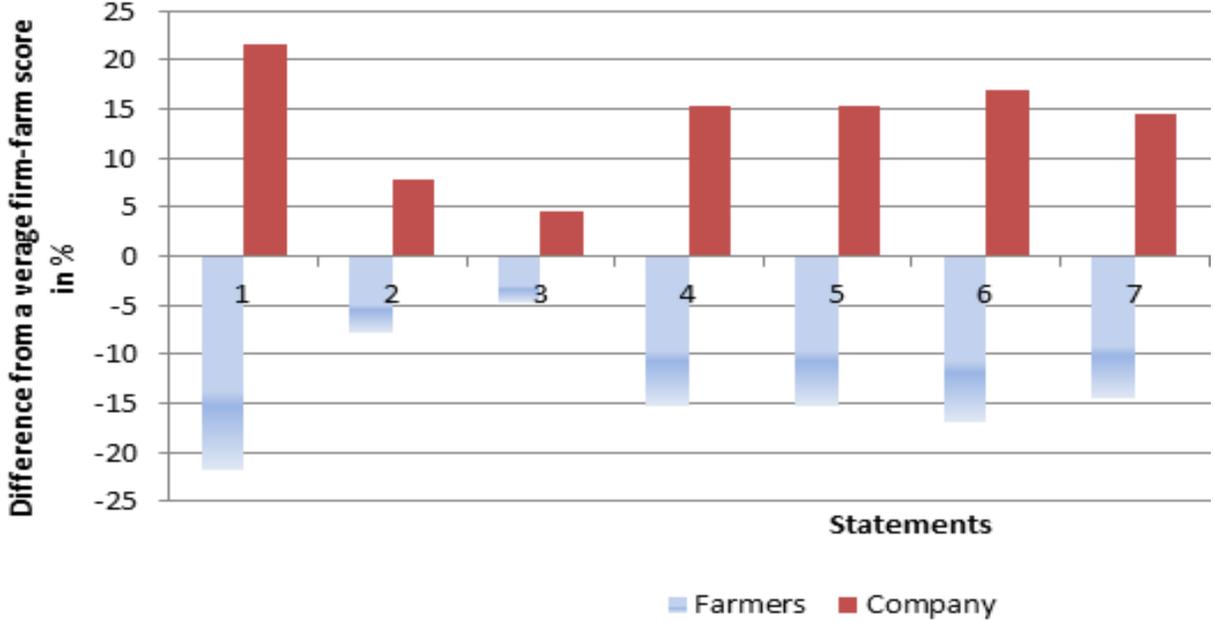


Figure 4 5 Level of agreement on post-harvest

4.2.3 Challenge area 3: Functioning of KOTUKA farmer group

Challenge area of functioning of farmers' cooperative is compiled by 8 statements talking about administration and leadership of maize farmers' organisation of maize; the following figure shows scores of firm and farmers and average of all statements in this challenge area. High scores than average show the positive agreement. Low scores than average show the negative agreement on statements. The average score of 55% is the mean of all statements.

Where numbers represent the following statements:

Table 4.7 Statements on functioning of farmers' group

1	Farmers agree with the way that the SOSOMA Industries selects maize suppliers
2	Farmers have sufficient maize farming field
3	We agree that farmers sell the maize as a cooperative, and not as individual farmers
4	Elected KOTUKA leaders adhere to the tasks and responsibilities defined in the constitution and by-laws
5	Regular KOTUKA's meetings are effective
6	All members are aware about cooperative financial issues
7	SOSOMA Industries is happy with the way the KOTUKA is managed
8	KOTUKA's leaders always represent the common interest of the farmers

In the challenge area of functioning of farmers' cooperative, it clearly revealed that the company gives the high score for all statements compared to farmers. The low score for SOSOMA Industries is 38% for statement 4 (responsibility of KOTUKA leaders) and high score is 90% for statement 1 (Selection of maize suppliers to SOSOMA Industries). The farmers give low score of 25% for statement 4 (responsibility of KOTUKA leaders) and high score of 72% for statement 3 (farmers sell their produce as a cooperative not as individual).

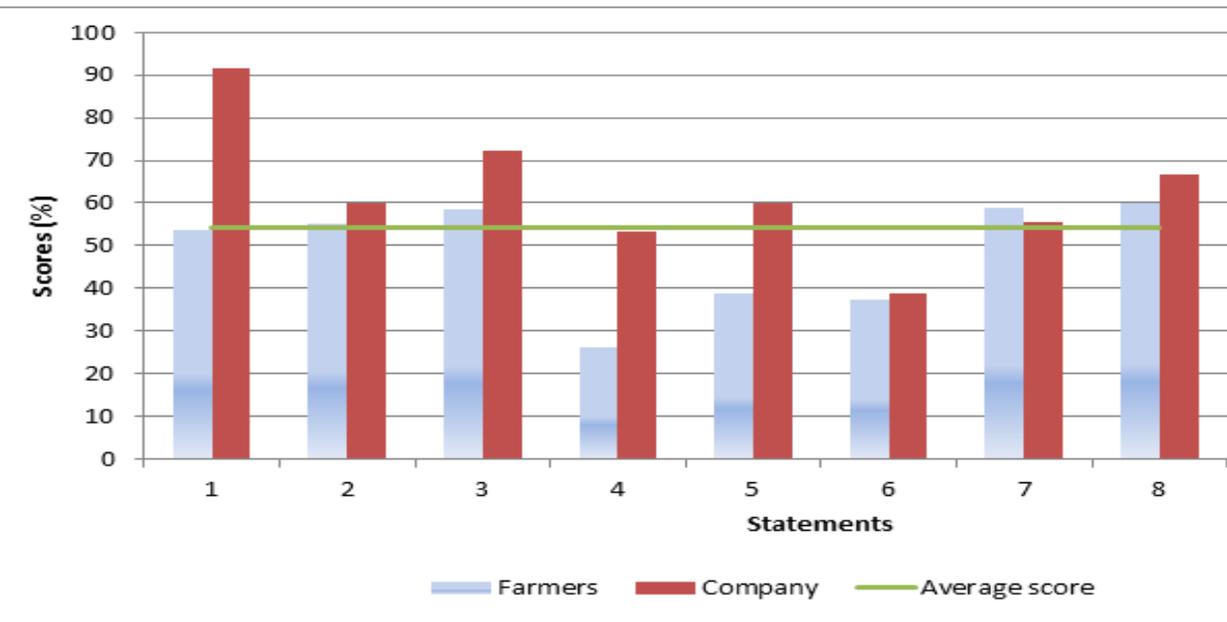


Figure 4.6 Scores on functioning of KOTUKA farmers' cooperative

It can be observed that in this area the level of agreement is very high except statements 1; 4 and 5 compared to the average. The high difference is 19% for the statement 1 (Selection of maize suppliers to SOSOMA Industries) and the low difference is 0.8% for statement 6 (awareness of farmers on financial issues of cooperative) compared to the average score. All statements firm and farmers do not have common agreement but small different on statement 6.

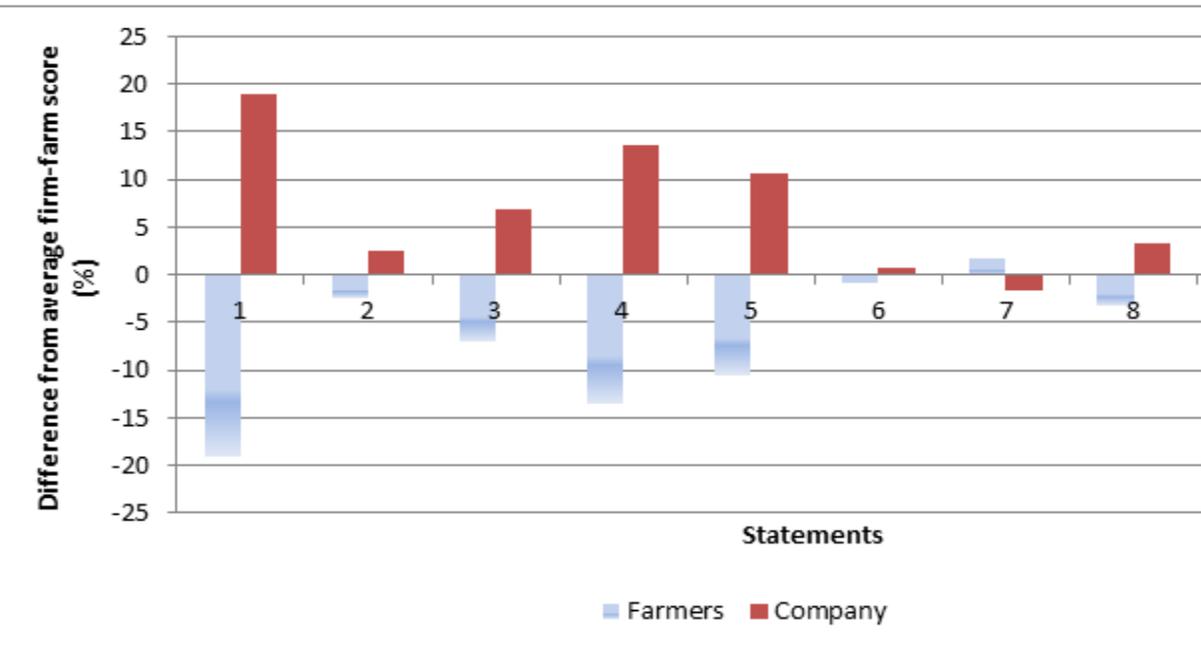


Figure 4.7 Level of agreement on post-harvest

4.2.4 Challenge area 4: Markets and prices

Challenge area of market and price is compiled by 7 statements talking about pricing and market of maize farmers' organisation of maize; the following figure shows scores of firm and farmers and average of all statements in this challenge area. High scores than average show the positive agreement. Low scores than average show the negative agreement on statements. The average score of 60% is the mean of all statements.

Where numbers represent the following statements:

Table 4.8 Statements on Markets and prices

1	KOTUKA is able to produce the quantity of maize needed by SOSOMA Industries
2	SOSOMA Industries clearly informs KOTUKA about quality requirements
3	There are other maize buyers on the market
4	KOTUKA knows the quality of maize needed by SOSOMA Industries
5	The maize farmers think that SOSOMA Industries pays them a fair price
6	SOSOMA Industries pays KOTUKA at right time
7	SOSOMA can buy maize produced by KOTUKA farmers

In the challenge area of market and price, the figure clearly revealed that the company gives the high score of 80% for statement 3 (other maize buyers on the market) and low score of 62% for statement 6 (payment modalities). The farmers give low score of 37% for statement 4 (quality of maize needed by firm) and high score of 57% for statement 1 (quantity of maize needed by firm).

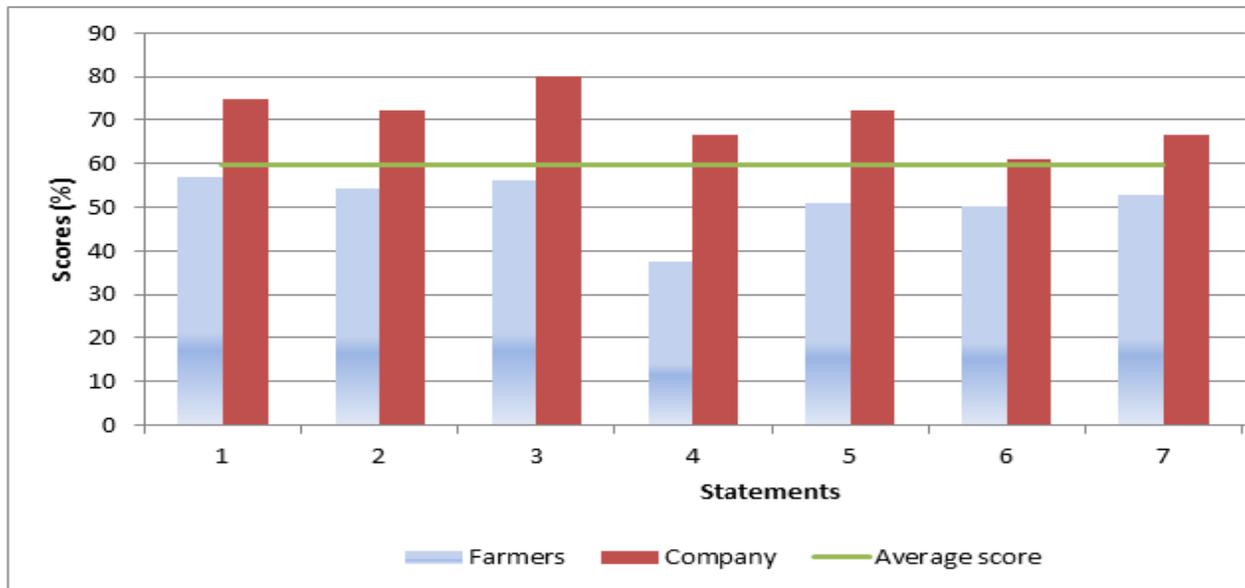


Figure 4.8 Scores on market and price

It can be observed that in this area the level of agreement is low in generally. The high difference is 14% for the statement 4 (quality of maize needed by firm) and the low difference is 6% for statement 6 (payment modalities) compared to the average score. All statements firm and farmers do not have common agreement.

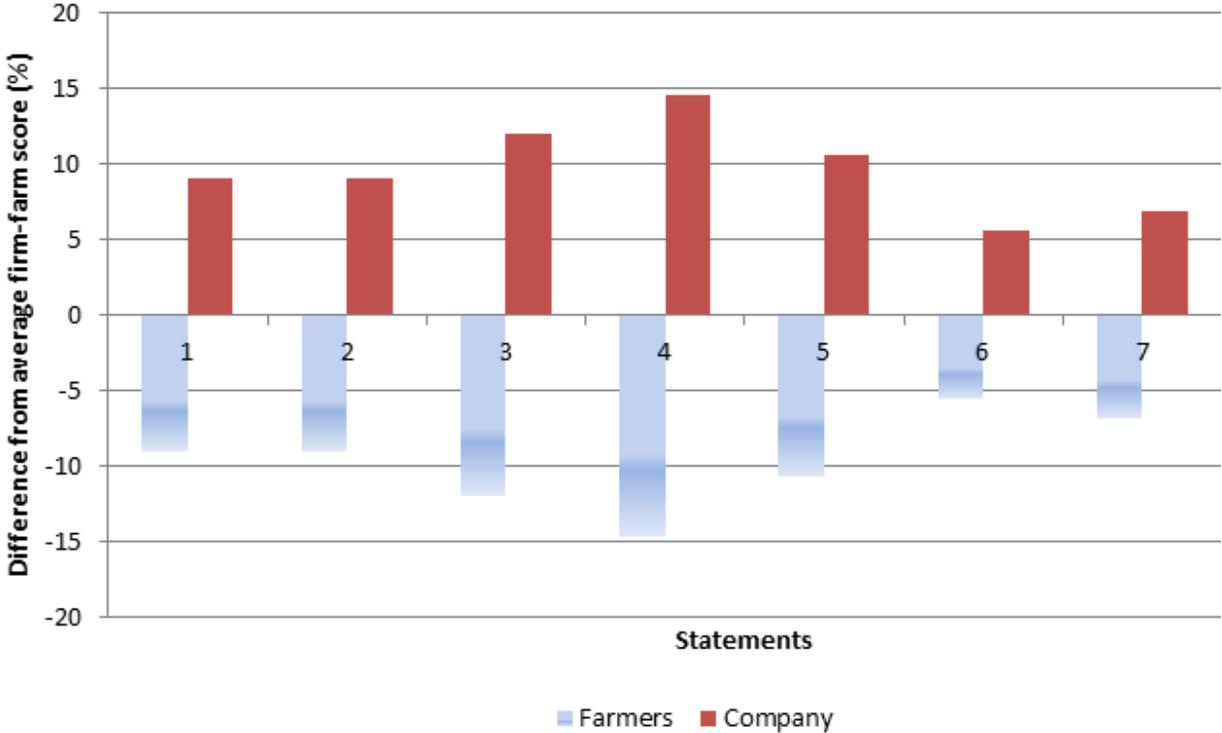


Figure 4.9 Level of agreement on market and price

4.2.5 Challenge area 5: Perspective on use of Contract

Challenge area of Perspective on use of Contract is compiled by 7 statements talking about future use of contract between firm and maize farmers' cooperative; the following figure shows scores of firm and farmers and average of all statements in this challenge area. High scores than average show the positive agreement. Low scores than average show the negative agreement on statements. The average score of % is the mean of all statements.

Where numbers represent the following statements:

Table 4.9 Statements on Perspective on use of Contract

1	SOSOMA Industries will be happy to have a guaranteed supplier of maize
2	KOTUKA cooperative will be happy to have a guaranteed market for their produce
3	SOSOMA Industries will take farmers' opinion on contract matters into consideration
4	KOTUKA will always discuss contract issues with the SOSOMA Industries
5	The contract is clear on dispute resolution
6	The farmer cooperative will follow the rules laid down in the Contract
7	Each farmer will be able to understand the content of the contract with SOSOMA Industries

In the challenge area of perspective on use of contract, it observed that the company gave the lowest score of 67% for statement 6 (respect of contract) and high score of 83% for statement 4 (discussion on contract issues between firm and farmers' cooperative). The farmers give high score of 76% for statement 3 (contract matters) and low score of 65% for statement 6 (respect of contract).

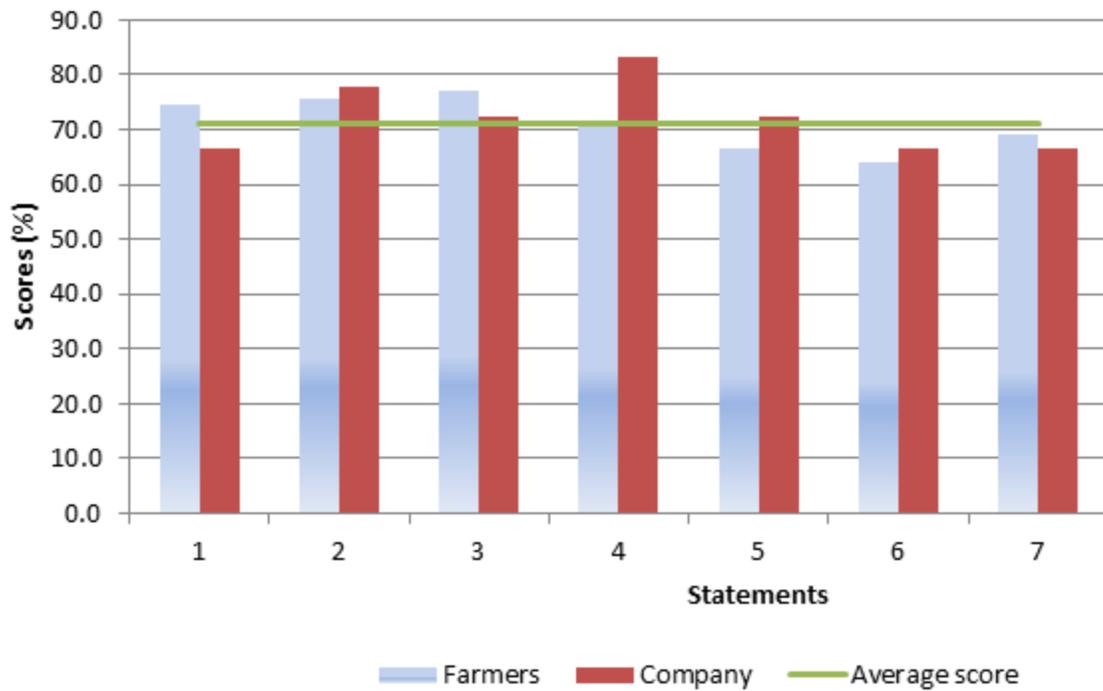


Figure 4.10 scores on Perspective on use of Contract

It can be observed that in this area the level of agreement is high except statements 1 and 4. The high difference is 7 for the statement 4 and the low difference is 1 for statement 6 compared to the average score of all statements. All statements firm and farmers do not have common agreement.

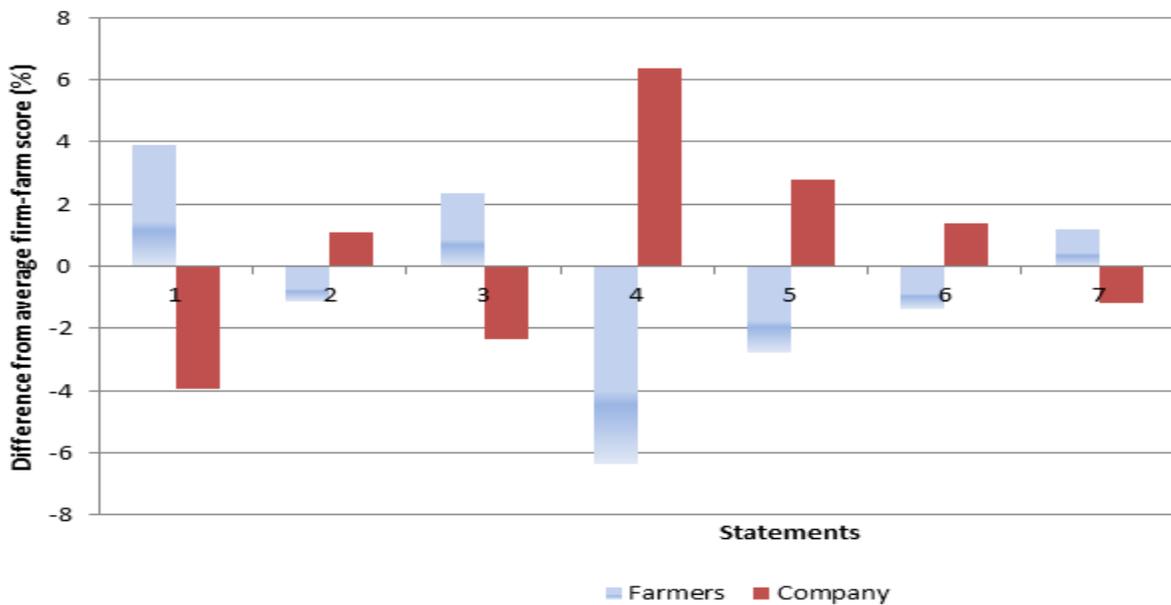


Figure 4.11 Level of agreement on Perspective on use of Contract

4.2.6 Challenge area 6: Quality standard and record keeping

Challenge area of quality standard and record keeping is compiled by 7 statements talking about quality of maize needed by firm and how farmers understand that quality; the following figure shows scores of firm and farmers and average of all statements in this challenge area. High scores than average show the positive agreement. Low scores than average show the negative agreement on statements. The average score of 65% is the mean of all statements.

Where numbers represent the following statements:

Table 4. 10 Statement of on quality standard and record keeping

1	Farmers follow good agricultural practices
2	Quality standards and reasons for rejection of maize produced are clear
3	At drying ground KOTUKA cooperative follow the hygiene standards
4	The farmer cooperative keep records of the maize delivered to SOSOMA Industries
5	Farmer groups correctly file the collection overviews provided by SOSOMA Industries
6	Farmers trust the delivery records by SOSOMA Industries
7	Farmers work together to improve the quality of maize

The company gives the lowest score of 62% for statement 7 (working together of farmers) and high score of 92% for statement 5 (correct records keeping). The farmers give high of 68% for statement 6 (delivery records of firm) and low score of 50% for statement 2 (quality standards and rejection of maize by firm).

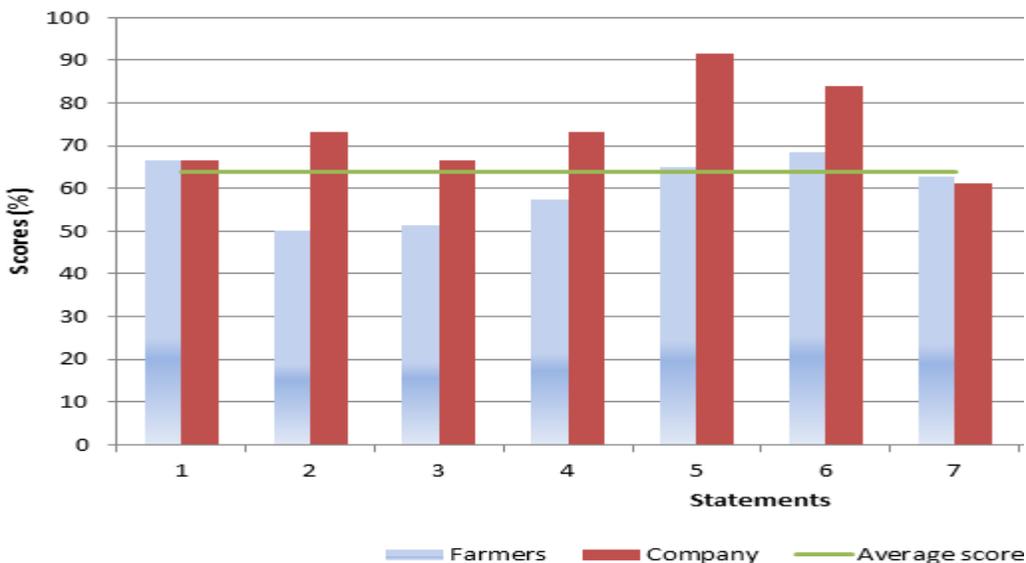


Figure 4.12 Scores on Quality standard and record keeping

It can be observed that in this area the level of agreement is very low except statement 1 and 7. The high difference is 13% for the statement 5 compared to the average score of all statements. Firm and farmers have common agreement on statement 1 (agricultural practices).

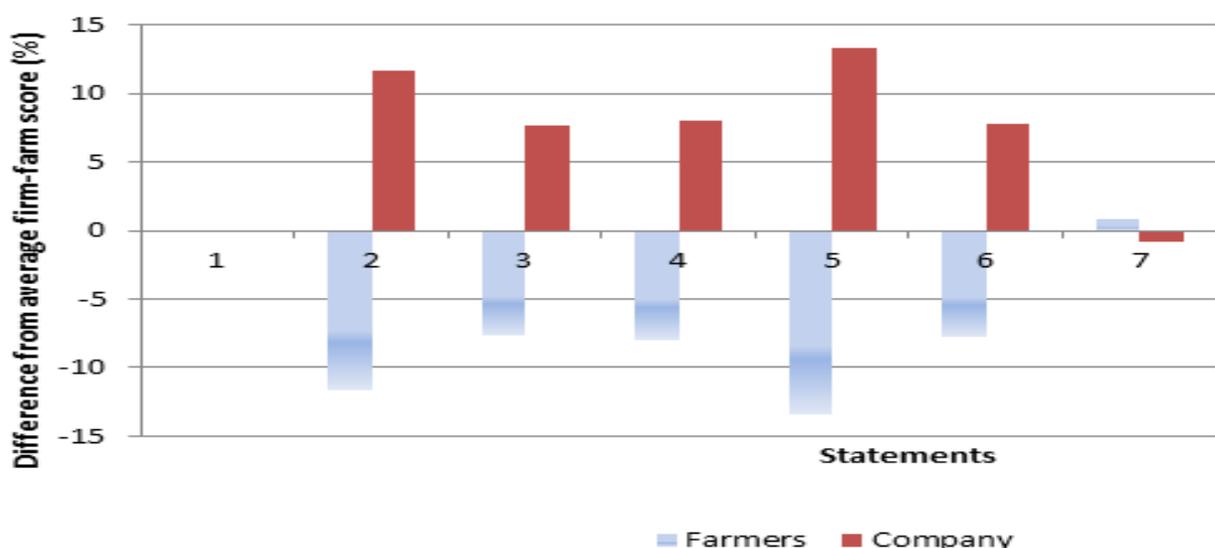


Figure 4.13 Level of agreement on Quality standard and record keeping

4.2.7 Challenge area 7: Cost /benefits and coping strategies

Challenge area of cost /benefits and coping strategies is compiled by 8 statements talking about benefit and coping strategies of maize farmers; the following figure shows scores of firm and farmers and average of all statements in this challenge area. High scores than average show the positive agreement. Low scores than average show the negative agreement on statements. The average score of 62% is the mean of all statements.

Where numbers represent the following statements:

Table 4. 11 Statements on cost /benefits and coping strategies

1	SOSOMA Industries is happy with the delivery maize from KOTUKA
2	Maize farming provides farmers with a steady income
3	The money from maize farming is the most important income for the family
4	All farmers (men and women) benefit from the sale of maize to the SOSOMA Industries
5	Maize revenues are invested in other crops
6	KOTUKA's farmers manage to get bank loans
7	KOTUKA's farmers are developing other income generating Activities
8	KOTUKA's farmers can adopt intercropping in maize field

The company gives the highest score of 89% for statement 6 and 7, where the low score for company is 55% for statement 3. The farmers give high score of 63% for statements 5 to 8 and low score of 54% for the statement 3 (source of income for household).

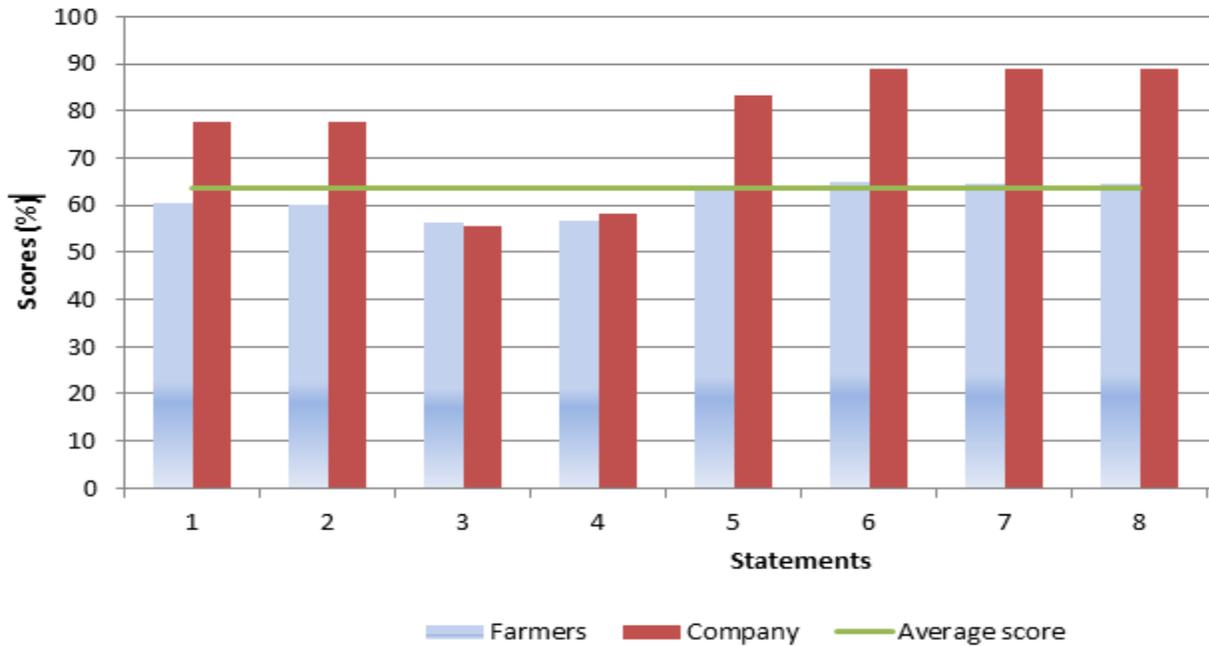


Figure 4.14 Scores on Cost /benefits and coping strategies

It revealed that in this area the level of agreement is very low except statements 3 and 4. The high difference is 13% for statements 6 to 8 and low difference is 0.2% for statement 3 compared to the average score of all statements. All statements firm and farmers do not have common agreement but small difference on statement 3 and 4.

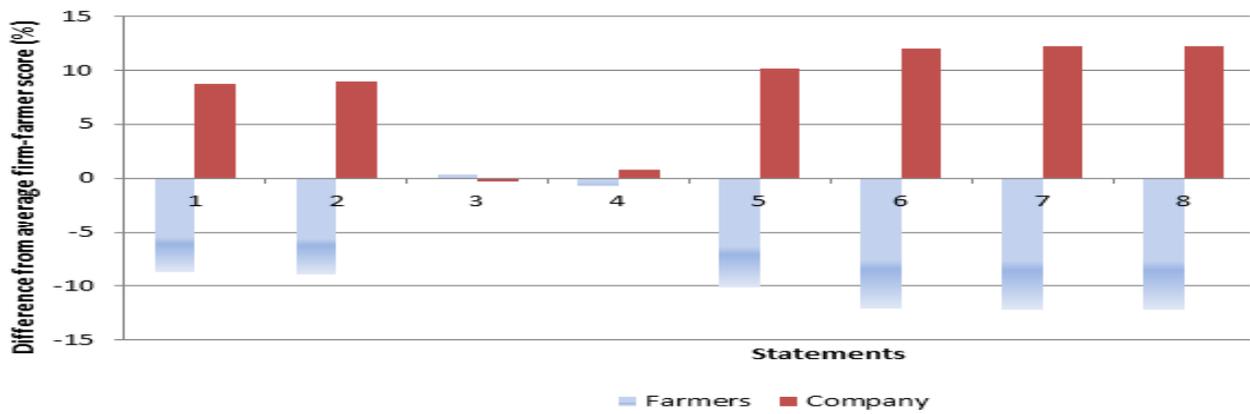


Figure 4.15 Level of agreement on Cost /benefits and coping strategies

4.3 Debriefing report

The debriefing report was summarised in the following table as follows:

Table 4. 12 Issues for low or high scores and suggestions for improvement (KOTUKA)

Challenge Area	Issues contributing to high or low scores on challenge areas.	Follow-up action for improvement
Production and productivity	<ul style="list-style-type: none"> - Inputs (seeds and fertilisers) are available but costs are too high; Farmers cannot buy them themselves: issue of subsidies and voucher - Delay of fertilisers during the starting of agricultural season had an impact on production and productivity due to dependency on rainfall. - Production is increasing due to the government politics - The cooperative's extension services are good but inadequate. 	<ul style="list-style-type: none"> - Continuous advocacy in the input provider institution. - Increase the spirit of self-saving for each farmer, and the can get enough money to buy the inputs at right time due to the use of voucher and subsidies is not sustainable. - KOTUKA: to create an active link with farmers through outreach services and sharing experiences. - The cooperative may keep on facilitating such services; an improvement is an issue.
Post-harvest	<ul style="list-style-type: none"> - Post-harvest facilities (sheets for drying are not available, public warehouse) difficult to meet the quality requirement. - Lack of Knowledge and skills on use of pesticides and storage technics 	<ul style="list-style-type: none"> - Advocacy from donors, training of farmers to use the traditional methods in good way and to adopt new ones where it is possible. - The cooperative has a warehouse which is under construction - Hiring labours for post-harvest activities is not sustainable.
Functioning of farmer organizations	<ul style="list-style-type: none"> - The farmers are not aware about different activities of cooperative. - The cooperative members are not highly active on meeting of their cooperative - The cooperative has assisted farmers to access extension services, access to inputs, and short time loan - SOSOMA Industries is happy because the quality of maize supplied by KOTUKA is of high quality and deliveries are on schedule. 	<ul style="list-style-type: none"> - Continuous training on issue of cooperative as a good way of unifying the forces instead of working individually. - Meetings should be used for pre-planning and forecasting operations not for situations only. - Members of the KOTUKA can be bonded with commitments to their cooperative. - Continuous training of KOTUKA members on business skills, markets requirements and price negotiation skills.
Markets and price	<ul style="list-style-type: none"> - Not all ordinary members do know the general investment in 	<ul style="list-style-type: none"> - The cooperative must inform members on details of their market

	<p>order to calculate the profit</p> <ul style="list-style-type: none"> - The quality requirement form major part of agreement of production delivery - The prices keep fluctuating with seasons and ordinary members do little know of their prices in advance. - Other buyers especially the traders are often available but that market is not also guaranteed 	<p>requirements and investment.</p> <ul style="list-style-type: none"> - KOTUKA must to negotiate and agree to stick to a fair price. - SOSOMA Industries is a quality driven entity the price com after. - The two parties to inform farmers on prices changes in time.
Perspective on use of Contracts	<ul style="list-style-type: none"> - KOTUKA will be happy to have permanent buyers of maize production and SOSOMA Industries will be happy to have the permanent suppliers of raw materials. - The contract is flexible allowing constant reviews some of which are not beneficial to all. And each farmer will understand the content of contract - Communication on market issues 	<ul style="list-style-type: none"> - Face to face discussion on future use of contract - KOTUKA leaders and SOSOMA Industries will discuss and agree on prices and payment modalities. - Negotiation flexibility will be needed - Good communication between both sides.
Quality standards and records keeping	<ul style="list-style-type: none"> - Good agricultural practices - Absence of post-harvest facilities - Spirit of working together for development - Limited knowledge and skill on quality management 	<ul style="list-style-type: none"> - More improvement is needed using training, cooperative warehouse is under construction - Continuous explanation and field school for demonstration - Promote periodic training of farmers and staff on quality standards required by SOSOMA Industries - Facilitate access to credit for farmers
Cost/benefit and coping strategies	<ul style="list-style-type: none"> - Maize farmers are able to get loan from bank - Income from maize is used in other income generating activities - Farmers grow soybeans and other crops - Coping strategies 	<ul style="list-style-type: none"> - More improvement is needed - Increase farmers' income by value addition from other income generating activities. - Improvement on livelihood of farmers - Increase the consolidated land as a way of improving the production and productivity

Table 4. 13 Issues for low or high scores and suggestions (SOSOMA Industries)

Challenge Area	Issues contributing to high or low scores on challenge areas.	Suggestions for improving firm-farmer relationship
Production and productivity	<ul style="list-style-type: none"> - Inputs (seeds and fertilisers) are available but costs are too high. Farmers cannot buy them themselves: issue of subsidies and voucher - Delay of fertilisers during the starting of agricultural season had an impact on production and productivity due to dependency on rainfall. - Production is increasing due to the government politics - The cooperative's extension services are good but inadequate. 	<ul style="list-style-type: none"> - As the firm grows it plan to have field officer in charge of quality to sensitise the farmers about the quality needed by firm. - Strive to increase contact with farmers through exhibitions and seminars or meeting. - Perspective partner with KOTUKA to manage production risks especially lack of market.
Post-harvest activities	<ul style="list-style-type: none"> - Post-harvest facilities (sheets for drying are not available, public warehouse) difficult to meet the quality requirement. - Lack of Knowledge and skills on use of pesticides and storage technics 	<ul style="list-style-type: none"> - Perspective partnership and advocacy for post-harvest facilities - Plan training with cooperative leaders and factory staffs on post-harvest and storage technics
Functioning of farmer organizations	<ul style="list-style-type: none"> - The farmers are not aware about different activities of cooperative. - The cooperative members are not highly active on meeting of their cooperative - The cooperative has assisted farmers to access trainings, and extension services, access to inputs, and short time - SOSOMA Industries is happy because the quality of maize supplied by KOTUKA if of high quality and deliveries are on schedule. 	<ul style="list-style-type: none"> - Strive to understand the society's functions, interests and risks to nurture mutual understanding. - Encourage quality deliveries through payment at right time and bonus.
Markets and Prices	<ul style="list-style-type: none"> - Not all ordinary members do know the general investment in order to calculate the profit (production cost) - The quality requirement form major part of agreement of production delivery - The prices keep fluctuating with seasons and ordinary members do little know of their prices in advance. - Other buyers especially the traders are often available but that market is not also guaranteed. 	<ul style="list-style-type: none"> - SOSOMA Industries might provide staff who popularizes their products and the quality of raw materials required. - Increase the partnership not only with KOTUKA but other farmers who produce other crops needed by factory.

<p>Perspective on use of contract</p>	<ul style="list-style-type: none"> - KOTUKA will be happy to have permanent buyers of maize production and SOSOMA Industries will be happy to have the permanent suppliers of raw materials. - The contract is flexible allowing constant reviews of some details which are not beneficial to all. Common understand on the content of contract - Communication on market issues 	<ul style="list-style-type: none"> - Face to face discussion on future use of contract - SOSOMA Industries will discuss and agree with farmers on prices and payment modalities. - Dispute resolution in meeting - Will need good communication between both sides.
<p>Quality standards and records keeping</p>	<ul style="list-style-type: none"> - Good agricultural practices - Absence of post-harvest facilities - Spirit of working together for development - Limited knowledge and skill on quality management 	<ul style="list-style-type: none"> - Perspective for more improvement is needed using training - Continuous explanation and field school for demonstration on quality needed by factory - Promote periodic training of farmers and staff on quality standards required by SOSOMA Industries - Encourage information exchange and work more closely with the KOTUKA. - Cross checking on quality during harvesting time
<p>Cost/benefit and coping strategies</p>	<ul style="list-style-type: none"> - Maize farmers are able to get loan from bank - Income from maize is used in other income generating activities - Farmers grow soybeans and other crops - Coping strategies 	<ul style="list-style-type: none"> - More improvement is needed where the signed contract can be used in bank as guarantee for their production - KOTUKA cannot satisfy the raw materials needed by factory; the increment in production is a wish - Increase farmers' income by value addition from other income generating activities. - Improvement on livelihood of farmers

5. Discussion of results

5.1 Current relationship between SOSOMA Industries and KOTUKA farmers' cooperative

The current situation on relationship mostly is demonstrated on partnership in value chain network; as explained by KIT (2010) both play a role of actors in the chain. Stated by CDI (2012) firm-farm relationship is characterised by partnership in production activities, transparency, contract, cost/benefit sharing and market assurance.

In the focus group discussion, it had been observed that SOSOMA Industries uses public tender where different commercial institutions deposited their offers. Farmers' cooperative also brought their offers. If the farmers meet the requirements of winning the tender depending on the quality and quantity, the farmers groups supply the firm. The firm respondent explained that *"we can negotiate with farmers by increasing price (cleaning cost) due to they offer maize of good quality and the cost of cleaning can be given to farmers"*. It has been revealed that relationship is based on Public Tender, this situation disagrees with the five models of farming contract stated by Earton and Shepherd (2001) and Prowse (2012) where firm participate or involved in agricultural activities in partner with farmers.

The researcher tried to know the reason why SOSOMA Industries have chosen the Public Tender instead of permanent supplier of raw materials or use of contract, they have responded as follows: *"as a factory we cannot invest in agricultural farmers' activities it is to expose the factory at high risk of failure and also to have a permanent suppliers of raw materials it is good but with several challenges such as money inflation, stability of raw materials and lack of trustiness of suppliers"*. Firm had preferred this way in order to overcome those challenges. Respondents from firm explained that even to identify the really farmers' cooperatives for contracting were a big issue without a facilitator in the linkage; this statement agreed the same for USAID (2010). Farmers stated that *"we know SOSOMA Industries in Public Tender only, we wish that if we have a contract with the factory we may not have challenges of market and post harvest losses"*, this is in line with Ellis (2000) and Agri-Pro Focus (2012) who stated that post-harvest loss is a big challenge for small farmers.

5.2 Production and productivity

As it had been revealed in challenge area of production and productivity; inputs (fertilisers and seeds) and services extension play potential role on production as stated by Ngaboyisonga (2010). The findings showed that farmers are not able to buy maize seeds without any outside intervention such as help from partners or from RAB.

The findings agree with MINAGRI (2007) where sufficient seeds are available at right time and affordable to farmers due to the system of voucher (where farmers get maize seeds with fertilisers and pay the half of fertilisers after harvest) but this is not applicable to seed multipliers where they have to pay the totality of the cost. Farmers stated that *“we have to wait due to maize seeds are brought by cooperative leaders, the delay have an impact on our production”*. It had been revealed delay of inputs had an impact on poor farmers due to at the beginning of agricultural season; mostly fertilisers come late and affect negatively the production which totally depends on rainfall. Extension services are provided by KOTUKA, Local government extension officer and RAB technicians. The findings revealed that the shift from traditional agriculture (use of local seeds, lack of fertilisers, several crops in one plot of land) to intensification agriculture shows a positive production growth as stated by MINAGRI (2010). In business case respondents of firm stated that *“we are not concerned by maize production, only post-harvested is our need”*. It has been observed that workers of firm are not aware about the production activities done by farmers. Mostly they receive treated raw materials only. It had been revealed that SOSOMA Industries cannot invest in raw materials production as a way of fighting against agricultural risks but also it is not a secure way due to other challenges have been occurred mostly in Tender such as delay and lack of trust among the suppliers. The firm scores observed in result section are based on individual knowledge of firms’ respondent due to the firm does not invest or interested in agricultural activities; those disagree with Prowse (2012) where state that in firm-farmer relationship; firm can support the farmers in production activities.

5.3 Post-harvest activities

Reported by farmers *“we use our traditional methods such manual threshing, winnowing using winds and drying using sun”*. The findings revealed that the modern post-harvest facilities (such as drying materials, common warehouse and moisture content devices) at farm level are not available as a result of poor quality of raw material and high losses of maize as explained by Laan (2011). Leaders of cooperative and farmers explained that post-harvest activities are done at cooperative level; this was a coping strategy where the cooperative hires labours to clean, sort and preserve the produce before selling to the buyers with major general purposes of post-harvest losses reduction and to keep the production with quality reliable on market. The firm thought that the farmers have post-harvest facilities due to what they knew is the good quality of maize that they supply; this was the reason of high score compared to the farmers’ scores.

In focus group discussion, it had been revealed that farmers mostly prefer liquid money from the fresh maize instead of waiting for the harvest period; the reason was that some farmers are not able to calculate the cost of production.

5.4 Functioning of farmers' cooperative

Farmer's group leaders play an important role in partnership development with internal and external actors in the chain by representing the cooperative and farmers in the following: source of information related to the market and extension services, provision of inputs at right time, good communication with the buyers. The leaders of cooperatives always represent the general interest of all farmers as explained in the focus group discussion. This had shown on the initiation of short time credit with SACCO in partnership with local leaders: When farmer needs credit the leaders of cooperative in partnership with local leader sign a prove which can help farmer to get credit to microfinance. The findings show that SOSOMA Industries is happy with the performance of farmer's cooperative due farmers offer selected raw materials with high quality compared to other raw material suppliers. But for farmers, the score is low due to the post-harvest activities take place at cooperative level.

"We come to Cooperative when we need a service like input and selling our maize" said maize farmers. Farmers are not aware about the financial issues of cooperative; even the company does not have enough information about that. The reason is that farmers do not invest much money in cooperative and their awareness is too low.

5.5 Transparency in market and pricing between SOSOMA Industries and KOTUKA

Farmers agreed on way selection take place in Public Tender *“the company is very positive on the way of selecting the suppliers of raw materials”* this shows the effect of transparency. As explained by respondent, selection is done on basis of quality of raw materials brought during the submission of the offer, after the tender committee look on price.

Farmers and firm agreed that there is other maize buyers on the market where farmers can sell; but not guaranteed, this agreed by NISR (2011). Large prominent consumers of maize products are local buyers: WFP, CAMERWA, CNLS and local retailer.

5.6 Quality standards

Actually the factory buys all raw materials using public tender where the quality is the first critical point followed by the price. In regards to the statements on quality standards both firm and farmers were positive on quality requirements, where firm need raw materials of good quality and farmers' cooperative do much as possible to satisfy the quality required by firm during tender delivery.

As explained the cooperative hired labours to satisfy the quality of maize required by Firm *“as cooperative we hire the labours for maize grading and sorting in order to meet the quality requirements”*.

Maize products from SOSOMA Industries are sold at local buyers: WFP, CAMERWA, CNLS and local retailers; this makes quality standards one of the most important point to focus on in processing, particularly for the firm's sustainability and credibility on market.

There is also a general lack of supporting infrastructure in the KOTUKA working area such as tarred roads, which makes transportation of the maize difficult especially during the raining period and have an impact on quality.

The quality of the maize supplied affects quality of processed products. SOSOMA Industries has to meet quality standards and food certification requirements as set by Rwanda Bureau of Standards (RBS). This is a big challenge issue because the farmers involved are small holder farmers, and the quality of maize supplied is varying considerably because of the different farming practices by the individual farmers and the post-harvest handling techniques used. SOSOMA Industries is doing much as possible as a way of harmonising the quality of their products in order to get RBS certificate which is under process.

A SOSOMA Industries labours said that *“our biggest problem with regards to quality is the fact that most of our maize suppliers do not have commercial spirit of trust.”* The efforts needed to

raise quality awareness; the firm has planned to make a strong partnership with farmers' cooperative not only in maize but also in soybeans and sorghum. Record keeping is important to trace the source of the crop in terms of food safety concerns. The weight notes produced by the farmers are useful also for tracking purposes and also as a way of invoicing the payment of delivery products.

5.7 Perspective on contract farming

The willingness on potential use of contract was an issue for both sides. Reported by General Director *"we are going to increase our partnership with farmers' cooperatives due to even the other suppliers bought the production in rural areas at low price using middleman; so, if we directly negotiate with farmers' cooperatives we will be guaranteed on quality delivery"*. It had been revealed that the high score give in this challenge area is significant to the future potential of increment in their relationship.

The firm stated that *"the volatility of prices in country is very high, always poised great risk to the income generated by farmers even the price of energy in country is not stable"*, hence the contract cannot include a fixed prices of raw. The findings revealed that SOSOMA Industries will be happy to have the permanent suppliers of raw materials; it will be a good way of ensuring good quality and quantity required in daily activities. At the other part, the farmers also need permanent buyers like SOSOMA Industry.

More importantly, these perspectives helped in developing action plans for improved collaboration on both side. Both farmers and firms have accepted to collaborate on issues they both gave low scores, capitalize on ones they both scored high, and have face-to-face discussions on issues where their views differ if necessary with a third part from linkage facilitator.

5.8 Coping strategies

The findings also showed how the farmers are dependent on maize as a source of household income: source of school fees for children and investment in other generating income activities. This may indicate the existence of a strong need to further protect farmer's livelihoods by making maize production much more sustainable in term of market. Through maize production farmers earn money which they can use to buy food and thus improve their food security situation even the payment of short loan from MFI. The findings showed that most of maize farmers have other alternative income generating activities may be handy especially to protect farmers when maize production drops down due to climatic hazards such as small local business, animal raising, cultivation of other food crop, tailoring for female while masonry, carpentry and brick making are for males. Here off-farm activities play an important role at household as a source of liquid money.

5.9 Stakeholder linkages

The fundamental aspect of value chain development focus on relations and linkages among the operators and these linkages among different groups in the sector or chains can either be formal or informal (Eaton and Shepherd (2001)). The findings revealed that stakeholders (KOTUKA, SOSOMA Industries, RAB, Local leaders and World Vision) work almost individual on their own with minimum communication within other relevant stakeholders. Linkage between KOTUKA and SOSOMA Industries is too low based on Public Tender with future positive potential for improvement. Network among Agri-Hub and KOTUKA with SOSOMA Industries was not strong built but with high potential of improvement in terms of communication, advocacy and other possible means.

6. Conclusion and Recommendations

6.1 Conclusion

From the business case description, questionnaires and debriefing report, it can be decided that the current relationship between SOSOMA Industries and KOTUKA was almost non-existent as result of poor partnership in other agribusiness activities because it is based only on Public tender. The production and productivity are big issue in market linkage due to both sides are mutually needed each other; it can be expressed that farmers need market and firm need maize as raw materials. From the findings; it can be concluded that mostly illiterate and poor farmers are not able to buy the inputs for their behalf even to calculate the cost of production is a big issues; this is shown at harvesting time where they sold they produce at low price without making under consideration the cost of production. On delay of input during the starting of the season, it can be concluded that the impact come on farmers due to the agriculture done is relied on rainfall. Apart from that, farmers always are depending on the gift and donation of inputs and do not want to invest their money in agriculture as a result of delay of agricultural activities during the season. At the other hand the firm also is not aware about production activities of farmers due to poor relationship.

Mostly farmers are not aware about the functioning of their cooperative in terms of leadership administration, financial status and post-harvest handling activities including quality requirement and the use of pesticide used in grain storage. The leaders of KOTUKA do much as possible to cooperate with other institutions like local government, RAB, World Vision and other NGOs. To have an extension officer in cooperative can be concluded as an advantage for farmers' communication themselves and with cooperative or other agricultural organisations working in that area. The indigenous knowledge is used in many activities such as use of organic manures in combination with chemical fertilisers or in absence of that, to carry their produce to the cooperative warehouse as a measure of preventing damage and losses and use of traditional drying materials.

From the case study description and questionnaire results, it can be concluded that maize farmers do not have a permanent and secured market with defined contract as a guarantee. At the other part, SOSOMA Industries does not have a secure source of raw materials as a result of poor quality of raw materials followed by high cost of production due to the time and labours required to treat those bad raw materials.

To participate in public tender for SOSOMA Industries was shown to be also a limit to poor farmers; even the chance of KOTUKA to win in tender were very low due to the suppliers of imported maize, the commercial crop institutions which buy the maize in rural areas at low price were dominant in Tender. The functioning of cooperative had an impact on farmers' members by providing extension services and help, provision of inputs and short time loans from SACCO. In terms of quality KOTUKA do much as possible to meet the quality standards requested in Public Tender. For SOSOMA Industries it can be concluded that it is a quality driven factory.

It can be concluded that firm does not have much information on agricultural activities even on functioning of farmer group due to all factors of relationship take place individual for each side. However, a sign of good will for improvement of relations was observed from both parties when it came to future perspectives. Perspective on contract for both parts it was observed that similar issues kept being raised, where the details of contract may be well discussed among the actors in the chain in terms of quality and prices. The issue of price is complex and depend on different factors; firm and farmers might negotiate about it before the delivery of raw materials.

It can be concluded that stakeholders (KOTUKA, SOSOMA Industries, RAB, Local leaders and World Vision) work almost individual on their own with minimum communication with other relevant stakeholders. Linkage between KOTUKA and SOSOMA Industries was also too low with future positive potential for improvement. Network among Agri-Hub and KOTUKA with SOSOMA Industries was not strong built but with high potential of improvement in terms of communication, advocacy and other possible means.

6.2 Recommendations

As recommendation, all operators in value chain must play their role in the chain as a good way of partnership in development. This study is mostly focused on post-harvest agribusiness; not only farmers but also firm and facilitators (Agri-Hub Rwanda) even other actors in chain as shown on following figure (Figure 6.1) must contribute in firm-farmer sustainability. NGO as supporters may play their roles not only in production but also market linkage need more effort to make a solid foundation between firm and farmers. Participation of Banks in agribusiness must be encouraged and farmers must be sensitised on self-saving spirit after selling their produce.

The following model can be applied to during the initiation period where the facilitator (NGOs) and local government coordinate linkage mostly farmers to firm within banks.

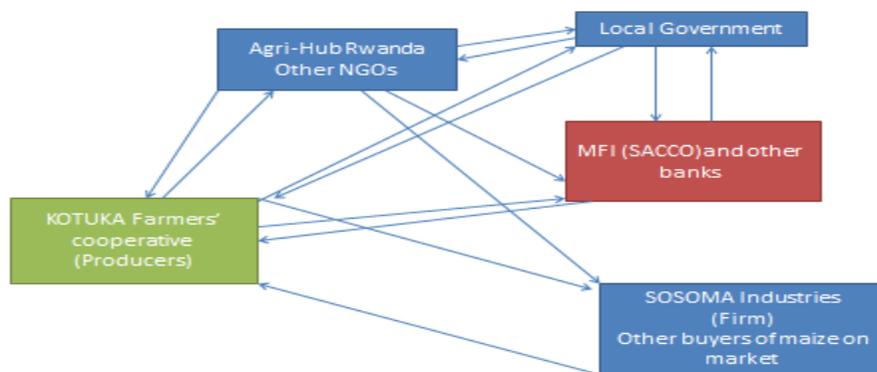


Figure 6. 1 Contract model between firm and farm with linkage facilitator

Source: Adopted from USAID, 2011

- There is need for strengthening public and private partnerships due to most of time they play role of supporter in the chain as it had been shown that strong relationships between stakeholders in value chains promote chain development.

KOTUKA farmer's cooperative

- To improve and to keep on the commitment among cooperative members and to increase the spirit of working together as a way of coalescing the power rather than to work individually by using cooperative meeting and sensitisation.
- To hold on the increment and improvement of communication and information sharing with stakeholders especially SOSOMA Industries, NGOs, donors and microfinance institutions in meeting and common work (umuganda).
- Defined contract for a guaranteed production as permanent and secured market as a way of creating an advanced conducive relationship with SOSOMA Industries.
- To increase as much as possible the consolidated land because it is also an alternative way of addressing the issue of land scarcity in that region. To increase maize plot lands but not only for seed multiplication but for consumption due to consumption maize can be sold easily in SOSOMA Industries and generate income for household.
- Face to face discussion with SOSOMA Industries on market issues when it is needed.
- Provide information on price at right time to farmers.
- Strength the extension services: farmers should follow good agricultural practices as a way of increasing production and productivity, due to even the small plot of land is misused due to average production is 2.5 tons/ha, there is a wide range for improvement up to 3.5 tons/ha.

SOSOMA Industries

- Increase the willingness in firm-farm relationship by making quick and consistent communication with farmers' cooperatives not only in maize but also in soybeans and sorghum.
- Providing extension services as a way of sensitising farmers about the quality needed by factory before and after agricultural season as a way of encouraging farmers to do agribusiness and to strengthen their relationship.
- To increase contact with farmers in several development activities (umuganda).
- To encourage the farmers to make the quality needed by firm as much as possible by using incentive.
- To plan a training with farmers on post-harvest issues
- Face to face discussion with farmers on quality and if necessary on contract issues
- Improved communication with other stakeholders
- Cross checking on quality during harvesting period.
- Improved relationship not only with KOTUKA but with other crop farmers that produce seeds needed by factory in its daily activities.

Agri-Hub Rwanda

To increase and maintain firm-farm relation, the following points should be emphasized by Agri-Hub Rwanda:

- ✓ Providing permanent advocacy in different institutions that can support agribusiness in Rwanda especially KOTUKA and SOSOMA Industries.
- ✓ To provide agricultural trainings two times per year on capacity building that can support both farmers and firm in the system as a way of consolidating their relationships.
- ✓ To make a solid and demonstration firm-farm relation as a school field in Rwanda where other firms and farmers can visit and study how to make a sustainable firm-farm relationship
- ✓ Supporting both technically and financially the agricultural services especially KOTUKA and SOSOMA Industries relations in order to provide adequate information on market and improvement where it is necessary in the chain.
- ✓ To provide a permanent monitoring and evaluation with existing firm-farm relationship as a way of sustaining the business among them.
- ✓ Advocating for farmers on the buyers' institutions like RAB to enhance the payment modalities as a good way to maintain the good reputation in chain.
- ✓ Facilitating linkage of farmers' cooperative to the micro financial institutions.
- ✓ Provide necessary information for farmers on production cost.

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Annex 1: Questionnaire

KOTUKA COOPERATIVE

SOSOMA INDUSTRIES

For the researcher:

Please fill in the following information about the case:

Country:	
Case:	
Name researcher:	
Date:	

For the respondent:

Please fill in the following information:

Name respondent:	<i>What is your name?</i>
Gender respondent:	<i>What is your gender? (please tick)</i> <input type="checkbox"/> Male <input type="checkbox"/> Female
Age respondent:	<i>What is your age?</i> years

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>

For members of the farmer group/cooperative:

If you are a member of the farmer group/cooperative, 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 your farmer group / cooperative?</i>
Position respondent:	<i>What is your position in your farmer group / cooperative?</i> <input type="checkbox"/> I am a farmer and sell my products through this farmer group <input type="checkbox"/> I am a board member / member of core group <input type="checkbox"/> My position is:
Duration participation:	<i>How long are you a part of this farmer group/coop?</i>

 [If applicable:] <i>Since when do you have this position in the board?</i>
--	--

Statements		Scores			
		0	1	2	3
		<i>Strongly disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly agree</i>
		☹ ☹	☹	☺	☺ ☺
1 Production					
1.1	Maize seeds are accessible to farmers				
1.2	Maize seeds are available at right time				
1.3	Farmers know utilization of Maize seeds				
1.4	Sufficient maize seeds are available				
1.5	Sufficient fertilizer are available				
1.6	Fertilizers are available at right time (stability)				
1.7	Fertilizers are accessible/ affordable to farmers (price)				
1.8	Farmers use of fertilizers (in field) as recommended by agronomists				
1.9	Farmers' yields are increasing				
2 Post-harvest					
2.1	Post-harvest Pesticides are available				
2.2	Farmers get the recommended pesticides at right time				
2.3	Pesticides are accessible/affordable to farmers				
2.4	Drying surface is adequate to farmers				
2.5	Warehouse is sufficient				
2.6	Warehouse is adequate				
2.7	I know the production cost of 1kg of maize				
3 Functioning of farmer group					
3.1	Farmers agree with the way the SOSOMA Industries selects maize suppliers				
3.2	Farmers have sufficient maize farming field				
3.3	We agree that farmers sell the maize as a cooperative, and not as individual farmers				
3.4	Elected KOTUKA leaders adhere to the tasks and responsibilities defined in the constitution and by-laws				
3.5	Regular KOTUKA's meetings are effective				
3.6	All members are aware about cooperative financial issues				
3.7	SOSOMA Industries is happy with the way the KOTUKA is managed				
3.8	KOTUKA's leaders always represent the common interest of the farmers				
4 Markets and prices					

4.1	KOTUKA is able to produce the quantity of maize needed by SOSOMA Industries				
4.2	SOSOMA Industries clearly informs KOTUKA about quality requirements				
4.3	There are other maize buyers on the market				
4.4	KOTUKA knows the quality of maize needed by SOSOMA Industries				
4.5	The maize farmers think that SOSOMA Industries pays them a fair price				
4.6	SOSOMA Industries pays KOTUKA at right time				
4.7	SOSOMA can buy maize produced by KOTUKA farmers				

Statements		0	1	2	3
		Strongly disagree	Disagree	Agree	Strongly agree
		☹☹	☹	☺	☺☺
5 Perspective on use of Contract					
5.1	SOSOMA Industries will be happy to have a guaranteed supplier of maize				
5.2	KOTUKA cooperative will be happy to have a guaranteed market for their produce				
5.3	SOSOMA Industries will take farmers' opinion on contract matters into consideration				
5.4	KOTUKA will always discuss contract issues with the SOSOMA Industries				
5.5	The contract is clear on dispute resolution				
5.6	The farmer cooperative will follow the rules laid down in the Contract				
5.7	Each farmer will be able to understand the content of the contract with SOSOMA Industries				
6 Quality standard and record keeping					
6.1	Farmers follow good agricultural practices				
6.2	Quality standards and reasons for rejection of maize produced are clear				
6.3	At drying ground KOTUKA cooperative follow the hygiene standards				
6.4	The farmer cooperative keep records of the maize delivered to SOSOMA Industries				
6.5	Farmer groups correctly file the collection overviews provided by SOSOMA Industries				
6.6	Farmers trust the delivery records by SOSOMA Industries				
6.7	Farmers work together to improve the quality of maize				
7 Cost /benefits and coping strategies					
7.1	SOSOMA Industries is happy with the delivery maize from KOTUKA				
7.2	Maize farming provides farmers with a steady income				
7.3	The money from maize farming is the most important income for the family				
7.4	All farmers (large and small, men and women) benefit from the sale of maize to the SOSOMA Industries				
7.5	Maize revenues are invested in other crops				
7.6	KOTUKA's farmers manage to get bank loans				
7.7	KOTUKA's farmers are developing other income generating Activities				
7.8	KOTUKA's farmers can adopt intercropping in maize field				

Annex 2: Checklist for the Interview

F-F challenge areas	Experiences, examples / Views and comments	Importance
Context: power distribution, level playing field, trust between farmers and companies, transaction risks and costs, previous experiences, project orientation, ...		
Local service provision: research, extension, input supply, credit, transport, ...)		
Crop / produce: export market, bulk product for local market, ... alternative crops, alternative market outlets ...		
Production risks: climate, pests and diseases, GAP, ... distribution of risks over producers and company, insurance, likelihood of producing contracted volumes		
Farmers: resource endowment, food & livelihood security, level of specialization, economic orientation, modalities for selecting farmers		

F-F challenge areas	Experiences, examples / Views and comments	Importance
Company: resource endowment, 'open door policy', credibility and transparency, qualified staff,		
Farmer group functioning: leadership, accountability to members, internal communication and transparency, internal control on compliance (GAP, quality, delivery), record keeping and financial administration, autonomy of organizational costs		
Prices and price setting modalities : min-max prices, dealing with market price fluctuations (reference market prices), differential prices for quality (1 st and 2 nd grade), bonus for higher volumes or quality		
Embedded services: inputs, credit, training, farmers credit discipline and risks of side use, company default on service provision, ...		
Contract : language, terminology, explanation, understanding, transparency, elements covered, signatories		
Delivery : timeliness, volume, quality and grading, traceability and administration		

F-F challenge areas	Experiences, examples / Views and comments	Importance
Side selling : farmers' respect of contract, new entrants, predatory purchasing, horizontal coordination (code of conduct with other buyers), vertical coordination (relations and goodwill with farmers)		
Payment modalities : cash/bank account, timeliness of payment, company default on payment, group/individual payment, ...		
Institutional environment : legal system, witnesses, informal and formal contract enforcement and dispute settlement, bureaucracy, corruption, ...		
Standards International and sector specific standards, food safety, certification and traceability, ...		