



IFAD
INTERNATIONAL
FUND FOR
AGRICULTURAL
DEVELOPMENT



MINAGRI



**VALUE CHAIN ANALYSIS OF TEA PRODUCTION IN KARONGI
DISTRICT, RWANDA. A CASE STUDY OF PROJECT RURAL INCOME
THROUGH EXPORT (PRICE), RWANDA.**

**FINAL REPORT by
ADEYEMI, ENIOLA ILEMOBAYO (MDP Student)**

**Alfred Mutebwa
(Field Practicum Supervisor)**

**Prof Olanrewaju Olaniyan
(Academic Supervisor)**

AUGUST 2018

ACKNOWLEDGEMENT

My sincere gratitude goes to International fund for Agricultural Development (MDP-IFAD WinWin) for the financial support provided during the course of this Research and Global MDP Association for the support throughout this research.

I am also grateful to the Ministry of Agriculture and Animal Resources, Rwanda under the auspices of Single Project Implementation Unit for providing a conducive environment and support throughout this study

Words are not enough for me to appreciate my Onsite Supervisor, Mr. Alfred Mutebwa for having willingly accepted to guide me and for his care, knowledge support, advice accorded to me through the research process and systematically for his valuable time to supervise this study.

To all the tea farmers, cooperative staffs and Tea Factory in Karongi District, particularly those who were interviewed for providing useful information. Special Thanks to Mrs. Bernadette Nyiraneza for the time she spent in arranging for field trips and accompanying me to meet many respondents.

To my Academic Supervisor and my Coach; Prof. Olanrewaju Olaniyan, and Dr. Olawale Olayide for the kind gesture, support and constructive criticism throughout this study.

I also extend my thanks to all respondents for their patience and collaboration during field survey. I am grateful to my fellow Rwandan colleagues; Remilekun Akolade, Olusegun Taiwo, Dr. Olugbade Omotajo, Toyib Aremu and Mary Mercy. I would like to express my gratitude to all my friends and classmates for their support and encouragement throughout the study period. A big thank you to Center for Sustainable Development, University of Ibadan, Ibadan, Nigeria.

I wish to extend my heartfelt gratitude to my parents, Prof & Mrs. O.A Adeyemi, and my siblings, Anuoluwapo and Ireoluwa for their patience, endurance and moral support during the entire period of this study.

Glory and honor to the Almighty God for the opportunity and capacity given to me to realize my ambition.

ACRONYMS AND ABBREVIATIONS

BRD	Banque Rwandaise de Développement (Development Bank of Rwanda)
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
GL	Green Leaves
GoR	Government of Rwanda
IFAD	International Fund for Agricultural Development
IPAR	Institute of Policy Analysis and Research - Rwanda
Kg	Kilo grams
KII	Key Informant Interview
MINAGRI	Ministry of Agriculture and Animal Resources
MINECOFIN	Ministry of Finance and Economic Planning
NAEB	National Agricultural Export Development Board
NISR	National Institute of Statistics of Rwanda
OCIR THE	Office for Rwanda Industrial Crops-Tea
PDCRE	Projet de Développement des Cultures de Rente et D'exportation (Smallholder Cash and Export Crop Development Project)
PSTA	Plan Stratégique pour la Transformation de l'Agriculture/Strategic Plan for the Transformation of Agriculture
RDB	Rwanda Development Board
RWF	Rwandan Franc
SORWATHE	Rwanda Tea Company
SPIU	Single Project Implementation Unit
SPSS	Statistical Package for Social Science
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
VCD	Value Chain Development

ABSTRACT

Rwanda is recovering from the 1994 genocide, which severely impoverished the population and stalled the country's private and external investment. Tea is one of Rwanda's most important official sources of foreign exchange and an important source of income for farmers.

The quality of Rwanda tea is among the best in the world but the quantity remains a challenge. In order to increase quantity of tea, farmers are encouraged to extend tea farms and join cooperatives to strengthen the system. Despite this strategy, 70% of all tea farmers work an average of approximately 0.25 hectares of tea area.

The project sought to establish factors that affect the production along the Value Chain with focus on the inputs. The study was carried out in Western Province of Rwanda in Karongi District. A simple random sampling method was adopted. A total of 339 tea farmers were sampled out to carry out the structured questionnaire.

An interviewer-administered (Key Informant Interview) questionnaire survey together with the review of secondary information were all part of the study methodology. Data collected were coded and analyzed using Statistical package for Social sciences, descriptive statistics and inferential statistics.

The study revealed the farmers determine the yield/input (plucking, pruning, fertilizer application while the cooperative determine the quality (training farmers on best agricultural practices, transporting green leaves from the collection centres to the tea factory) which is stronger with support from the government and international organisations.

Also major factors/challenges identified by tea farmers were mainly low fertilizers, insufficient seedlings, bad roads, proximity of farm, insufficient collection centres, low prices and farmers' late payment of green leaves and delays in the distribution of loans from BRD in the infringement of the contract signed between farmers and BRD.

The research pointed out the benefits attached with farmers forming a cooperative. Ever since the advent of cooperatives and support from the government and international organization, tea now competes with other cash crops like coffee. There has been an increase in the price of Green Leaves per kg from 100rwf to 150rwf. Although the increase is quite low, but it has improved the living of the farmers to a certain extent. The prices fluctuate due to the unstable demand and supply of Rwandan tea. As at November 2017 Tea was sold at \$2.60/kg. The findings also revealed the strengths, weaknesses; opportunities and threats (SWOT) for further development in the value chain

Based on the above results the study recommended

Government support is the key for tea VC development

Key Words: Value Chain, Tea Production, Smallholder farmers, Productivity, Farmers' Cooperatives.

TABLE OF CONTENT

DEDICATION	Error! Bookmark not defined.
ACKNOWLEDGEMENT.....	2
ACRONYMS AND ABBREVIATIONS.....	3
ABSTRACT	3
CHAPTER ONE.....	9
1.1 PROBLEM STATEMENT.....	9
1.2 Objectives of the Study	11
1.2.1 Specific Objectives	12
1.3 Justification for the Study	12
1.4 Scope of the Study	12
1.5 Outline of the Study.....	13
CHAPTER TWO.....	14
SITUATIONAL ANALYSIS OF THE TEA SECTOR OF RWANDAN ECONOMY	14
2.1 Context of PRICE you are investigating in terms of objectives, activities achievements and	14
shortcomings	14
2.2 Stylized facts on Tea sector in Rwanda, Production, employment and Policies for the sector	15
2.2.1 Tea production in Rwanda by comparison to neighboring countries	17
2.2.2 Current State of Tea Production.....	17
2.2.3 Evolution of tea farmer’s cooperatives in Rwanda.....	19

2.2.4 Rwanda’s Tea Policy.....	20
2.3 Stylized Facts on Value Chain analysis of tea farming production, distribution, consumption on nature and trends, earnings and exports	21
2.3.2 Tea Distribution System.....	21
2.3.3 Tea Export.....	22
2.3.4 Value added and direct sale	23
CHAPTER THREE.....	24
LITERATURE REVIEW	24
3.1 Introduction.....	24
3.2 Review of Conceptual Issues	24
3.2.1 Concept of Smallholder Farmer	24
3.2.2 Value Chain Analysis	25
3.2.3 Value Chain Actors.....	27
3.2.4 Cooperative-based approach to Value Chain Development and Smallholders’ farmers.....	27
3.2.4 Tea Productivity.....	28
3.2.5 The concept of tea quality and its grades in Tea farming	30
3.2.6 Factors affecting smallholders’ farmers participating in Agriculture extension.....	30
3.2.7 Advantages of cooperatives in agriculture extension	31
3.2.8 Constraints of inputs	31
3.2.8 Constraints related to markets.....	32

3.2.9 The challenges in tea production sector in Rwanda.....	33
3.3 Review of Empirical Issues	33
3.4 Review of Methodological Issues.....	38
CHAPTER FOUR	40
METHODOLOGY	40
4.1 Sampling Design.....	40
4.3 Data requirement and Sources	41
4.4 Population and Sample size	41
Sample Size =	41
4.5 Validity and Reliability of Research Instrument	42
4.6 Method of Data Analysis (by Objectives).....	42
CHAPTER FOUR	43
RESULTS AND DISCUSSIONS.....	43
4.1 Introduction.....	43
4.2 Demographic characteristics of respondents.....	43
4.3 Research Objective 1	45
4.4 Research Objective 2	47
4.5 To evaluate the impact of famers' organization (Cooperatives) on Crop Productivity	52
RECOMMENDATION AND CONCLUSION	55

CHAPTER ONE

1.1 PROBLEM STATEMENT

Tea was introduced to Rwanda in 1952. The tea industry was branded as a primary focus area in 2003 and a comprehensive tea industry strategy document was approved by Cabinet in Mid-Year, 2004.

Today, tea is one of Rwanda`s main cash crops. Tea produced in Rwanda includes majorly black tea, white tea, green tea, organic tea amongst other varieties.

Rwanda tea is planted on hillsides at high altitude (between 1,800 and 2,000 m), and on well drained marshes at an altitude of between 1,600 and 1,850 m.

The tea sector is characterized by low productivity. Productivity levels remain low compared with other countries in the region. Tea in Rwanda is mainly cultivated by smallholder farmers, on total areas of less than 0.25 ha per household. Smallholder plots produce on average the equivalent of 7,000 kg of GL/year/ha while in Kenya they produce on average the equivalent of 23,000 kg of

GL/year/ha and in Tanzania they produce on average the equivalent of 18,000 kg of GL/year/ha (FAO, MINAGRI&OCIR THE 2008)

Tea in Rwanda is mainly cultivated by small farmers, on total areas of less than 0.25 ha per household. It is one of the few labor-intensive crops that provide regular cash income to farmers and employment opportunities for the rural population. Thus, the sector has great prospective as panacea to poverty reduction.

The tea because it is an export crop and it is therefore managed by National Agricultural Export Board (NAEB). Rwandan tea is sold either at the auction in Mombasa or directly to private customers. NAEB uses the selling price in Mombasa as a reference for suggesting prices to private clients. They also set the minimum price paid to farmers. Up to Year 2002, this price did not depend on the quality of the tea delivered to the factory for processing.

International Fund for Agricultural Development (IFAD) has financed 16 rural development programmes and projects in Rwanda. The projects have contributed significantly to improving incomes and food security in rural areas, particularly through watershed development, increased production in irrigated marshland and hillsides, development of livestock and export crops, and support for cooperatives and rural enterprise promotion.

The earlier programs and projects financed by IFAD were supporting rural development efforts mainly in production and land use management. Most recently the value chain approach was initiated in early 2000 including support to export crops which was pioneered by PDCRE project and then continued with its offshoot; PRICE project. These two project deal with main export crops namely tea and coffee as well as new export crops such as horticulture and sericulture. They also include a cross-cutting component of rural finance. Other recent projects deal with postharvest activities and dairy development.

Smallholder's tea producers in Rwanda face the challenges of how to increase quantity and how to get better prices for the excellent quality of green leaves they produce. The Government of Rwanda in her National Export strategy (NES) stated that the quality of the Rwandan tea is among the best in the world, but, the yields are low by comparison with other nearby African countries and producing countries in Asia (GoR 2005).

With the world price of tea forecast to decline (World Bank, 2016), except for the price of specialty and high-quality teas, low quality and poor productivity will severely hamper the role of the tea sector in increasing exports and reducing poverty and achieving the goals of Vision 2020. A value chain approach identifies the various levels and stages required to bring a product or service from conception, through the different phases of production, delivery to final consumers, and final disposal after use.

The major problem of associated with tea production in Rwanda is low productivity which implies low yield would be better identified across the value chain of tea production (MINAGRI, 2017). Another problem is the issue of Farmers Cooperatives in Rwanda, it has been identified that every tea grower is attached or registered under a cooperative. The farmers and cooperatives are the major actors in improving productivity on the tea sector, directly/indirectly with aid from

the factory that does the marketing and processing of the green leaves and the Government of Rwanda that sets prices through NAEB.

Cooperatives are most times minor shareholders in tea factories and hence have weak capacity to structure and manage their investment. As such, they are unable to influence the dividend policy of the factory and most times do not receive dividends for long periods after they have invested. Other challenges faced by cooperatives are inadequate road system limiting the productive capacity of the tea cooperatives, as well as the quality of the tea leaves delivered to the tea factories. The inadequate support in the areas of market linkages and transportation facilities, led to a situation whereby only one company (IKIREZI) is actively buying from farmers.

Most literatures focus on the factories has the main actors along the value chain, but there is no value chain without input which is giving by the smallholder farmers alongside the cooperatives. There has also been a focus on the environmental sustainability of tea production in other countries e.g. Sri Lanka (India) while many others focused strictly on policy and governance aspect of the values chain which is equally very important in ensuring the sustainability of tea.

Many empirical studies have shown the benefits cooperative style farming can bring to small-scale farmers in economic, social or other forms. But doing so in the specific context of Rwanda is another matter. Here it is not only important how the cooperative itself is organized but how it relates to other stakeholders it works with and the government

Studies on Value Chain have mainly focused on individual coffee cooperatives, an established sector in Rwanda. Everyone is significant along the value chain, from the tea growers (smallholder tea farmers), the cooperatives, the factories, the government, the exporters and the final consumer.

This study would give answers to the following questions

1. What are the roles and the relationship between each actor along the value chain?
2. What are the factors promoting low productivity? (with regards to the farmers)
3. Does the cooperative have an impact on the tea production?

1.2 Objectives of the Study

The main objective is to carry out a value chain analysis for tea in Karongi District of Rwanda. This includes mapping of the value chains, detailed descriptions of the main factors involved in

the value chains (from farmers to end consumers) and lastly, analysis of how the value is distributed across the different actors.

1.2.1 Specific Objectives

1. To identify and describe the roles of primary actors in the value chain
2. To examine the interrelationships of primary actors in the value chain
3. To assess the factors that lead to low productivity of Tea
4. To evaluate the impact of farmers' organization (Cooperatives) on Crop Productivity

1.3 Justification for the Study

There has been a lot of focus on Coffee production, there is a need to diversify our attention to other export crops especially Tea.

Major problems of tea production in Rwanda have been identified, this study would interact with the tea farmers/growers, leaders of the cooperatives, manager of the tea factory and key members of NAEB. To solve the issues related with yield of tea production, low quality of green leaves amongst others which have a long term effect of raising the smallholder farmers' income and also for the Government of Rwanda to achieve goals set out in the 'Vision 2020' plan to increase the country's standard of living. This study is very relevant and essential.

In addition, the current study will inform government policy especially field activities with regard to designing changes to streamline the tea projects management to enhance more productivity from the farmers.

The outcome of the study will contribute to the existing human stocks of knowledge from which the stakeholders will be able to generate new insights and ideas for improving various nodes along the value chain analysis of tea.

1.4 Scope of the Study

The scope of this study is the tea sector in Rwanda with a focus on the small holder farmers (tea growers) in Karongi District in the Western Province of Rwanda, both male and female. All tea growers are members of the cooperatives and are all beneficiaries of the PRICE project. The focus will be on the Karongi Tea Cooperative Growers (KATECOGRO) and the Karongi Tea

Factory; the study will also include some secondary source of data from NAEB and Ministry of Agriculture and Animal Resources (MINAGRI)

1.5 Outline of the Study

The thesis consists of six chapters as indicated below:

Chapter 1: Presents the introductory part which includes sections such as Introduction and Problem Statement, Objectives of the Study, Justification for the Study, Scope of the Study and Outline of the Study

Chapter 2: Presents the background to the study such as background issues on the situation concerning the topic such as; situational analysis of the project in the country and the immediate environment, background information of the PRICE project, background information tea component of the project.

Chapter 3: Literature review which contains a review of conceptual issues, review of theoretical issues , review of empirical issues and review of methodological issues.

Chapter 4: Methodology which includes conceptual/analytical framework, statement of hypotheses, sampling design, data requirement and sources (population and sample size, preparation of instrument and description of the questionnaire and interview guides)

Chapter 5: This chapter concentrates on the presentation and discussion of the results

Chapter 6: presents the summary, conclusion and recommendations of the study

CHAPTER TWO

SITUATIONAL ANALYSIS OF THE TEA SECTOR OF RWANDAN ECONOMY

2.1 Context of PRICE you are investigating in terms of objectives, activities achievements and shortcomings

Background information of the Project Rural Income through Export

The main aim of this research is to promote sustainable increased returns to farmers from key export-driven agricultural value chains through increased volumes and quality of production, improved marketing and effective farmer organizations.

The Tea Development Component

Building on the tea expansion model developed by PDCRE in partnership with private investors, aims at increasing farmer revenues by:

Building their capacities to deliver higher volumes and quality of green leaves to processing factories;

Supporting tea factories in reaching high value markets and forging links with buyers for direct sales, thereby lessening dependence on the Mombasa auction and avoiding bulk market price decline; and

Promoting better relations between tea cooperatives and private factories enabling farmers to earn a higher share of the end market price.

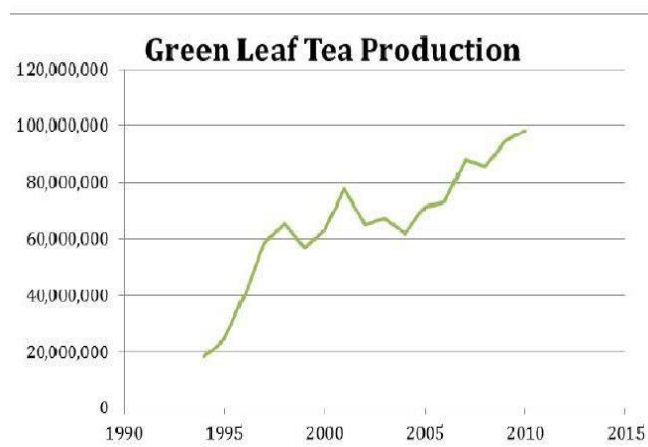
These objectives are supported both at existing and new sites. The expected outcome of the Tea Development Component is that tea growers will produce increased volume and quality of tea, of which at least 10% will reach high value markets, and which altogether will earn tea growers at least 20% share of market end prices.

2.2 Stylized facts on Tea sector in Rwanda, Production, employment and Policies for the sector

Rwanda's unique topography means that farm activities depends on diverse range of geographical landscape and micro-climates. The country is also land locked, which creates higher energy and transport costs than regional neighbours. In Rwanda, like in much of the developing world, smallscale subsistence farmers produce most of the agricultural output. Smallholder farmers dominate production, with complex extension needs Agricultural exports represent over 70% of the total value of exports; Tea and Coffee are the two main export crops and the most widely cultivated cash crops. The Government of Rwanda has also made efforts to diversify the country's exports by investing heavily in horticulture geared towards exports. The country produces several products as staple foods: maize, sorghum, rice, wheat, beans, soya beans, Irish potato, sweet potato, cassava and bananas.

Tea growing in Rwanda started in 1952. Since its introduction, tea production has increased steadily, from 60 tons of black tea in 1958, to 1,900 tons in 1990, to 5,414 tons in 1995, to 14,500 tons in 2000, to 17,800 tons in 2001, reaching a peak of 23,249 tons in 2010. Over 90% of the production is exported, but represents only a small share of the total volume traded in the international market, which is about 1.4 million tons. Note that 1 kg of black tea is from 4-5 kg of green leaves.

Figure1: Green leaf tea production over time



Source: MINAGRI, 2011-2012

From 1995, the general trend of Rwandan Tea output has been upward. However, as for the case of food crops and coffee, the Tea production data show significant instability. In comparison to coffee, Tea has not seen significant improvement in terms of quality. The Green leaf tea percentage which is a measure of Tea quality is around 70% which is a modest improvement on the 2003 figure of 67% and in a way short of the 80% target set out in the first tea strategic plan than ended in 2008.

The first tea strategy identified the key constraint to industry growth as a decline in both quality and productivity, coupled with a reliance on the sale of bulk Cut-Tear-Curl “CTC” black tea at the auction in Mombasa.

A few factors identified as constraints are;

- Tea farmers produced low quality green leaf due to poor farming practices.
- Tea farmers believed that they were not adequately remunerated for the quality of their green leaf delivered to the tea factories. This was in part due to a persistently low green leaf quality produced on the farms and in part to the loss of quality during transportation, amongst other factors. More than 5,280 million kg of tea was produced globally in 2015, of which more than 1,998 million kg or 38% of total production in the international export market. Though tea is produced by a large number of countries, its production is dominated by four countries: China, India, Kenya and Sri Lanka. These four countries account for more than 75% of production and 60% of global export in recent years. In addition, countries like Vietnam and Indonesia have increased their shares substantially both in production and in export recently. (FAO, International Tea Committee 2015)

Demand for good quality teas, such as Darjeeling and Assam teas in India and some Sri Lanka and Kenya teas, has continued to expand, and their prices have commanded a good premium over the price of average or inferior quality teas. From this point of view, Rwanda has a distinct opportunity to exploit, since Rwanda CTC tea is considered among the very best in the world. This reputation, which is a critical factor for the financial viability of new investments in the subsector, must be restored after the decline in the quality of OCIR-Thé now NAEB products occurred after the 1994 Genocide.

Currently, not all tea factories in Rwanda are back to the pre-1994 performance in this respect. The view of experts and traders coincides with the view of the GoR in that, provided the country

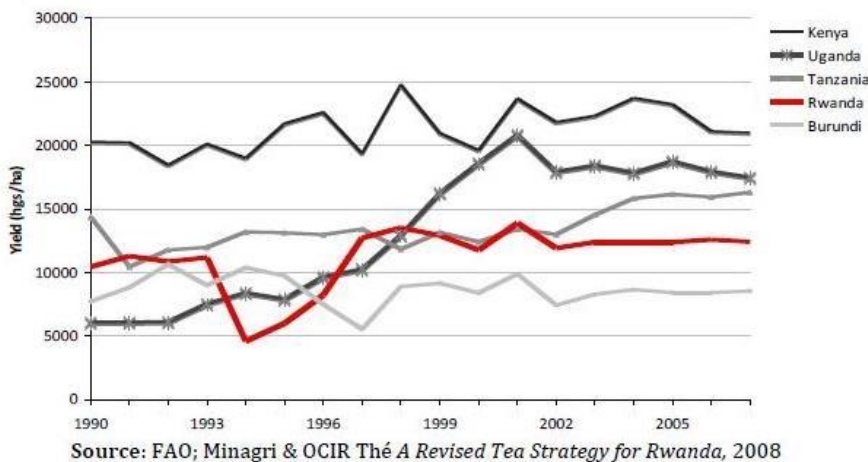
production is brought back to the pre-war level of quality, Rwanda tea can obtain prices. Some traders feel that most Rwanda CTC teas can fetch higher prices than the best Kenya teas. (FAO, 2016).

2.2.1 Tea production in Rwanda by comparison to neighboring countries.

In Rwanda, yields are low by comparison with other producing countries in Asia and also in nearby

African countries. In fact, the quantity of Rwanda's tea is very small in the international market compared to countries with large scale producers such as Kenya, Uganda, Tanzania, India and Sri Lanka.

Figure 2: Tea production in Rwanda by comparison to neighboring countries



2.2.2 Current State of Tea Production

Tea farmers cultivate on small areas of farmland, an average of 0.25 hectare per farmer. 1 hectare of tea plantation produces 1,800 kg of processed tea; which is 25% lower than the productivity of 1 hectare of tea plantation in Kenya, where yield is at 2,400 kg/ha. It is necessary to improve both the productivity and the quality of tea in order to increase tea exports. In addition, the Rwandan government must also encourage better uses of fertilizers, and increase the use of pruning.

Use of fertilizer

MINAGRI recommends the use of 600 kg, at the ratio of 25:5:5 for nitrogen, phosphorus, and potassium in 1 hectare, each year. If this goal were to be met for every hectare of tea plantation in Rwanda, roughly 7,700 MT of fertilizer would be needed. Nevertheless, due to high transportation costs as a land-locked country, Rwanda's fertilizer price is 60-80% higher than that of Kenya. In recent years, the soaring price of fertilizers became a major reason why many tea plantations could no longer afford to use enough fertilizer. In particular, smallholders lack access to funding, which in turn lowers their ability to purchase enough fertilizer.

In a key informant interview with the Karongi factory manager, a tea plantation owned by the factory uses 600 kg/ha of fertilizer, whereas an individual farmer's fertilizer usage remains at 500 kg/ha. The difference in the quantity of the fertilizer used may seem small, but the difference it makes to productivity is enormous. Tea plantations owned by factories produce 8,000-9,000 kg/ha, which is 1.3-1.5 times higher than an individual farmer who harvests 6,000 kg/ha.

As for the purchase of fertilizer, this is usually done through tea factories and tea cooperatives. The cost of fertilizer is deducted when green leaves are purchased from farmers.

Improvement of plucking and pruning

The difference in yield between tea plantations owned by tea factories and plantations owned by farmers is not solely caused by the difference in the quantity of fertilizer used. Whether or not pruning and removing weeds are being carried out, and the difference in technical skills used in plucking all play an essential role in determining the final yield.

However, if producer price of tea remains low, there is little incentive for farmers to switch to improved skills to pluck green leaves.

Plantations too large to pluck efficiently

A tea factory owns an average of 384 hectares for its tea plantation. To complete harvest in a 10day cycle, 38 ha of land must be harvested per day. Given that this is an exceptionally labor intensive task, and because there is an insufficient supply of labor in the vicinity of these tea plantations, many green leaves are left to grow rather than being plucked.

Figure 3: Tea Sector at a glance

Tea Sector – SWOT

<p><u>Strengths</u></p> <ul style="list-style-type: none"> - Suitable soil & climate (western half of Rwanda) for tea production - All-year production - Recognised and stable quality - Consistent good prices in world market - Cost competitive 	<p><u>Weaknesses</u></p> <ul style="list-style-type: none"> - Small producer on world market - Land-locked, dependence on neighbouring countries and infrastructure for market access - High dependence on Mombasa tea auction - Lack of “cooperative” experience and management skills
<p><u>Opportunities</u></p> <ul style="list-style-type: none"> - Large areas of land available for tea garden expansion - Develop direct customer base for quality teas - Potential for organic and special teas with increased value-added 	<p><u>Threats</u></p> <ul style="list-style-type: none"> - Shortage of labour in some areas - (Longer-term) transport costs to market - Competition from Kenya and Uganda

Source: NAEB 2017.

2.2.3 Evolution of tea farmer’s cooperatives in Rwanda

Like many other African Countries, cooperatives were first introduced in Rwanda by the Belgians in the colonial period as instruments for driving the agenda of the government’s socio-economic goals (Mukarugwiza, 2010).

In the agricultural sector, African cooperatives were strictly managed by the colonial administration to the point of setting the prices cooperatives could pay their members for their produce, which was lower than what private European entrepreneurs paid (Wanyama, 2009). At the time of independence in 1962, these cooperatives were mainly involved in social activities (Mutual assistance, offering insurance for health hazards and life, and so on). After the independence, the GoR used these cooperatives as mechanisms for implementing policies and development plans, thus becoming a tool for political control (MINICOM, 2006).

Farmer’s decision to participate in extension of tea farming through cooperative depends on many factors. Among them are farmer’s characteristics, elements in contracts offered to farmer’s and location factors. Characteristics of farmers may be general (age, gender, education) or specific to the households (family size). contractual elements include trust, expectation regarding the price, access to credit and other inputs etc. It is important to note that membership has also an

indirect effect to decision making through the access and use of production factors and transaction costs.

Production factors includes the size of their tea plantation and access to inputs such as labour, fertilizes etc.

There are different forms of tea farmer organizations functioning in Rwanda. Recent statistics show that there are 13 established tea farmer organizations presently in active operations. The total membership of these organizations is 30,334. These organizations command a total land area of 8,600 ha.

The first cooperative was formed in 1964 in Rushaki-Bungwe and former Byumba district (Actual District of Gicumbi) in the Northern Province. It has been named Coopthe Mulindi with 1 000 members. This cooperative was set up initially to supply the scared labour for the estate and later with development of smallholder tea it was reorganized to supply green leaf to Mulindi factory. Coopthe Mulindi has been registered in 1996. Though it was initially supported by OCIR-Thé, it is self-managing since 1997. The members have 867 ha of tea area.

The First most recent tea smallholder organizations are Cothenya in Nyaruguru (Former Nyakizu district) in Southern province supplying green leaf to Mata factor. It has 2 ,563 members with a land area of 786 ha. The second recent smallholder organization is ATP in Kanama-Rubavu district in Western province which supplies green leaf to Pfunda factory. It has a membership of 1 580 with a total farming area of 361 ha. (NAEB, 2013)

Among other farmers' organization includes KATECOGRO which is subject to the present research. It was born in 2009 and located in Karongi District in Western Province with 368 members and 1603 ha of tea area.

2.2.4 Rwanda's Tea Policy

To achieve tea export targets, the Rwandan government is carrying out the tea action plan with a budget of \$41 million over four years, beginning from 2009. Within the action plan, more than 60% of the budged is used for construction of infrastructure such as factory rehabilitation and road improvement. Other major activities include expansion of area planted with tea, seedling distribution, and extension training for tea quality and quantity improvement. In addition, environmental improvements, as well as marketing for domestic blends, are planned as an approach to increase value-added production. To implement the action plan, three working

groups are set up for production/processing, marketing, and institution, consisting of government officials, factory directors, and representatives from donors.

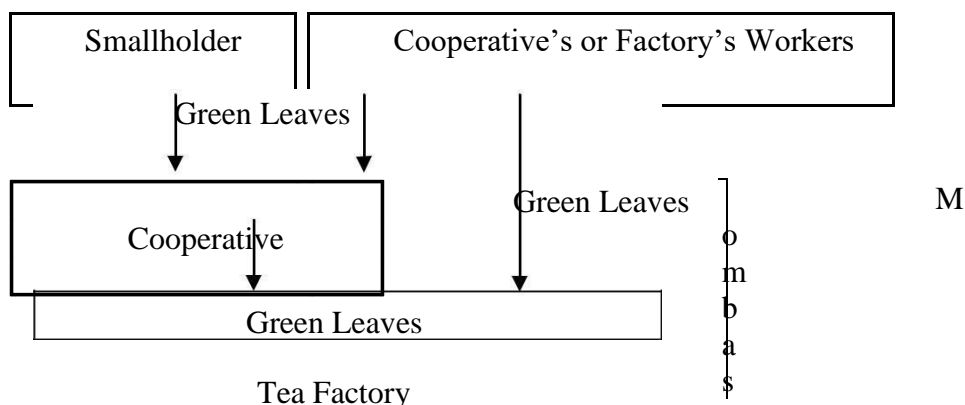
2.3 Stylized Facts on Value Chain analysis of tea farming production, distribution, consumption on nature and trends, earnings and exports.

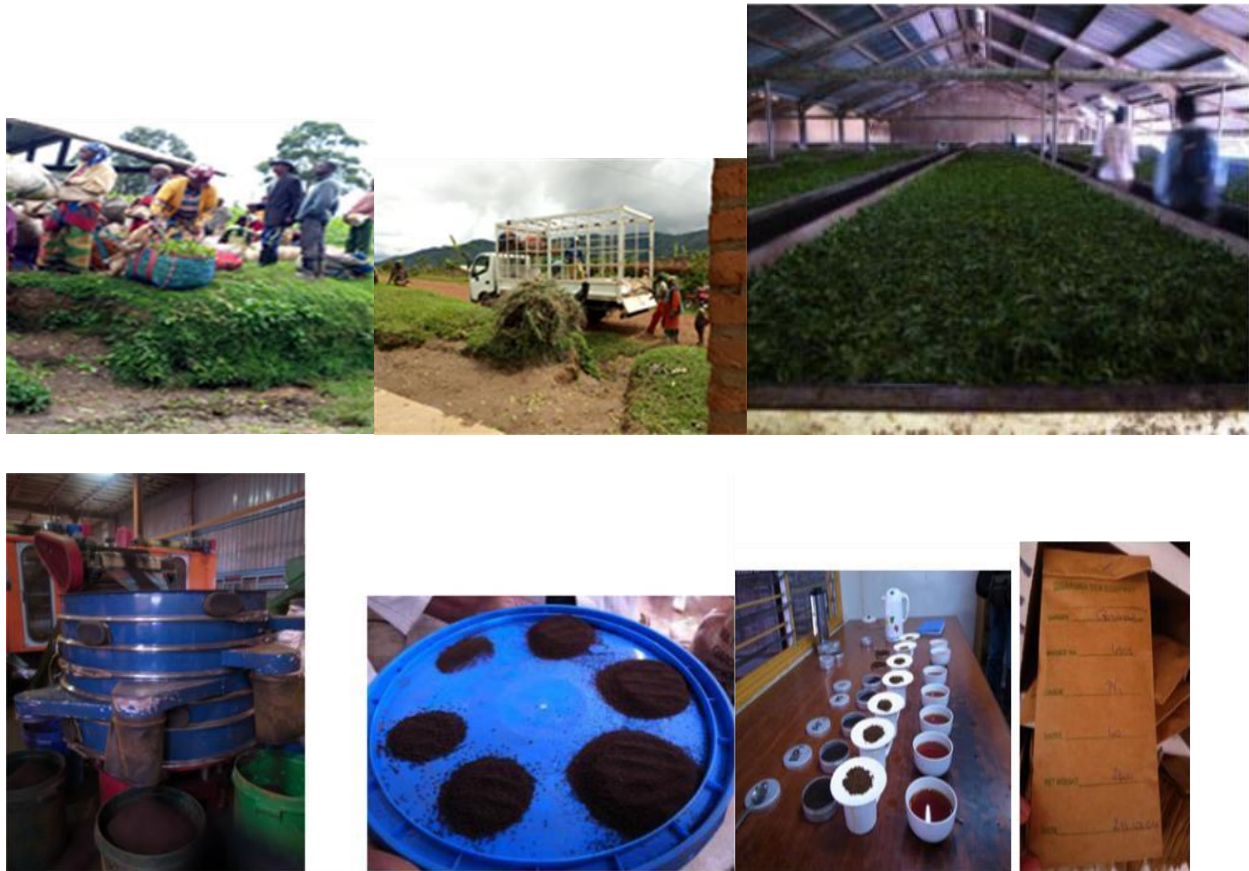
2.3.2 Tea Distribution System

In Rwanda, 70% of green leaf harvest is coordinated by cooperatives, and the remaining 30% is done on tea plantations owned by factories. As for tea cultivated by cooperatives, there are two types of ownership: tea plantations owned by the cooperative itself, and plantations owned by individual farmers who collectively form the tea cooperative.

The quality of tea produced deteriorates significantly if green leaves are not processed immediately following harvest. Consequently, tea farmers have no choice but to sell their harvest to the nearest tea factory. Thus, the distribution of tea can be said to be rather inflexible and fixed. Additionally, because it is not possible for individual farmers to sell tiny amounts of green leaf harvest to factories, they must sell their harvest through a cooperative. As a result, smallholder farmers are limited to one distribution channel – selling through a cooperative. The purchase price of green leaves is set by the government. Although review is conducted on a 6-month basis, the price is usually fixed. When export prices rise and the factory makes a profit after buying green leaves from the farmers, the cooperative would pay them a dividend.

Distribution Channels for Tea Leaves





2.3.3 Tea Export

Domestic consumption in Rwanda is less than 1% of the production and almost all tea is exported. The export value has been increasing since the mid-2000s owing to an increase in the auction price as well as in production volume. The major export destinations are UK, Pakistan, and Egypt. Together, these countries account for 77% of the total volume exported. The factories which are top at exporting are also the top producing factories, namely: Rubaya, Sorwathe, and Mulindi.

They account for 37% of the national export value.

The highest priced tea for export is from Gisovu. Its export price has always been more than 20% higher than Rwanda's average export price. Nyabihu and Kitabi follow, with their exported tea priced at 10~15% higher price than the national average. They are located on hillsides, and

the high export price reflects the high quality of their tea. On the other hand, as the quality of Mulindi and Sorwathe produced on improved marshland is inferior, their export price is approximately

10% lower than the national average.

Just as for coffee export, overseas buyers consider poor contract compliance by the Rwandan tea exporters to be a major issue. Rwandan exporters' reliability and their slow shipping schedule were particularly criticized. These remain the major challenges in export transactions.

2.3.4 Value added and direct sale

70% of tea produced in Rwanda goes to the Mombasa auction, and the remaining 30% is directly exported to overseas importers. Because the auction price fluctuates in accordance to the international supply and demand, and since a global oversupply of black tea is expected, the Rwandan government hopes to learn from Sri Lanka's success and thus is aiming for domestically blended and packaged tea to reach 3% of total export volume by 2012. However, because it takes time to expand the production of blended tea, the government will first encourage production of value-added tea such as leaf tea and green tea manufactured by the orthodox process, aiming to increase value-added tea to 50%.

However, the combination of low awareness of Rwanda as a tea production country, and overseas buyers' low opinions of the Rwandan brand power, means that marketing and promotional support are necessary if Rwanda is to sell leaf tea abroad. Moreover, the government intends to expand the domestic consumption by increasing the production and sales of tea bags domestically. In fact, according to NAEB Secretary General Mr. Kanyankole, domestic manufacturing of tea bags has already begun.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

The review of literature in this work collected ideas and opinions of different researchers and who did the research on value chain analysis and those related to tea production.

This chapter discusses the key concepts of the topic. Most subjects discussed among this research Value chain analysis, Tea sector, Cooperatives and the various Stages of value chain from producers to the distribution to consumer sectors and the contribution of different stakeholders on tea production.

3.2 Review of Conceptual Issues

3.2.1 Concept of Smallholder Farmer

The concept of smallholder farmers arises as a classification based on; the size of the landholding; the purpose of production which may be own home consumption or market and income levels of the farmer. Machethe *et al.* (2004) argues that limited purchased input and use of actual technologies often associated with small-scale and subsistence farming in resource-poor conditions are major characteristics of smallholder farmer. Nevertheless, smallholder farmers operate in different conditions which vary across geographic regions; whether a farmer is urban or rural and also whether in a developed or a developing country.

Others describe smallholder farmers as those depending on household members for most of the labor or those with a subsistence orientation, where the primary aim of the farm is to produce the bulk of the household's consumption of staple foods (Hazell *et al.*, 2007).

Though, there is no defined explicit characteristics of smallholder farmer in Rwanda, different statistics such as land scarcity, little use of input, purpose of production whether business or own consumption, rural population fall in category of smallholder farmers.

According to a study carried out by Ministry of Agriculture (MINAGRI) on production systems in 1991, the small farmer is defined as a farmer with a small piece of land, his homestead, which cannot produce enough food for the family's subsistence. He has to engage in other activities (trader, hauling, crafts etc...) or sell his labour to someone else to complement his farm output.

Dixon *et al.* (2003) stated that smallholder farmers are the backbone of African agriculture. The author notes that majority of the population in Sub-Saharan Africa are considered as smallholder farmers and reside in the rural areas.

3.2.2 Value Chain Analysis

According to Kaplinsky and Morris (2001), the value chain “describes the full range of activities which are required to bring a product or service from conception, through the different phases of production, delivery to final consumers, and final disposal after use”

Pearce and Robinson (2007) explained value chain as “a perspective in which business is seen as a chain of activities that transforms inputs into outputs that customer’s value”. Thus, identifying each activity involved in the chain and the cost attached to each activity are vital steps in value chain analysis.

Agro-value chains encompass activities that take place at various levels (farm, rural and urban), starting with input supply and continuing through product handling, processing, distribution and recycling. As products move successively through the various stages, transactions take place between multiple chain actors, money and information are exchanged and value is progressively added (Da Silva and De Suza Filho, 2007).

A number of stakeholders exist within a value chain and a few actors are involved at each stage of the value chain, which are found within complex inter-linkages (Stamm, 2004). Each stakeholder within the value chain contributes a significance to the end product.

Below is an extended chain analysis which provides a more all-inclusive understanding of the socio-economic environment most actors operate in.

According to Kaplinsky and Morris (2001), there are some potential points of entry including: retailers, independent buyers, key producers, sub suppliers, commodity producers, agricultural

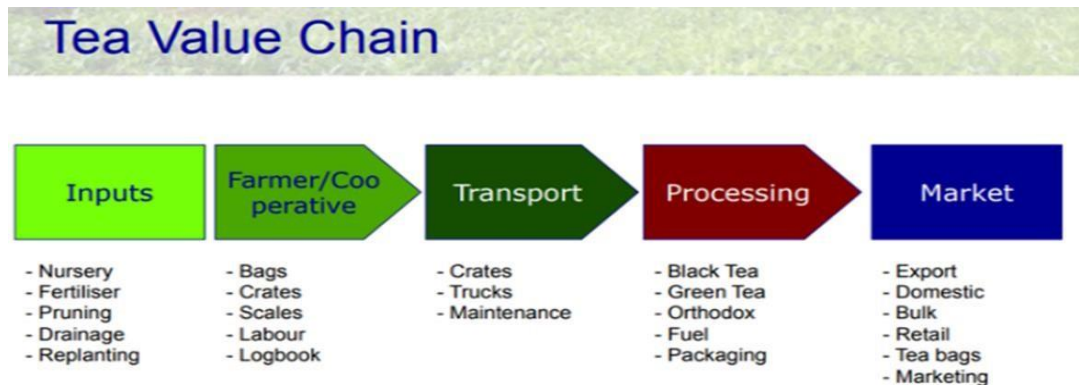
producers, small farms and firms, informal economy producers, traders and other groups. Accordingly, the point of entry will define which links and which activities in the chain are to be the subjects of special inquiry.

Value chain analysis is the process of breaking a chain into its constituent parts in order to better understand its structure and functioning. The analysis consists of identifying chain actors at each stage and discerning their functions and relationships; determining the chain governance, or leadership, to facilitate chain formation and strengthening; and identifying value adding activities in the chain and assigning costs and added value to each of those activities. The flows of goods, information and finance through the various stages of the chain are evaluated in order to detect problems or identify opportunities to improve the contribution of specific actors and the overall performance of the chain.

In reality, value chains tend to be more complex, to involve numerous interlinked activities and industries with multiple types of firms operating in different regions of one country or in different countries around the globe. For instance, agro-food value chains encompass activities that take place at the farm as well as in rural settlements and urban areas. They require input supplies (seeds, fertilizers, pesticides, etc.), agricultural machinery, irrigation equipment and manufacturing facilities, and continue with handling, storage, processing, and packaging and distribution activities. Other elements, such as power generation, logistics, etc., which form the chain environment, are also important factors affecting the performance of value chains.

The diagram below shows a simple tea value chain in Rwanda showing the various stages across the chain

Figure 1 Simple Tea Value Chain in Rwanda



3.2.3 Value Chain Actors

According to GTZ (2007), the term value chain actor summarizes all individuals, enterprises and public agencies related to a value chain, in particular the value chain operators, providers of operational services and the providers of support services. In a wider sense, certain government agencies at the macro level can also be seen as value chain actors if they perform crucial functions in the business environment of the chain.

According to Getnet (2009) value chain actors are those involved in supplying inputs, producing, marketing, and consuming agricultural products. They can be those that directly involved in the value chain (rural and urban farmers, cooperatives, processors, traders, retailers, cafes and consumers) or indirect actors who provide financial or non-financial support services, such as credit agencies, business service and government, researchers and extension agents.

3.2.4 Cooperative-based approach to Value Chain Development and Smallholders' farmers

Cooperatives are economic entities depending on the relevant legal system, which may combine commercial and not-for-profit structures, and play a major role in the economic and rural development of many countries around the world. In certain geographical areas and for particular commodities, agricultural cooperatives gather very large numbers of producers and manage most of the production. They take several forms depending on their membership, object and activities. Cooperatives may vary considerably in size as well as in technical and economic capacities.

An agricultural cooperative performs different tasks. It may market the production of its members or even organize the production process itself. The cooperatives sometimes provide services (such as planning, technical assistance, access to equipment, supply of inputs and quality control).

Cooperatives are regulated by a special legal regime, and particular rules are applied to those engaged in agriculture or the production of specific commodities (UNIDROIT, 2015). Cooperatives serve dualistic goals of organizing smallholders into larger, productive entities and facilitation the formation of the state. In many situations cooperatives were utilized as

instruments of control by governments, through which national interests had dominance over individuals.

Cooperatives is one of the best known type of producer organization is the cooperative, an ‘autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically-controlled enterprise’ (ICA, 2010).

Although modified to adjust to different legal and local circumstances all cooperatives are built on generic principles (Williams, 2007). The purpose of a cooperative is to provide services to its members with regard to inputs, outputs and marketing. As members do pay contribution they also own the cooperative (Van Dijk and Klep, 2005). Economic benefits are distributed according to the members’ level of economic activity in the cooperative not according to his capital equity (IFAD, 2007).

Cooperatives have difficulties in raising investment capital, as members have equal ownership and voting rights, there is little motivation to invest in the cooperative. Furthermore, cooperatives establish a lot of rules and regulations which can make them inflexible (Oxfam, 2007).

In the 1970s, many workers were granted ownership of land by the tea factories, and while they currently manage and represent the cooperative, plucking and pruning is carried out by hired workers. Thus, the area of the tea plantation as well as the number of members in this type of cooperative are fixed. Every year, profit is shared between the members. As for the cooperatives that are formed by a collection of individual tea plantation owners, tea cultivation activities such as plucking and pruning are conducted by individual plantation owners themselves; it is only the selling of green leaves which they conduct as a group. Thus, for this type of cooperative, it is possible to have new members.

3.2.4 Tea Productivity

The term ‘productivity’ means different things to different persons. The definition of productivity is complex and this is because it is both a technical and managerial concept. Hence, discussing productivity at all levels is common because of the direct relationship between productivity and the standard of living of a people.

In the OECD (Organization for Economic Co-operation and Development), Productivity is commonly defined as a ratio of a volume measure of output to a volume measure of input use.

While there is no disagreement on this general notion, a look at the productivity literature and its various applications reveals very quickly that there is neither a unique purpose for, nor a single measure of, productivity.

Tea productivity is a measure of the ratio of input that is land, labour, capital and management, and the output that is the consumable tea. Thus translating to kilograms made tea per hectare. Tea is an industrial crop among other crops like coffee, horticulture, rice, cassava, etc., which contribute to more than 50% of agricultural exports in Rwanda.

The tea industry will often refer to the output of the tea processing which is the made tea and the area the tea bushes are planted.

Crop production can be measured from crop yield. Fermount and Benson (2011) define crop yield as; $\text{Crop yield} = (\text{amount of harvested product}) / (\text{crop area})$

Crop yield is normally expressed as kilograms (Kg) or metric tons (t) of product per hectare (ha). As a result, the estimation of crop yield involves both estimation of the crop area and estimation of the quantity of product obtained from that area

According to Rwanda Cooperative Agency (2013), a cooperative enables member to organize for collection, storage, processing and marketing of the produce or products. The produce may be from the farm (e.g. milk, livestock, tea, maize, coffee, fish etc.) and products may be from the factory or handwork (cheese, baskets, etc.).

The United States Department of Agriculture (1990) stated that Cooperatives increase farm income in a number of ways in which include:

- Raising the general price level for products marketed or lowering the level for the supplies purchased;
- Reducing per unit handling or processing costs by assembling large volumes;
- Distributing to farmers any net saving made in handling, processing and selling operations;
- Upgrading the quality of suppliers or farm products handled and □ Developing new markets for products.

3.2.5 The concept of tea quality and its grades in Tea farming

According to Li Jie (2015), the tea men in the ancient time not only should know the etiquette of preparing tea to entertain guests, but also should be good at tea planting and processing. Good tea should not only be collected in the right time, but also be processed with proper methods.

In Rwanda, tea has gained enormous global acceptability because of its quality. The following factors contribute to its quality. Rwandan climate, abundant rainfall, acidic soils of pH 4.5 to 5.5, due to the high-elevated grounds where Rwanda tea is grown, its strength, bright colour, flavour and consistency in manufacturing, its renowned all over the world as a superior beverage, nature has endowed Rwanda with the best ecological conditions, making Rwanda Tea unique and consistent in quality, sufficient and willing labour that produce quality tea, a good altitude of 1800m above sea level, over 72% of the cultivated area (9,071 ha) is situated in the high mountain areas.

3.2.6 Factors affecting smallholders' farmers participating in Agriculture extension

The Rwandan agriculture sub-sectors have high but unrealized potential for the value addition. This is due to lack of access to credit facilities, poor rural infrastructure and weak land title.

Agriculture has traditionally been seen as a risk investment by banks, rural infrastructure is poor, due to in availability of adequate energy and water resources, and this is that processing facilities often run below capacity. Besides that, poor qualities of roads; this raises transport costs and waste time to the market. (Damien Ntawiyanga, 2016)

The agriculture sector is failing to meet the demands of rapidly growing population. It is also at the heart of one of the countries' serious environment problems: land degradation, which is characterized by soil erosion and declining soil fertility and is driven by unsustainable land use practices, namely deforestation, over cultivating including steep slopes without appropriate soil conservation measures and overgrazing. (MINAGRI, 2009)

Individual smallholders in developing countries face numerous constraints in the marketing of their products resulting from high transaction costs in the market chain. They have limited access

to physical and financial resources. This restricts their opportunities to increase their scale of production in order to reduce transaction costs and to invest in efficiency increasing and value adding technologies (Nkurunziza I., 2014).

3.2.7 Advantages of cooperatives in agriculture extension

Cooperatives offer opportunities that smallholders could not achieve individually. In fact the importance of agricultural cooperatives in improving the lives of millions of smallholder farmers and their families cannot be overstated, the three Rome-based United Nations (UN) agencies said. Empowered by being a part of a larger group, smallholder farmers can negotiate better terms in contract farming and lower prices for agricultural inputs like seeds, fertilizer and equipment. In addition, cooperatives offer prospects that smallholder farmers would not be able to achieve individually such as helping them to secure land rights and better market opportunities.

Ranging from small-scale to multi-million dollar businesses across the globe, cooperatives operate in all sectors of the economy, count over 800 million members and provide 100 million jobs worldwide, 20 per cent more than multinational enterprises. In 2008, the largest 300 cooperatives in the world had an aggregate turnover of US\$1.1 trillion, comparable to the gross domestic product (GDP) of many large countries.

Agricultural cooperatives play an important role in supporting men and women small agricultural producers and marginalized groups by creating sustainable rural employment. Producer cooperatives offer men and women smallholder's market opportunities, and provide them with services such as better training in natural resource management, and better access to information, technologies, innovations and extension services, (FAO ,2005)

3.2.8 Constraints of inputs

In a research conducted by MINAGRI,2011, low productivity is mainly attributed to the low use of inputs. In a vicious cycle, the low productivity continues to prevent farmers from using the inputs, as many farmers barely produce sufficient food to feed their family with no surplus, and therefore have no income with which to purchase yield enhancing inputs.

Green revolution in Asia was intervened by the facilitation of modern inputs such as improved seeds, fertilizers and pesticides to farmers. With the introduction and adoption of these improved inputs, the farmers were able to substantially increase their crop production levels by several

folds. The increased yields provided food security and stability which in turn triggered an array of social and economic transformation.

The five main causes that lead to low use of agriculture input include the country's geographical structure, insufficient inputs stocks, affordability, farmer's knowledge and skills and incentives.

As in the case of geographical structure more than 39% of the cultivated land is on slop which in turn occupies over 25% of available land in Rwanda. This not only increase the risk of soil erosion but also limits the use of tractors in agricultural activities, for example in 2003, Kenya had 50 times more than tractors per hector.

Another issue is insufficient national stocks; Rwanda has for long time lacked indigenou sources of fertilizers and pesticides.

Affordability is a problem because of lack of domestic sources of fertilizers and high cost of pesticides; while most farmers are poor and lack of access to credits to finance inputs.

Farmers 'knowledge and skills are limited though a number of farmers understand the fact that better use of inputs could improve the yield (World Bank, 2007).

3.2.8 Constraints related to markets

According to Birasa Nyamulinda et al 2011, stated that the two factors are underlying the low commercialization of agriculture products are inadequate of business skills and entrepreneurial ethic and quality produce. Lack of business skills and entrepreneurship is also a problem since; there is very limited agribusiness entrepreneurship in Rwanda. Key underlying factors include among others lack of detailed business plan, lack of understanding by banks, lack of information about opportunities, reluctance to use banking services.

Low quality produce is an issue of concern, with most production intended for own-family consumption; crop farmers have weak incentives to increase quality.

Lack of sustainable market and post-harvest management remained top challenges for the farmers. Bad roads, long distance to Mombasa and adverse weather are also factors that affect tea productivity.

In addition, quality standard and process, which are key determination of competitiveness on international market, may be poorly understood by many farmers, (PSF 2008)

3.2.9 The challenges in tea production sector in Rwanda

Tea has always been an important commodity for the Rwandan economy but after the Genocide in 1994, smallholder tea farmers were seriously affected by low prices and lack of incentives and resources to restore their export crops.

Among other challenges the Rwandan tea sector is facing are: limited access to fertilizers for small tea growers as they are very expensive for them, limited industrial skills and limited processing capacity which affects both quantity and quality of the green leaves produced.

The biggest challenge is limited basic infrastructure like roads which increase the cost of production and has negative effects on the income of famers. Low prices for the green leaves have a negative impact on the way smallholder growers handle the pruning and harvesting of their tea plantation.

It is important to get the leaves to the factory for processing as soon as possible, because the fresh leaves deteriorate very quickly if not processed within hours of picking. In remote tea-growing areas, this can be a hindrance to creating a great final product and does not allows producers to get the full value of their tea with selling to middlemen for transport to a factory through the cooperatives. Other constraints stem from the lack of up-to-date research, which affects agronomic practices of traditional crops, (IPAR, 2009)

3.3 Review of Empirical Issues

Ponte (2002) also used a value chain analysis to examine the impact of deregulation, new consumption patterns and evolving corporate strategies in the global coffee chain on the coffee exporting countries in the developing world. The study concluded that the coffee chain was increasingly becoming buyer-driven and the coffee farmers and the producing countries facing a crisis relating to changes in the governance structure and the institutional framework of the coffee value chain. A value chain approach was used in Kenya to identify strengths and weaknesses of the cotton textile supply chain and formulate a strategy to improve the cotton-

apparel sub-sector (RATES, 2003). The study identified lack of coordination among the actors in the cotton industry in Kenya as one of the major factors limiting the competitiveness of the cotton industry.

Institutional innovations and harmonization of trade policies were proposed to solve the problems of institutional and policy failure.

Dereje (2007) used value chain approach to study the competitiveness of Ethiopian coffee in the international market. The study indicates that Ethiopian farmers have low level of education, large family size with small farmland and get only 3% of the retail price in the German market. Thus, policy intervention was suggested to improve farmers' performance. Further, a value chain study conducted on mango by Dendena *et al.*, (2009) indicated that the subsector is facing some challenges. Among others: highly disorganized and fragmented industry with weak value chain linkages, long and inefficient supply chains, inadequate information flows and lack of appropriate production are explained as the major problems. Moreover, a study conducted by Biruhalem (2010) on rice value chain revealed that there were multiple public and non-public actors involved along the rice value chain, upstream from input supply to downstream consumers, playing different roles. However, there is no mechanism to coordinate multiple actors together for effective and efficient functioning of the value chain. There is public sector actors' domination with limited private sector involvement in the value chain. A long tradition of limited responsiveness, topdown, hierarchical, non-participatory/ exclusiveness and less risk taking type of organizational culture, habits and practices lead to have weak interaction, knowledge and information sharing with the various actors along the value chain. As to the linkage, weak and informal market linkage between chain actors characterizes the rice value chain. Lack of post-harvest processing technology, limited access to supply of inputs, severe termite attack, non-availability of welldeveloped rice market, high labor demand for crop management, absence of responsible body who works on actor's interaction were some of the challenges identified for innovation at various stages of rice value chain. The study recommended partnership to be created among value chain actors to create an enabling environment for sharing information, knowledge and solve existing problems and as extension service should be strengthened to solve the existing problems and to increase competitive advantage of the rice production.

Mebrat 2014 work in tomato value chain analysis shows that cooperative is predominantly helpful in terms of agricultural inputs, and promotes use of quality/improved seeds increase the quantity of the product to be supplied to wholesalers.

According to Kralawi Sita et al (2016), the impact of the huge demand of global tea consumption are not yet to be fully felt directly by the people of the tea smallholders in Indonesia as the main actors and producers of tea which owns a 46% of the total area of tea plantation in Indonesia. The problem lies on the tea marketing aspect in addition to limited access to market information, the mastery of technology, production inputs and capital. In generally tea smallholders still sell in the form of green leaf (GL) where the marketing chain are often not distributed equitably and shoots the price the farmer is still very low, that caused the low income of tea smallholders. This condition makes it increasingly weak and fragile of the tea smallholders bargaining position in the tea supply chain.

Baffes (2004), conducted a study to examine the performance of Tanzanian tea sector and identifies policy-driven impediments, especially for the smallholder sector. It looks at the cause of its poor performance, evaluating policy reform initiatives and exploring alternatives in the context of the world tea market. In Tanzania, commercial production began in 1926 at Usambaras and Njombe. Tea industry there provided employment of more than 50,000 families of the country. Tanzanian tea is grown under two systems- by smallholders, on plots averaging less than a hectare and on large estates, which often exceed 1,000 hectares. The studies cited some constrains of tea industry which affect production efficiency. The constrains being low prices and late payments by the tea authority, old and inefficient processing factories, inadequate use of inputs, rundown transport equipment, poorly maintained feeder roads and low yields. Other constraints are complex taxation system, high rates of taxation, import and export bans (increase the burden on tea sector). Tanzania took initiative to revamp production after deterioration of two nationalized estates. The first step was privatization and rehabilitation of the two mentioned tea authority estates, which took place from 1988 to 1993. Rehabilitating the east Usambaras, tea estates of separating regulation and small holder promotion or privatizing tea authority owned factories or reviving research, restructuring the local tea blending and packing industry.

The age of farming household heads was observed to have an inverse relationship with productivity of farmers in studies from Adeoti (2002), Ajibefun and Abdulkari (1999, 2004), Ajibefun and Daramola (1999), Ajibefun et al. (2002, 2006), Coelli and Battersse (1996), Idjesa (2007), and Ogundele (2003). All of these studies were carried out in the humid forest, dry savannah, and moist savannah regions of Nigeria, except for the Coelli and Battersse study, which was carried out in India. This was understandable since it is expected that as a farming household head becomes older his or her productivity will decline. Years of farming experience is another factor that enhances productivity among farming households. Years of farming experience in Nigeria increases as age of the farmer increases. It is within this context that years of farming experience and age of farmers were discussed together in this section of the report. Age is also positively correlated with productivity; older farmers have also been observed to have higher productivity than younger farmers. For example, Ajani (2000), Ajibefun and Abdulkadri (1999, 2004), Ajibefun et al (2002, 2006), and Idjesa (2007) observed that productivity in the humid forest and moist savannah agro-ecological zones of Nigeria was positively associated with more experience in farming.

Land Ownership Closely related to the factor of residency status is the land ownership status of farming households. Adekanye (1988), Ajani (2000), Akinseinde (2006), Babalola (1988), and Olawoye (1988) showed that farmers that owned parcels of land on which they farmed were more productive than non-landowning farming households. This was understandable since farmers that owned land on which they farm were ready to make huge investments on such land through the adoption of new technological packages which enhance productivity levels. Adekanye (1988) provided empirical evidence showing that women had a lower level of productivity than men because they had far less access to land and other productive inputs. Education is one of the key assets needed to foster productivity in any profession. Findings of Adetiba (2005), Adeoti (2002), Ajani (2000), Ajibefun and Abdulkadri (1999, 2004), Ajibefun et al. (2002, 2006), Amaza (2000), Bravo-Ureta and Rieger (1991), Idjesa (2007), Idumah (2006), and Kehinde (2005) confirmed that education was key to enhanced productivity among farming households in the humid forest, dry savannah and moist savannah agro-ecological zones of Nigeria and in New England. This was likely because good education propels heads of farming

households to adopt new innovations and technologies that are vital to enhancing farm productivity.

Farm Size

The effect of farm size on farm productivity is inconclusive. Lau and Yotopolus (1971) using the profit function equation found that small farms attained higher productivity levels than larger farms in India. Sahidu (1974) adopted the Lau-Yotopolous model to sample India wheat farms and came up with a contrary conclusion showing large and small farms exhibiting equal levels of 9 productivities. Khau and Maki (1979) using the Lau-Yotopoulous model in Pakistan observed, however, that large farms were more efficient than small farms. Using a normalized profit function and stochastic frontier function, Ajibefun et al (2002) and Mbata (1988) showed that large farm size enhanced productivity among farmers in the dry savannah and humid forest agro-ecological zones of Nigeria.

Access to Fertilizer, Agro-Chemicals and Improved Seeds/Planting Access to fertilizer, agrochemicals, and improved seeds/planting materials has been proven as an important driver of agricultural production and productivity among farmers in Sub-Saharan African. Using stochastic frontier model, Mbata (1988) and Ogundele and Okoruwa (2006) observed that the use of fertilizer increased agricultural productivity of crop farming in the dry savannah and humid forest agroecological zones of Nigeria. Nkonya et al (2005) also alluded to the positive impact of fertilizer. The use of herbicides according to Mbata (1988), Ogundele and Okoruwa (2006) had a positive correlation with technical efficiency or productivity of farmers. However, Tella (2006), using the Timmer and Kopp indices, revealed that the use of chemicals contributed to productivity negatively if not properly utilized. The use of improved seeds/planting materials on agricultural productivity were also documented in studies of Adewuyi (2002), Idjesa (2007), Ogundele (2003), Ogundele and Okoruwa (2006), and Tella (2006) in the humid forest, moist savannah and dry savannah agro-ecological zones of Nigeria. Findings of Idjesa (2007), Ogundele (2003), and Ogundele and Okoruwa (2006) using the stochastic frontier model revealed that the use of improved seed had a positive impact on the technical efficiencies of crop farmers. This finding was consistent with Nkonya et al (2005), who also showed that purchased seeds had a positive impact on a farmer's productivity in Uganda. Tella (2006), however, showed that improved planting materials when not utilized in the recommended proportion could reduce

a farmer's productivity. However, the positive contribution to efficiency of farmers having access to improved planting materials could be reversed if the costs were relatively high and out of the reach of farmers. Adewuyi (2002) using the linear programming and Tobit models observed that the high cost and inadequate supply of input (plant material inclusive) negatively affected productivity.

Access to Roads and Transport

Access to roads and transport is also important to improving productivity. According to Adewuyi (2002) poor roads negatively affected farming households' productivity. Using a related factor, Okike (2000) used the stochastic frontier model to show that the high cost of transportation reduced productivity of livestock farmers in the dry savannah and humid forest agro-ecological zones.

Access to Extension Services

Access to extension services has been identified as key to farm productivity in a series of studies. Obwona (2000), using the translog production function, demonstrated that access to extension services by tobacco farmers improved their productivity in Uganda. In contrast, BravoUreta and Rieger (1991) using the stochastic efficiency decomposition model based on Kopp and Diewert's deterministic methodology, concluded that extension services did not markedly affect productivity of farmers in New England. However, the studies of Adewuyi (2002), Ajani (2000), Amaza (2000) and Awotide (2004) all reported that extension services enhanced farmers' productivity in the humid forest and dry savannah agro-ecological zones of Nigeria.

3.4 Review of Methodological Issues

A research on the analysis from value chain approach Nguyen Viet khoi (2016), Over the past two decades, there has been an increasing trend in analyzing international trade from the perspective of "value chains", particularly in agro industry. Vietnam is also known as one of the most ancient home of tea, the tea is a high-value product that Vietnam is already exporting to many other countries and territories worldwide. Having all these importance, there are still

challenges facing the Vietnam tea industry including high fragmentation, small-scale operation and weak linkage among participants in the tea manufacturing process. The paper investigated the roles and benefits of participants in this single crop through value chain analysis to help them upgrade their position in the tea chain.

In a research on Concepts, applications, and extensions of value chain analysis to livestock systems in developing countries (Karl M. 2017)

The analysis of value chains has augmented our knowledge on the complexities, inter-linkages, distributional benefits, and institutional arrangements of production and marketing channels in developing countries. However, the analysis remains relatively qualitative and case-specific, with limited ability to rank or assess the impact of alternative interventions or to analyze sufficiently the complex market dynamics and feedbacks present in livestock systems. The research offered insights on ways to improve the analytical rigor of the value chain methodology that combines both qualitative and quantitative approaches.

In the Analysis and Improvement of a Tea Value Chain (Korrakot Y. Tippayawong 2017), the researcher aimed at improving the performance of a tea company using value chain analysis. The company value chain activities were investigated. Analysis of current production practice was analyzed using a failure mode & effect analysis (FMEA) technique to perform a risk assessment within the manufacturing process weaknesses. Linear programming method, based on fast moving product theory and the Lingo program was used as a tool to calculate a suitable model. Activity in warehouse storage was selected to improve and accommodate future product expansion and ordering. This methodological discussion tried to synthesize the methods of enquiry used in a diverse number of studies, not all of which explicitly focus on value chain research. Each of these studies reflected the contingent circumstances of the research investigation, mirroring the resources available to the researchers, their skills, and probably most critically, the quality of their access to the subjects of the research.

UNIIDO 2009, mapping a value chain facilitates a clear understanding of the sequence of activities and the key actors and relationships involved in the value chain. This exercise is carried out in qualitative and quantitative terms through graphs presenting the various actors of the chain, their linkages and all operations of the chain from pre-production (supply of inputs) to industrial processing and marketing. When dealing with value chains where benefits are sought for the poor and the marginalized, it is also important to give special consideration to poverty,

gender and environmental factors. The mapping diagrams were prepared through an iterative process which can be divided into two stages: First, an initial map is drawn which depicts the structure of the chain in logical clusters: the main actors and the activities carried out at the local level, their links to activities at other domestic or foreign locations, the supporting services and their interactions, the links to the final market, and some initial indications of size and importance. The second stage is quantifying the value chain, which involved adding detail to the basic maps drawn initially (structure and flow).

CHAPTER FOUR

METHODOLOGY

4.1 Sampling Design

A simple random sampling method will be adopted. The Karongi district was selected as the focal point of the research. The town is a characteristic of the agricultural tea farming sector in Rwanda where farming is predominantly 80% KATECOGRO, 2015.

The map below shows the sectors where the research was carried out.



4.3 Data requirement and Sources

Data was collected through a mixture of key informant interviews, Stakeholder meetings (one before and one after fieldwork, to share preface findings), field visits meetings with district government officers (National Agricultural Export Board), cooperative leaders, smallholder tea growers, tea factory managers.

The research will also include secondary data through key policy documents, reports and other data from government departments MINAGRI (Ministry of Agriculture and Animal Resources), IFAD, and other organizations.

The quantitative approach was used to obtain quantifiable data and produce statistics. The qualitative approach was typically used to collect information that related to judgment, perception, and priorities about an issue.

4.4 Population and Sample size

There are 2,860 tea farmers registered with the Karongi Tea cooperative growers (KATECOGRO) in the Karongi District. The sample size is calculated by

$$\frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p(1-p)}{e^2 N}\right)}$$

Sample Size =

Population Size = N

Margin of error = e

Z-score = z

With a 95% (1.96) confidence interval and a Margin of error of 5%,

A total of 339 tea farmers would be sampled out to carry out the structured questionnaire.

4.5 Validity and Reliability of Research Instrument

In order to test the validity of the evaluation tool which was used for this study, the researcher tested the questionnaire to 10 respondents. These respondents as well as their answers are not part of the study process and are only used for testing purposes.

After the questions were answered, respondents were asked for any suggestions or any necessary corrections to improve the instrument further. After which the content of the questionnaire based on the assessment and suggestions of the sample respondents were modified. Irrelevant questions have been removed and changed vague or difficult terminologies into simpler ones so as to make the survey more comprehensive for the selected respondents.

1. To identify the roles and interrelationships of primary actors in the value chain
2. To assess the factors that lead to low productivity of Tea
3. To evaluate the impact of famers' organization (Cooperatives) on Crop Productivity

4.6 Method of Data Analysis (by Objectives)

4.6.1 Operationalization of variables

Objective	Measurement Scale	Type of Analysis	Tool of analysis
To identify the roles and interrelationships of primary actors in the value chain		Questionnaire and Key Informant Interview (KII)	Descriptive
To assess the factors that lead to low productivity of Tea	Ordinal ratio or interval	and Questionnaire, Key Informant Interview	Descriptive Mean standard deviation, frequency and percentage
To evaluate the impact of famers' organisation (Cooperatives) on Crop Productivity	Ordinal ratio or interval	and Questionnaire, Informant Interview, Publications	Descriptive Mean standard deviation, frequency and percentage

CHAPTER FIVE

RESULTS AND DISCUSSIONS

5.1 Introduction

This chapter presents the analysis and interpretation of the data in order to show whether the objectives are realized or not. First, the demographic characteristics of respondents are presented and analyses the factors affecting the productivity of tea and case study of the research. This was done by respondents giving their opinions about statements provided by showing the extent to which each of the given factors is influencing production.

5.2 Demographic characteristics of respondents

5.2.1 Gender of respondents

Gender of Respondents

Gender	Frequency	Percent
Male	182	60.1
Female	118	38.9
Total	300	100.0

According to the above table, the results from the survey on gender showed that females who are involved in tea farming were lower than male. The reason is that many females are more involved and committed to grow food crops which bring cash in short period.

However, farming women face constraints in decision making due to lack of farming knowledge, belief that women are subordinate to male counterparts, and illiteracy (Chayal *et al.* 2013).

Marital status

The marital status of the respondents is as below, analyzed to establish the spread of the different marital status.

.2.2 Marital status

Marital Status of the Respondents

Marital status	Frequency	Percent
Single	2	.7
Married	268	88.4
Divorced	1	.3
Widowed	29	9.6
Total	300	100.0

7% of the respondents were single, 88% married and 10% either widowed or divorced.

5.2.3 Level of Education

Educational Level of the Respondents

Level of Education	Frequency	Percent
No Formal Education	52	17.2
Primary School	211	69.6
Secondary School	32	10.6
University	5	1.0
Total	300	99.0

Majority of the respondent had primary education level and followed by those who had no formal education level. The farmers who had secondary and university education levels were found to present a small number in tea industry as tea growers.

This implies that farmers would find it more difficult to adopt new farming technologies geared at improving agricultural production. Aphunu and Otoikhian (2012) argue that education plays a key role in agriculture as it creates a positive mental attitude and behaviour, making it more likely that member will adopt modern farming creativity and innovations which boost agricultural productivity.

Improved education provides a chance to improve the performance of tea farmers, since educated people have a greater capacity for acquiring and implementing new knowledge gained through training.

5.2.4 Gender and Educational Level

Cross tabulation of Gender and Educational Level of the Respondents

		Educational Level				Total
		No Formal Education	Primary School	Secondary School	University	
Gender	Male	25	138	15	4	182
	Female	27	73	17	1	118
	Total	52	211	32	5	300

From the table above the male respondents are have more educational background than the female respondents.

In Africa, men are seen as superior to women. While women learn to cook and keep the home, the men are out making waves.

5.2.5 Age of Respondents

Age of Respondents

	N	Minimum	Maximum	Mean	Std. Deviation
Age	300	23.00	94.00	49.9333	13.26154

The oldest and youngest for the sample were 94 and 23 respectively. The average age was 49 years

.3 Research Objective 1

Value chain analysis is about understanding how activities and actors that are involved in bringing a product from production to consumption are linked. Mapping a value chain is a key

component within a VCA, as it can be very difficult to see the relevant interdependencies in a complex system or discuss systemic interventions, without mapping them first. Mapping a value chain with its various components, linkages and actors can among other things, simplify a structured discussion about the opportunities and constraints that producers and other actors face as well as what could be done to address them.

1. Role of Farmers

The smallholder farmers are very important in the value chain. The farmers are categorized into two sections; Tea Pluckers and Tea Growers. Women are majorly tea pluckers because the process is very sensitive and delicate to the tea production.

The Smallholder farmers are in charge of field maintenance (e.g. weeding, pruning), Fertilizer Application, Replanting, Plucking.

The determinant of a quality green leaf is primarily in the hands of the tea farmers

2. Role of the Cooperatives (Farmers Organization)

Due to the 1994 genocide the country was left without infrastructure and working institutions. However, the cooperatives quickly came back in the following years. The cooperative focus on input procurement, transporting leaves to the tea factory, The **interrelationship** between the Farmers and the Cooperatives

The farmers determine the yield while the cooperative determine the quality

Yield through

- I. Adequate fertilizing
- II. Regular plucking
- III. Pruning Maintenance IV. Replanting

Quality by

- I. Training Pluckers
- II. Motivation of Pluckers and Growers
- III. Providing adequate sacks or crates
- IV. Transporting to the Tea Factory

The cooperatives are representatives of the Farmers and serve as middlemen between the Farmers, Tea Factory, National Agricultural Export Board (NAEB) and the Export Market. The Cooperative is the Voice of the Farmers

3. The Role of the Tea Factory

The Factory is KEY in the production and processing of tea.

The factory determines what happens to the leaves collected by the Cooperative.

They coordinate leaf deliveries between the farmers and cooperatives.

Leaves are lost if they are not processed. Good quality leaves can be processed into bad tea.

Tea is processed into

- CTC (modern cut tea)
- Orthodox (traditional rolled tea)
- Green (unfermented tea)
- Organic (only possible from organic leaves)

Vast majority of Rwanda tea is sold through Mombasa auction:

Strength/Opportunity	Weakness/Threat
Rwanda tea is considered consistent good quality	Overland transport to Mombasa
Prices (for Rwanda tea) are relatively stable	Unpredictability of tea type in demand (CTC, Light, etc.)
Demand is stable	Rwanda is small player
	Rwanda tea is commodity instead of premium product

.4 Research Objective 2

To assess the factors affecting Tea Productivity

When the production of green leaves is at its peak. How do you harvest?

The result above shows that majority of the farmers harvest the green leaves with their families, some of the reasons that include insufficient income to hire casual labor and short staffed agronomist

How do you harvest green leaves?	Frequency	Percent
Family Alone	145	47.9
Support from cooperatives	28	9.2
Hiring Casual Labor	127	41.9
Total	300	99.0

from the cooperatives

Where do you sell green leaves?	Frequency	Percent
Cooperatives	178	58.7
Tea Factory	122	40.3
Total	300	99.0

From the Survey, green leaves from the farmers are given to either the Cooperative or the Tea Factory.

Karongi Tea Factory owns a tea plantation, therefore farmers around the area give their green leaves to the factory.

From what source do you receive seedlings?	Frequency	Percent
Cooperatives	300	99.0
Total	300	99.0

Seedlings are given to the Farmers by the Cooperatives. The cooperatives have nurseries through the help of IFAD and NAEB who have donated immensely to the Project Rural Income through Export.

What type of fertilizer do you use?	Frequency	Percent
Chemical Fertilizer	300	99.0
Total	300	99.0

The Tea farmers' use 100% Chemical fertilizers. The global market is fiercely competitive. In a recent study, the use of fertilizers with Nitrogen Oxide (NO₃) increases the salinity nature of the soil. Every tea farm needs organic fertilizer application to be productive.

Was there any natural hazard(s) that affected your yield in the last season?	Frequency	Percent
Yes	64	21.1
No	236	77.9
Total	300	99.0

It was observed that only tea plantations in the upstream areas are majorly affected

If yes, what was that?	Frequency	Percent
Heavy Rain	64	99.0
Total	64	99.0

All the tea plantations affected by natural hazards are mainly caused by Heavy Rainfall which translates to flooding.

Most households rely on tea farming although some of the farmers have other sources of income, but they are not sustainable. So most of the farmers are shut down whenever the area is hit by a damaging event.

There are many factors that contribute positively to agricultural production among cooperatives (Awan & Mustafa, 2013).

Findings derived through the use of Pearson Chi square show a relationship between dependent variables of harvest (kg harvest per month) and independent variables like training received by farmers and cooperative organizations. Other factors that determine the operation of agricultural cooperatives include government assistance, inputs used in production and age of farmers. In addition, participants reported that extension officers, marital status and level of education of cooperative members played an important role in their productivity

The five main causes that lead to low use of agriculture input include the country's geographical structure, insufficient inputs stocks, affordability, farmer's knowledge and skills and incentives. As in the case of geographical structure more than 39% of the cultivated land is on slop which in turn occupies over 25% of available land in Rwanda. This not only increase the risk of soil erosion but also limits the use of tractors in agricultural activities, for example in 2003, Kenya had 50 times more than tractors per hector.

Another issue is insufficient national stocks; Rwanda has for long time lacked indigenous sources of fertilizers and pesticides.

Affordability is a problem because of lack of domestic sources of fertilizers and high cost of pesticides; while most farmers are poor and lack of access to credits to finance inputs.

Farmers 'knowledge and skills are limited though a number of farmers understand the fact that better use of inputs could improve the yield (World Bank, 2007).

Problems/Challenges faced by smallholder tea farmers.

The study revealed that the problems/challenges are affecting negatively the tea production.

Factors	N	Percent of Cases
Low fertilizers	273	91.0%
Insufficient Seedlings	238	79.3%
Bad Roads	267	89.0%
Proximity of Farm	258	86.0%
Insufficient Collection	260	86.7%
Low Prices	286	95.3%
Total	1582	527.3%

Dichotomy group tabulated at value 1.

The results revealed that 95.3% of the farmers have reported low prices for the green leaves collected by the Cooperative compared to other neighboring cooperative. Low prices for the green leaves (150 Rwf/Kg) have a negative impact on the way smallholder growers handle the pruning and harvesting of their tea farm. The tea farmers were unhappy

Another problem mentioned by respondent is sub-optimal delivery of fertilizers which affect both quantity and quality of the green leaves produced. In addition to this, NAEB uniform green leaves price nation-wide and there is no incentive to increase production and ensure quality.

Another challenge mentioned by 86.7% of tea farmers is the insufficient collection while 86% are affected by proximity of the farm to the collection centers. The failure to build more collection centers for tea farmers has negative consequences because green leaves are collected there before been transported to the nearest factory which is Karongi Tea Factory; over a distance of 30-45 km on poor roads. This seriously reduces the quality of the tea. Farmers have to trek over that long distance to get the green leaves to the cooperative/factory.

The project has exposed the cooperatives to adequate funding and they shouldn't wait till the collection centres are built for should build themselves, project built only a few

5.5 To evaluate the impact of famers' organization (Cooperatives) on Crop

Productivity

Agricultural cooperatives help farmers solve a collective action problem, i.e. how to procure inputs most efficiently and market their outputs on more favorable terms than they could achieve by themselves. Agricultural cooperatives play an important role in increasing the productivity and household income of smallholder farmers. Co-operatives are used by the government and NGOs to extend training and other capacity building initiatives.

A key informant interview was carried out with 5 farmers to ascertain the influence of the cooperative on the farmer's productivity.

1. What has been the progress from the start?

KATECGRO cooperative started in 2007 under the leadership of President Kagame, it started with counsellors and then appointed President

Production of green tea during the genocide was very low. This genocide destroyed Rwanda's ability to sustain itself and had two significant effects on the country's future. Namely, one, no one wanted to invest in Rwanda and, two, the available workforce in the country was traumatized and impoverished.

Tea was produced in small quantity, but ever since the advent of cooperatives and support from the government and various other international organizations, tea now competes with other cash crops like coffee.

2. Benefits of being a member of a Cooperative/ importance of cooperatives in addressing market issues, farmer's satisfaction with management and cooperative as a whole and addressing input issues
 - a. Get advice on elementary farming practices
 - b. Teach farming in terraces to reduce soil erosion
 - c. Teach how to improve environmental practices on the farm (for example; making compost from grasses)
 - d. Cooperatives help achieve unity and reconciliation
3. Farm incomes (how the cooperatives have contributed to farm incomes)

There has been an increase in the price of Green Leaves per kg from 100rwf to 150rwf. Although the increase is quite low, but it has improved the living of the farmers to a certain extent.

The prices fluctuate due to the unstable demand and supply of Rwandan tea. As at November 2017 Tea was sold at \$2.60/kg.

4. What activities are performed by the cooperative?

- a. Aid production process for the tea farmers
- b. Provide advocacy
- c. Act as middlemen between the tea farmers and the factory as well the government
- d. Provide farm extension services through the agronomist
- e. Provide training on the best agricultural practices e.g. fertilizer application, plucking, land preparation amongst others

5. What is the relationship between the cooperative and the factory?

It is essential for a cordial relationship to exist between both parties.

- a. The cooperatives give yield (Green Leaves) collected from the tea farmers
- b. The factory auctions and sells the processed tea
- c. They provide loans and credit facilities
- d. They make available fertilizers with a subsidized price

6. Funding

Asides support from the government, private and international organizations, they raise funds through bank loans/credit, and share percentage from the green leaves (20%)

Employees of the cooperative are paid by the Government, Non-Government Organization (NGO), IFAD, and BRD amongst other organization

7. Factors/Challenges Affecting Quality of Tea Produced

- a. Farmers do not understand land cultivation. From the survey majority of the farmers are uneducated.
- b. Quality of green tea is affected by the type of soil and the area where tea is cultivated (Acidic Soils and Mountain tea are the most suitable)
- c. The planting of seedlings, green leaves as well as the plucking stages are very sensitive and important in tea production
- d. Inadequate training because of the limited number agronomist.

- e. On the part of the factory, every stage of processing can add or reduce the quality of tea.

8. IFAD INTERVENTION

- a. 100% provision of seedlings
- b. Training on seed planting in the tea nurseries
- c. Provision of materials and equipment needed in the nursery
- d. Employment of Agronomist to assist in training the tea farmers on the best agricultural practices
- e. Land extension services

9. GOVERNMENT POLICIES- regulatory framework, pricing policies

National Agricultural Export Board (NAEB), is a government agency that manages the affairs of export crops in Rwanda. They advise on the development of policies, work with stakeholders' networks and coordinate their activities in relation to the processing and export of agricultural and livestock products, identify and support research activities regarding exports of agricultural and livestock products.

NAEB checks the quality standards for agriculture and livestock export commodities in collaboration with other relevant institutions, participates in international negotiations and forums in order to ensure the protection and extension of agricultural and livestock products export market as well as, establishing relationships and cooperation with regional and international organisations with the aim of improving operations and collaboration with regard to exports of agricultural and livestock products. (NAEB, 2017)

NAEB proposes together with all stakeholders the price of tea across the nation to reduce exploitation.

According to this survey, NAEB helped with the marketing of the tea in Mombasa, but recently each factor has Auction broker that helps them bid higher during the Auction which is a result of the variance in the quality of tea processed by the factories. This is one of the reason for distortion in prices of green leaves given to the tea farmers.

CHAPTER SIX

6.1 CONCLUSION

The main objective of this study is to carry out a value chain analysis for tea in Karongi District of Rwanda. This includes mapping of the value chains, detailed descriptions of the main factors involved in the value chains (from farmers to end consumers) and lastly, analysis of how the value is distributed across the different actors.

The findings revealed that the farmers determine the yield/input (plucking, pruning, fertilizer application while the cooperative determine the quality (training farmers on best agricultural practices, transporting green leaves from the collection centres to the tea factory)

The second objective of the study was to assess the factors affecting tea productivity. Those challenges were mainly low fertilizers, insufficient seedlings, bad roads, proximity of farm, insufficient collection centres, low prices and farmers being paid late for green leaves and long delays in the distribution of loans from BRD in the infringement of the contract signed between farmers and BRD. The project has exposed the cooperatives to adequate funding and they shouldn't wait till the collection centres are built for should build themselves, project built only a few

The third objective of the study was to evaluate the impact of famers' organization (Cooperatives) on Crop Productivity. From the research, tea was produced in small quantity, but ever since the advent of cooperatives and support from the government and international organization, tea now competes with other cash crops like coffee. Benefits of being a member of a Cooperative/ importance of cooperatives in addressing market issues, farmer's satisfaction with management and cooperative as a whole and input issues where addressed

There has been an increase in the price of Green Leaves per kg from 100rwf to 150rwf. Although the increase is quite low, but it has improved the living of the farmers to a certain extent. The prices fluctuate due to the unstable demand and supply of Rwandan tea. As at November 2017 Tea was sold at \$2.60/kg.

6.2 RECOMMENDATION

Based on the results from this study and the proposed solutions from the farmers' responses to main challenges the following recommendations can be drawn:

- To increase productivity. They have potential for higher yields Include role of farmers like good agronomic practices (weeding pruning etc.)
- To increase quantity of Rwandan tea in the international market, Rwandan tea stakeholders should try to target specialty tea markets that provide price premiums which secure adequate income for smallholders' tea growers.
- The government and its partners should support tea farmer in need to build tea factories because the harvest must be processed within a few hours of picking.
- The government needs to finds ways to motivate producers and encourage the availability of finance for business start-up in the sector.
- The need for policy makers, particularly in Government, to formulating policies that prioritize free access to credit support by rural smallholder farmer's communities.
- The agriculture extension agents should create and intensify awareness campaigns and membership drive in rural areas to encourage smallholder farmers to forming or affiliating to agricultural cooperatives so that they enhance their access to farming information as well as to have joint bargaining power for farming services and inputs.
- The need for the government and its developments partners to establish credit agencies in rural areas to enhancing the farmer's awareness of the credit services and the access thereof.
- The agriculture sector authorities should promote the training for smallholder farmers from basic farm management principles such as farm record keeping and analyzing the profitability of the farm enterprise to identifying good markets and laying out a business plan.
- The tea cooperative and its different donors should pay on time, what is due to the farmers in order to compensate their hard work and help them to move out from poverty

6.3 LIMITATION TO THE STUDY

The Value Chain of Tea Production, a case study of the factors affecting productivity was conducted with a significant cooperation of the respondent owing to the effect it had on them but the language barrier was of little significant. It was overcome with the use of enumerators and the agronomists in KATECOGRO.

The study largely relied on primary data collected using questionnaires and is limited to responses received. Some of the tea farmers were skeptical and scared of disclosing information about their impression of the Cooperative, mainly because I was accompanied by the Agronomist who is a staff.

The study encountered a number of difficulties along the field work. First, the large number of value chains that were to be analysed became a challenge for such a small team and on such a short period of time

Prices vary significantly and are susceptible to change throughout the seasons for obvious reasons (harvesting, production, climate, etc.). Nonetheless, they provide a clear understanding of how the value is distributed between the actors of the different chains.

REFERENCES

- Abdulsamad, Ajmal, Shawn Stokes, and Gary Gereffi. (2015). "Public-Private Partnerships in Global Value Chains: Can They Actually Benefit the Poor?" *USAID. LEO Report No. 8. Available at SSRN*: retrieved from <http://dx.doi.org/10.2139/ssrn.2594465>
- Alberta Agriculture and Food Council (AAFC). (2004). Value chain guide book: A process for value chain development. Value Chain Initiative. 2nd Edition. September 2004. retrieved from www.agfoodcouncil.com
- Asian Development Bank (ADB). (2005). Agricultural commercialization, value chains and poverty reduction: Making markets work better for the poor. Discussion Paper No.7. retrieved from at: www.markets4poor.org
- B Munyua, A Orr, J Okwadi, (2013) Open Sesame: A Value Chain Analysis of Sesame Marketing in Northern Uganda.
- Birasa Nyamulinda, Alfred Bizoza, Daniel Rukazambuga et al (2011), *Agricultural post-harvest Innovative technologies and access to niche market: Experience from Gataraga IP, Rwanda*. Learning Publics Journal of Agriculture and Environmental Studies Vol 2 (1). 1-23 ISSN-L: 2026-5654

- Bienabe, E., Coronel C., Le Coq, J. & Liagre, L. (2004) Linking smallholder farmers to markets: Lessons learned from literature review and analytical review of selected projects. *Study Report, Final draft, March. CIRAD & IRAM. World Bank.*
- Biruhalem, K. (2010). Rice value chain in Metema district, North Gondar, Ethiopia: challenges and opportunities for innovation. *An M.A Thesis Presented to the School of Graduate Studies of Addis Ababa University.*
- Claude Bizimana, Felicien Usengumukiza, John Kalisa and John Rwirahira (2012) Trends in Key Agricultural and Rural Development Indicators in Rwanda.
- Dendena, G. Efreem, L. and Lema, B. (2009). Fresh mango value chain analysis in Arbaminch area. *Organization of Value Chain Competency. Addis Ababa, Ethiopia.* p63.
- FAO, MINAGRI&OCIR THE., 2008.A revised Tea strategy for Rwanda, Kigali
- FAO, 2005., Modernizing National Agriculture extension systems: A practical Guide for policy makers of Developing Countries. Rome, Italy
- Gilbert, C. L., (2006). Value chain analysis and market power in commodity processing with application to the cocoa and coffee sectors. *Presentation Paper for the FAO Workshop on Governance, Coordination and Distribution along Commodity Value Chains. April, Rome, Italy, FAO.*
- Government of Rwanda, 2005., Smallholder Cash and export crop development Project, Volume I. Kigali
- Government of Rwanda ,2011., Rwanda National Export Strategy, Kigali
- Humphrey, J., (2006) Global value chains in the Agri-food sector. *Working Paper on Global Value Chains and Production Networks: Prospects for Upgrading by Developing Countries. Institute of Development Studies University of Sussex, Brighton.*
- ILO (International Labour Organization), (2006). An ILO guide for value chain analysis and upgrading, Geneva.
- John Rwirahira (2009), *RWANDAN AGRICULTURE SECTOR SITUATIONAL ANALYSIS: An IPAR Sector Review*
- Kaplinsky R and Morris M. (2002) A Handbook for Value Chain Research. Brighton: Institute of Development Studies, University of Sussex.
- Kaplinsky, R. and M. Morris, (2000). A handbook for value chain research, IDRC. Ottawa, Canada.

- Kaplinsky, R. and M. Morris, (2001). A handbook for value chain research, prepared for the IDRC in the Bellagio workshop.
- KPMG, 'The Agricultural and Food Value Chain: Entering a New Era of Cooperation', retrieved from <https://www.kpmg.com/global/en/issuesandinsights/articlespublications/pages/agricultural-and-food-value-chain.aspx>.
- LI Jie, (2015). *Teahouses and the Tea Art: A Study on the Current Trend of Tea Culture in China and the Changes in Tea Drinking Tradition*. Department of Culture Studies and Oriental Languages Faculty of Humanities UNIVERSITY OF OSLO
- Lwelamira, J. Binamungu, H.K. and Njau, F. B. (2011). Contribution of small scale dairy farming under zero-grazing in improving household welfare in Kayanga ward, Karagwe District, Tanzania retrieved from <http://www.lrrd.org/lrrd22/2/lwel22031.htm>. On 19 June, 2017.
- Markelova, H., Meinzen-Dick, R., Hellin, J., Dohrn, S., (2009). Collective action for smallholder market access. *Food Policy* 34(1), 1–7.
- MINAGRI, 2009., Strategic Plan for the transformation of Agriculture in Rwanda-Phase II. Kigali
- MINAGRI, 2012., Annual report. Kigali
- MINICOM, 2013., Annual report. Kigali
- NAEB, 2013., Annual report. Kigali
- Ouma, E., Jagwe, J., Obare, G.A., Abele, S., (2010). Determinants of smallholder farmers 'participation in banana markets in central Africa: the role of transaction costs. *Agricultural Economics* 41(2),111-122.
- Ponte, S., (2002). The late revolution regulation, markets and consumption in the global coffee chain. *World Development*, 30 (7): 1099-1122.
- Republic of Rwanda (2016) National Institute of Statistics of Rwanda, Integrated Household Living Conditions Survey: Enquête Intégrale sur les Conditions de Vie des Ménages (EICV3)
- Schmitz, H., (2005). Value chain analysis for policy makers and practitioners. International labor organization, Geneva.
- UNIDO (United Nations Industrial Development Organization), (2009). Agro-value chain analysis and development. Vienna.
- UNIDROIT, FAO and IFAD. (2015). UNIDROIT/FAO/ IFAD Legal Guide on Contract Farming.

United States Department of Agriculture .1990. *Cooperative benefits and Limitation; Rural Business cooperative services*

USAID (2015) Scaling Impact: Improving smallholder farmers' beneficial access to output markets pp1-32.

William G. 1994. *Constructing Questions for Interviews and Questionnaires: Theory and Practice in Social Research*. Cambridge University

World Bank. (2003). *Reaching the rural poor: A renewed strategy for rural development*. Washington, DC

World Bank. 2007., *World Development Indicators*. Washington, DC

World Bank, 2011. *Doing Business Survey Report-Trading across Borders Best Practices*. Washington, DC

PHOTO GALLERY

