ECONOMIC ANALYSIS OF CONTRACT FARMING FOR SMALL-SCALE

TOBACCO PRODUCERS IN SONGEA DISTRICT, RUVUMA REGION

BY

ANDREW ADAM MWANSELLE

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE

REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN

AGRICULTURE ECONOMICS OF SOKOINE UNIVERSITY OF

AGRICULTURE. MOROGORO, TANZANIA.

2010

ABSTRACT

This study analyses the performance of small-scale-tobacco producers under contract farming system and farmer characteristics that influences tobacco production in Songea district. The Specific objectives were: (i) To examine the cost and return of tobacco small-scale farmers under contract farming scheme in the study area; (ii) To assess the influence of contract farming characteristics on tobacco production; (iii) To examine the resource use efficiency in contract farming; (iv) To estimate yield and price uncertainties in production and marketing by the small-scale tobacco contracts farmers. A multi-stage random sampling technique was employed in selecting a representative sample of tobacco farmers where by 65 (DFC), 27 (Burley), and 20 (VFC) tobacco contract farmers were interviewed. Results revealed that through practicing contract farming respondents reduced cost of production (7%), improved quality of their harvest (31%) and increased income (37%). The study shows there is no significant difference in production cost, yields and returns for Burley, DFC and VFC tobacco farmers (P>0.05). Also shows that factors of production, experience, education and contract price had a significant influence on farmers tobacco production (P>0.05), further more tobacco farmers were significantly employing their resource efficiently under contract farming (P<0.05). Although there were enough evidences to conclude that tobacco farmers experienced uncertainties during production and marketing of their tobacco (P>0.05). The study recommends establishing a comprehensive-open contract farming arrangements and improving managerial skills to cooperatives leaders with enhancement of farmer's knowledge about contractual practices so as to enrich small scale farmer's welfares in Tanzania.

DECLARATION

I, ANDREW ADAM MWANSELLE, do hereby declare to the senate of Sokoine University of Agriculture that this is my own original work and has neither been submitted nor being currently submitted for a degree award in any other University.

_____   _____

Andrew Adam Mwanselle   **Date**

(Msc. Candidate)

The above declaration is confirmed

_____   _____

Prof. M. E. Mlambiti   **Date**

(Supervisor)

_____   _____

Mr. N.W. Marwa   **Date**

(Supervisor)

COPYRIGHT

No part of this dissertation was reproduced, stored in any retrieval system or transmitted in any form or by any means, without prior written permission of the author or Sokoine University of Agriculture on that behalf.

ACKNOWLEDGEMENT

DEDICATION

This work is dedicated to my beloved adorable parents Adam Amani Mwanselle (Damix) and Martinah Agathon Suka (Mary) for funding my studies, their never-ending love, encouragements and for laying a foundation to my life.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

AOTTL	-	Alliance One Tobacco Tanzania Limited
ASDS	-	Agriculture Sector Development Strategy
ATTT	-	Association of Tanzania Tobacco Traders
DFC	-	Dark-Fire Cured Tobacco
FAO	-	Food and Agriculture Organization
FCV	-	Flue Cured-Virginia Tobacco
FPCs	-	Farmer Primary Cooperatives Society
GDP	-	Gross Domestic Product
MAFS	-	Ministry of Agriculture and Food Security
MFC	-	Marginal Factor Cost
MVP	-	Marginal Value of Productivity
NGOMAT	-	Ngoni-Matengo Cooperative Union
SONAMCO	-	Songea-Namtumbo Cooperative Organization
TISA	-	Tobacco Institute of South Africa
TLTC	-	Tanzania Leaf Tobacco Company
TShs	-	Tanzanian Shillings
TTB	-	Tanzania Tobacco Board
TTC	-	Tanzania Tobacco Council
TTCA	-	Tanzania Tobacco Cooperative Apex
URT	-	United Republic of Tanzania

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Tanzania's economy is highly dependent on agriculture; the sector is the major source of productive employment and income to the nation, with about 70% of people especially in the rural areas practicing different agricultural activities (MAFS, 2006; URT, 2007). Agriculture account's for 45% of GDP and contributed 66% of export earnings (MAFS, 2006; URT, 2007). Tobacco is one of the important traditional crops that have been performing well in export trade, other crops being coffee, cotton, sisal, tea and pyrethrum (MAFS, 2006). However, there is an increase of non-traditional export crops especially of horticultural nature such as cut flowers, fruits, spices and oilseeds (MAFS, 2006; URT, 2007).

In Tanzania, tobacco export trade earns the country 16.72% of total foreign income each year (URT, 2007). In 2005 and 2006, tobacco was the second largest export crop earning the government with about 21.3% foreign income revenue (TTB, 2006; URT, 2007). Tobacco production in Tanzania has been steadily increasing to become one of the important crop in the country economy. Between 1984 and 1992, the area under tobacco increased by 66% with Tanzania producing 0.2% of the total world tobacco production (MAFS, 2006). In Africa, Tanzania has overtaken South Africa to become the third largest tobacco producer after Zimbabwe and Malawi (Gabagambi and Lyimo-Macha, 2005). The total estimated area in Tanzania that is under tobacco cultivation is approximately 56 000 hectares and there is a huge possibility of increasing the area as it is understood that total area that tobacco can

be cultivated is approximately 8 million hectors (TTB 2006; URT, 2007). It is estimated that, there are about 85 515 farmers who are practicing tobacco production in Tanzania (MAFS, 2006; Mboma, 2006).

1.2 Tobacco Production in Tanzania

The three major types of tobacco grown in Tanzania are Virginia Flue Cured (VFC), Dark-Fire Cured (DFC) and Burley tobacco (TTB, 2006). VFC tobacco accounts for 80% of the total tobacco grown in the country and is mainly produced in the Iringa and Tabora region (TTB, 2006). DFC Tobacco accounts for 15%, whereas 99% of the DFC comes from Songea district, Ruvuma region. Burley tobacco is only of minor commercial importance and its national production volume is relatively small (Abdallah, 2006; TTB, 2006).

Tobacco is an important industry for the country's development. Tobacco's contribution to poverty reduction in the society is presented in aggregate form at national level. TTB (2007) reports indicate that as for the year 2006, the industry provided employment to 92 178 farmers, 7 291 employees in tobacco and cigarette processing companies; and 200 cigarette distributors. Overall, the tobacco economy supports the livelihood of about 510 095 Tanzanians, equivalent to about 1.14% of the country's population (MAFS, 2006; TTB, 2007). The industry has great contribution in form of various taxes and levy paid for the central and local government revenues, consequently the industry's payment of taxes and levies to the government enhances the latter capacity to fund social and economic development activities in the rural and urban areas (Gabagambi and Lyimo-Macha, 2005; TTB,

2007; Mshiu, 2007). About 90% of tobacco produced in Tanzania is for export and the rest is for the domestic market, purchased by Tanzania cigarette company and the Mastermind cigarettes company both located in Dar es Salaam. The main foreign market of tobacco produced in Tanzania are Belgium, Netherlands, Portugal, France, South Africa, Great Britain, Japan, USA, Russia and Germany (TTB, 2006).

Tobacco yields in Tanzania increased from 28 600 tonnes in year 1994/95 to 51 972 tonnes in 2004/05, an increase of 81.70%; the increase was due to application of quality seeds varieties (K326, UIT10 and RG17) and fertilizer NPK 10:18:24; improvement of extension services and assurance of reliable market while provision of credit from tobacco companies' abled farmers to reduce cost of buying farming inputs (Abdallah, 2006; TTB, 2007). In addition tobacco quality increased by 15%, for top grades and decreased by 10% for low grades. Tobacco export increased from 17 019 tonnes, valued at 17 billions Tshs in year 1994/95 up to 34 861 tonnes valued at 82 billions Tshs in year 2004/05 (MAFS, 2006; TTB, 2007).

In Tanzania it is mainly the small-scale farmers in rural areas who practices tobacco cultivation mostly under the contract farming arrangements (TTB, 2006; TTC, 2007). As one of the approaches advocated by the Agricultural Sector Development Strategy (ASDS) which was developed in 2001 to operationalise the agricultural policy with the basic aim of creating an enabling and conducive environment for improving profitability to improve farm incomes and rural poverty reduction in the medium and long time horizons (URT, 2001). Small-scale growers through their primary cooperative societies (PC) are in input-output contract with the tobacco

companies, each PC is linked to a commercial company on contract basis where by tobacco companies provide extension services to tobacco growers (Rweyemamu, 2003; TTB, 2006).

Contract farming scheme in tobacco cultivation was established in 1995/96 season when tobacco companies got involved in procurement of green leaf tobacco from farmers (TTB, 2006). Tobacco companies engaged in the contract farming were Tanzania leaf tobacco company (TTPL), Top Server, Dimon, Intabex, and Standard commercial tobacco services. These companies were operating individually by then, but in 1999 formed a joint service company known as Association of Tanzania Tobacco Traders (ATTT) whose functions are input distributions and Extension services provision to tobacco farmers (TTB, 2006; Kalamata, 2006).

1.3 Contract Farming in Tanzania

Agricultural market liberalisation and relaxation of by laws that required farmers to grow specific types of crops, led farmers gaining more freedom in terms of which crops to grow, how to market them and to whom (Singh 2000; Kirsten and Sartorius, 2002; Silva, 2005). The parliament of Tanzania, in 1993 passed the crops board act, in which the private sector was allowed to participate in the procurement, price determination, processing and export of the four main export crops grown by the small holders: cashew nuts, coffee, cotton and tobacco (Rweyemamu, 2003). The reforms provided the conditions for mitigating process of contracturalisation, which gave small-scale-producers opportunity to be engaged in contract farming system with the processing firms especially sugarcane out-growers, sunflower, organic

coffee production, tobacco and cotton (World Banks, 2005; KIT, 2006; Mshiu, 2007). Currently the system is more established in the tobacco production sector where contract farmers are ensured with the supply of inputs and market of their produce at the pre-negotiated prices (Rweyemamu, 2003; Kalamata, 2006). Farmers groups agree with buyers on the following major issues: price for produce and inputs, extension services, volume of produce, supply of inputs, and credit recovery during sales payment to growers (Rweyemamu, 2003; Kalamata, 2006; TTC, 2007).

The principal legislation that governs practices of contract farming in Tanzania is the law of contracts –CAP 433 of the laws of Tanzania (MAFS, 2006). The tobacco industry act, 2001 was enacted in order to provide legal basis for involvement of private sector in the roles played by the public sector in the development of agricultural sector in Tanzania. Tobacco contract farming between farmers and tobacco companies is stipulated by the tobacco industry act 2001 16(2). The act is supported by tobacco regulations 2000 section 19(1), (2), (3), (4), (5) and (6) which details the operation aspects of tobacco contract farming (MAFS, 2006). According to TTB (2006) contract arrangement in tobacco industry, involves small scale growers and settlers, who up to 2004/05 season together were estimated to be 78 515 farmers. Small-scale growers make 95% of tobacco farmers in Tanzania, most of small-scale growers just cultivate on average one hectare of tobacco and they are operating in their primary cooperative society in their locations. The small-scale growers account for estimated 95% of tobacco produced in the country, while 5% is produced by the Greek settlers in Iringa region who operate under the "Southern Highland Tobacco Growers Association" (SHTGA).

1.4 Problem Statement and Justification

The involvement of private sectors through contract farming system has been considered a success over the recent years and it is perceived as an avenue for private sector to take over the roles previously served by the government in the provision of information, technology, inputs or credits for small-scale farmers in the developing countries (Singh, 2000; Kirsten and Sartorius, 2002). Despite the involvement of tobacco companies in production and processing of tobacco, the tobacco sector in Tanzania has been struggling in production and marketing, since early 2006, when Tanzania government called for the increase in tobacco production to 100 000 tonnes from 50 000 tonnes in 2005/06 season (MAFS, 2006). Tobacco production decreased by 10.4% from 56 500 tonnes in 2005 to 50 617 tonnes in 2006 also the value of exported tobacco decreased by 19.3% to US$ 65.2 million from US$ 80.8 million in 2005, this decrease was mainly due to the decrease in the export volume by 19.6% from 31 100 tonnes in 2005 to 25 000 tonnes in 2006 (MAFS, 2006; URT, 2007). The decrease in the exported volume was largely caused by drought that adversely affected production of tobacco in various regions during the 2005/06 season.

On the other hand, the market price for raw green tobacco had been fluctuating in various seasons. In year 1994/95, the average price per kg of VFC tobacco was Tsh 656 and DFC was Tsh 523; in 1995/96 prices rose up to Tsh 735 per a kg of VFC and Tsh 593 per a kg of DFC; but in 2000/01 the price dropped to Tsh 534 per a kilogram of VFC and Tsh 490 per a kilogram of DFC. In the world market the trend

of average price for a tobacco farmer also has been oscillating, in 1990-02 the average price dropped by 57% from 83.9% to 27.4% while in 2002-05 the average price rose by 3% from 39% to 42% for VFC tobacco (MAFS, 2006; TTB, 2006).

As the result of fluctuation in production and market price as denoted above; unstable growth rate in tobacco production under contract farming has been considered unsatisfactory as it has not been enough to bring a significant number of small scale farmers above the poverty line for developing countries (Doriye, 1990). In Tanzania especially Songea district, growing tobacco makes obvious economic sense, it creates employment to people and improves the living standard of the poor but still the fluctuation of market price alters costs and revenue with preventing realization of potential income gains because price that farmers come across are altered and this affect their income and welfare (MAFS, 2006). Since most of small-scale-farmers in Tanzania are subjected to high production and price risks due to crop and market failure, insufficient volume produced and poor standards, small scale farmers are becoming more marginalised, consequently being left out of the increases in wealth arising from reforms of arrangements in local crops production.

Therefore it is in the scope of this study to address the existing information gap on contract arrangement, especially in small-scale tobacco production to properly establish contract farming system potentials in crop production and improving small-scale farmer's welfare. This study will analyse contract farming as is practiced by small-scale-tobacco producers in Songea district focusing on the farmer's production costs and returns; resources use efficiency; price and yield uncertainties;

and influence of the contract farming characteristics on production of the small-scale-tobacco producers.

1.5 Objective*s*

1.5.1   Main objective

To analyze the performance of small-scale-tobacco producers under contract farming system in Songea district.

1.5.2   Specific objectives

(i)   To examine the cost and return of tobacco farmers under contract farming scheme with respect to three types of tobacco cultivated in Songea district.

(ii)   To assess the influence of contract farming characteristics on production of tobacco by small-scale producers.

(iii)   To examine the resource use efficiency of small-scale tobacco farmers under the contract farming.

(iv)   To analyse yield and price uncertainties involved in the tobacco production and marketing by the small-scale contracts farmers.

1.5.3   Hypothesis of the Study

(i)   Cost and returns

There is no significant difference in cost and return between farmers cultivating the three types of tobacco under contract farming scheme in Songea districts.

(ii)   Contract farming characteristics

Contract farming characteristics have no significance influence on the production of tobacco in contract farming system.

(iii)   Resource use efficiency

Tobacco farmers under contract farming arrangement use resource inefficiently.

(iv)   Yield and price uncertainties

Tobacco farmers experience uncertainty in production and marketing of their raw tobacco under contract farming arrangement.

1.6 Study Limitations

This study attempted to analyse performance of contract farming system in tobacco production by small scale growers. Since tobacco production in Tanzania is practiced only under contracting arrangement, it was not possible to have comparison of with and without contract farming

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter reviews theoretical basis and application of contract farming system starting with origin, definitions of contract farming, the principal agent theory and nature of contract farming as it is practiced in contract arrangements and reviews of empirical studies (success and failure) of contract farming schemes. It also reviews structure and roles of contract farming institutions in Tanzania with performance of contract farming in Songea district.

2.1 Contract Farming Background

2.1.1   Contract farming origin

The contracting of crops has existed from time immemorial; in ancient Greece the practice was widespread with specified percentages of particular crops being a means of paying tithes, rents and debts (Eaton and Shepherd, 2001). During the first century China also recorded various forms of sharecropping, while in the United States of America (USA) as recently as the end of nineteenth century, sharecropping agreements allowed for between one-third and one–half of the crop to be deducted for rent payment to the landowner (Eaton and Shepherd, 2001). These practices were of course a form of serfdom and usually promoted permanent indebtedness to farmers, in the first decades of the twentieth century, formal farmer-corporate agreements were established in colonies controlled by European powers, for examples, at the Gezira project in the central Sudan, farmers were contracted to grow cotton as a part of a larger land tenancy agreement (Warning and Hoo, 2000).

This project served as a model from which many smallholder contract-farming projects subsequently evolved (Warning and Hoo, 2000; Eaton and Shepherd, 2001).

Contract farming over the years has been enthusiastically promoted by the international development agencies like the World Bank, the United States Agency for International Development (USAID), the International Finance Corporation (IFC) and the Common Wealth Development Corporation (CDC); as one system that has considerable potential to contribute to the institutional organizational in improving a mechanism for integrating small scale growers into the modern agriculture that ensures self-sustained development for small scale growers who are the target of poverty reductions programs (Singh, 2000; Kirsten and Sartorius, 2002).

Contract farming has been increasingly practiced in developing countries; for example in Brazil 75% of poultry production is coordinated via contracts, where as in Vietnam there is indication that 90% of cotton and fresh milk, 50% of tea and 40% of rice are being purchased by traders through contracts (Silva, 2005). In Mozambique all cotton and tobacco are produced by contract farming, in Zambia 100% of paprika, tobacco and cotton are produced by contract farming system likewise in Kenya 60% of tea, sugar, and all the country tobacco are in contract farming system (KIT, 2006). Warning and Hoo (2000) and, Kirsten and Sartorious (2002) see contract farming as a potential substitutes for the state in the wake of neoliberal reforms in the agragarian sector: as the state disengages itself from the

provision of inputs, extension services, credit and price support, private firms can enter to fill the same roles and do more efficiently.

2.1.2 Definition of contract farming

Contract farming can be defined as an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices (Eaton and Shepherd, 2001). On the other hand, Baumann (2005) define contract farming as a form of vertical coordination between growers and buyers/processors that directly shape production decisions through contractually specifying market obligations such as value, quality and exercise some control at the point of production. Asokan and Singh (2003) define contract farming as the production and supply of agricultural produce under advance contracts, the essences of such contracts being a commitment to provide an agricultural commodity of a type, at a time and a price, and in the quantity required by a known buyer. It involves four things: pre-agreed price, quality, quantity or hectareage (maximum/minimum) and time.

Contract scheme are viewed as a dynamic partnership between agribusiness companies and small farmers that benefits both without sacrificing the rights of either. Contract farming is offered as a vehicle for transfer of technology and the modernization of peasant's small holder holdings (Asokan and Singh, 2003). Contract farming is fundamentally a way of sharing risks between the firm and the farmer, however the distribution of risk depends heavily on factors like bargaining

power, availability of alternatives and access to information. Warning and Soo Hoo (2000) take the small-growers project in the lake Naivasha area of Kenya, as a case of remarkable example of contract farming project. Each year 400 million fresh flowers are produced through contractual arrangements between large agro-industrial firms and peasant farmers, flowers are graded, packed and cooled where they are produced and then taken to Nairobi for export to Europe and North America. But regardless of typology the general term "Contract farming" refers to a particular form of supply chain governance adopted by firms to secure access to agricultural products, raw materials and supplies meeting desired quality, quantity, location and timing specification (Silva, 2005).

2.1.3   Types of contract farming

According to Simmons (2003), Baumann (2005) and Silva (2005), contract farming can take different arrangement but it can be classified into three modalities namely "market specification", "resources provision" and "production management".

2.1.3.1   Market specification contract

Marketing contract refers to oral or written agreement between a contractor and a grower that sets a price and an outlet for the commodity before harvest or before the commodity is ready to be marketed, that is future purchase agreements which determine quantity, timing and price of commodities to be sold. Most management decisions remain with the growers since they retain ownership until the final disposal of the commodity. In this type of contract, the producer has full autonomy

regarding production decisions, hence the producer bears all the risks of production but share price risks with the contractor.

2.1.3.2 Resource provision contract

In resource providing type of contract arrangement the firm may supply selected inputs to the growers including on occasions land preparations. Contracting firm specifies the sorts of crops to be cultivated, production practices, quality and standardisation of the crop through the provision of extension services and input credits. In this context the producer agrees to produce the raw commodity under some degree of company control and specification, as well as to sell the commodity to the processor at an agreed price, quality and time.

2.1.3.3 Production management contract

Production management type of contract; company has full control as well as provision of inputs, in this regard firm supplies and manages all the inputs and the farmer becomes just a supplier of land and labour (Silva, 2005). The firm closely monitors the quality produced and the production practices it followed, tends to dominate the terms of contract. Associated with large out grower and nucleus-estate schemes, the contractor directly shapes and regulates the production; and labour processes of the grower. Production contract specifies in detail the quality and quantity of a particular commodity to be procured and the compensation that the producer for the raw commodity would receive for his efforts at a pre-agreed price.

2.2 Principal-Agent Theory

Contract farming is a vertically integration form of production between the growers of an agricultural product and buyers or processors of that product (Harvey *et al*., 2005). Contracts may provide productions inputs, credit and extension services to the growers in return for market obligations on such considerations as the method of production the quantity that must be delivered and the quality of the product (Warning and Hoo, 2000). Contracting farming scheme can be modelled as a principal-agent game between a firm and a grower of which the firm acts as the principal and a grower as the agent. In contract farming farmers find a means to manage risk in production and marketing, as contract farming being fundamentally a way of allocating risks between growers and firms (Warning and Hoo, 2000; Mshiu, 2007). The two works together to produce and market the crop. The firm chooses growers with whom it would like to contract and sets the contract terms. The growers in turn choose whether to participate or not to participate. The combination of these choices describes the selection process for the contract-farming scheme. The benefits participants get will depend on the terms of the contract and their own characteristics (Warning and Hoo, 2000; Mshiu, 2007).

Baumann (2005) argues that with appropriate enabling environment the potential advantages of contracting to farmers and agribusiness firms tend to outweigh the potential disadvantages. To the extent that the benefits from a contract-farming scheme accrue more to larger growers than to smaller growers; the scheme will reinforce income stratification. To the extent the opposite is true; the scheme will have an equalizing effect (Warnings and Hoo, 2000). It is further argued that firms and growers will choose to contract with one another based on the gains they accept

to obtain from the contract. Moreover, the transaction costs and information costs in the market environment in which production takes place jointly influences both processes (Warnings and Hoo, 2000; Baumann, 2005).

2.3 Contract Specifications

Any contracts however brief or informal should represent a mutual understanding between the contracting parties (Eaton and Shepherd, 2001). Agreements in the form of written contract or verbal understanding, usually cover the responsibilities and obligations of each party, in the manner in which the agreement can be enforced and the remedies to be taken if the contract breaks down. As in many countries a high proportion of farmers are illiterate and therefore, management must ensure that agreements are fully understood by all farmers (Eaton and Shepherd, 2001; FAO, 2001)

One aspect which needs to be considered when drafting contracts is the legal framework; terms and conditions entered into the contracts must be written down for independent examination with copies given to farmer's representatives and some to relevant government agencies (Eaton and Shepherd, 2001). A farming contract whether written or oral, should comply with the minimum legal requirements that apply in particular country, local practices must also be taken into account as they may also influence how detailed a contract should be, or whether it should be a formal contract or a more simple registration (Mshiu, 2007), for example in Tanzania about 92 000 tobacco growers are registered primary cooperative societies who are in formal contracts with the buyers TLTC and Alliance One as required by tobacco industry regulations (GN.No.216), while in Thailand sugar industry farmers

and governments personnel reported the lack of a formal sugar-cane contract; and in Tanzania for the sisal industry there is no specific provision dealing with contract farming in the sisal industry legislation (FAO, 2001; Mshiu, 2007).

2.3.1 Formats of the contract

According to Eaton and Shepherd (2001), there are various formats that a contract arrangement may take. These formats are such as formal agreement which is an open, legally endorsed contract format with detailed conditions and obligations of each part, simple registration agreement that refers to the signed confirmation from the farmer who wishes the sponsor to reserve a contract for him/her. Simple registrations are based on so-called "informal association of trust and patronage that bypass formal legalities". While unwritten or verbal agreements are commonly used by informal individual developers and sometime by corporate sponsors, for example, MAFS (2006) reveals that in Tanzania, formal agreements format is adopted by the major non-traditional crops such as tobacco, tea, coffee industries and Kilombero sugarcane industry. However Mshiu (2007) insisted that formal agreements are not necessary for sound linkages between farmers and buyers but mutual trust is more important which can be developed through longer-term "fair play" on both sides, reliable and fast payment, timely product deliveries for sound linkages between farmers and buyers.

2.3.2 Specifications for contract farming

2.3.2.1 Contract durations

According to Mshiu (2007), in buyer –producer arrangement there are aspects which a contract will need to specify either all or some of the aspects. Duration of agreements depends on the nature of the crop. Contracts for short-term crops such as vegetables are normally issued and renegotiated on a seasonal basis, where as crops such as tea, coffee, sugar cane, and cocoa require long term contracts that can be amended periodically (Eaton and Shepherd, 2001; Mshiu, 2007). Product quality or more precisely the absence of quality can have far-reaching consequences in terms of market acceptance and future expansion. Most contracts contain detailed quality specification so that produce that does not conform to the agreed criteria can be rejected (Eaton and Shepherd, 2001; FAO, 2001).

2.3.2.2 Pricing arrangements

Pricing and payment arrangement are the most discussed and challenging components of all farming contracts (Eaton and Shepherd, 2001). The choice of which crop pricing structure to use is influenced by whether the crop is for the local or export market, the seasonal nature of production and the degree of competition in the marketing systems. Application of transparent formula is crucial and the drafting of clear pricing structure and the organization of a practical method of payment encourage confidence and goodwill. According to Eaton and Shepherd (2001), there are several ways by which prices offered to farmers can be calculated. These include: fixed price which is the most common method where by farmers are offered a set of fixed prices related to the specified grades at the beginning of each season. Payments based on the spot-market prices individual small-scale developers' act as

brokers under informal contracts with farmer groups to sell their produce. They collect the crops at the farm gate and sell the produce then pay the growers a percentage of the final sale price. In split-pricing system the agreed base price is paid out at the time of purchase or at the end of the harvesting season and the final price is calculated once the sponsor has sold the commodity depending on the prevailing market price (Eaton and Shepherd, 2001; FAO, 2001).

2.3.2.3 Payment procedures

The most convenient method of payment to farmers is usually cash-in hand immediately following delivery of any part of their crops, in majority of cases payments are made periodically throughout a season, perhaps two to four times, with the final payment after the last harvest. Any material and cash advances given to farmers during the season are normally deducted from the final payment.

2.4 Empirical Studies on Contract Farming Schemes: Success and Failure

Contract Farming is one system that has considerable potential for providing a way to integrate small-scale farmers in developing countries in export and processing market and into the modern economy (Asokan and Singh, 2003; Silva, 2005). In Africa, contract farming is believed to help farmers providing new technology, ready markets and secured inputs and prices; with offering a mechanism that ensures self-sustained development (Kirsten and Sartorius, 2002). Contract farming has also been a component of the most successful income-generating projects for smallholders growers, as well as important earner of foreign exchange in developing countries. Here we present several cases of contract farming studies case by case:

Asokan and Singh (2003), studied performance and problems in contract farming scheme in the Indian Punjab. The study revealed that contracting system increased employment especially to women with the number of farmers growing vegetable crops under contracts having increased. The main benefits as perceived by farmers being better and reliable income; new and better farming skills; and effective soil management with some farmers preferring contracting as it gave them assured market.

Chang *et al*. (2006) in the survey study of efficiency and profitability of contract farming in rice farms in Taiwan used regression model to analyze farmer's decision on contract participation and profit performance. Estimated results indicated that on average a contract farm is 20% more efficient than average non contract farm in a comparable operating environment. While Kalamata (2006) pointed out that contract farmers in Urambo district, Tabora region were getting more yield per hectare where by the researcher compared tobacco contact farmers to non-contact farmers due to their accessibility to extension services provided by the tobacco companies (the researcher failed to find information about non contract farming). Dileep *et al*. (2002) revealed that the cost incurred, yield and gross return obtained by the contract farmers were almost double compared to that of non-contract farmers. The result concluded that contract arrangement can indeed be an effective institutional reform mechanism to increase profitability and competitiveness for small-scale family farms.

Mshiu (2007) assessed the contribution of contractual arrangement in sugarcane and tobacco farming in Morogoro and Tabora in Tanzania. The study revealed that tobacco farmers accrued more profit compared to sugarcane farmers under contractual arrangement, though the study concluded that the absent of clear guidelines as to how contract farming should be framed, sugarcane growers in Mtibwa were significantly dissatisfied with contracts sole buyers while tobacco farmers questioned the grower's power to bargain input and output prices. The study concluded that the existence of monopoly buyer in sugar cane and tobacco contract farming lead the contract scheme not to be competitive to farmers. Mbwana (2007) studying institutional and economic analysis of contract farming in Manyara, Tanzania; revealed that contract farmers had low number of selling and high asset specificity which led to reduction of transaction costs, also the results showed that contract farming had significant positive influence in increasing farm productivity. Mathania (2007) assessing the potential of crop alternative to tobacco in Urambo district revealed that paprika production under contract farming was the more profitable enterprise compares to tobacco production.

According to Guo et al. (2005), in China along with system of subsidies, infrastructure investment and reforms in rural credit institutions, contract farming is perceived as innovations in creating new ways of doing business and also plays an important role in attempts to modernize China agriculture system and improves rural incomes. However the study argued that without adequate competition among contracting firms, informed farmers and rule of law, contract farming can lead to economic serfdom for peasant farmers a production system that only meets the

economic objectives of power elites. Key and Runsten (1999) cite a case study in Mexico where a local frozen vegetable firm managed to engage in successful contracting with smallholder by providing resource based contract that delivered credit, specialized inputs and extension advices with no collateral in the form of seedlings, all pesticides and fertilizers. The value of these advances was equal to about 40% of the total production costs of land preparation. Further more, Asokan and Singh (2003) asserted contract farming as an emerging tool for agro-processing firms especially in situations of market failure, however identified various constraints in the functioning of the arrangement which needs to be addressed for the mutual benefits to the firms and farmers. Similarly, Singh (2000) stressed the need of legal protection to contract growers from ill effects of contracting and specifying duties and forbidden acts for large parent firms.

Kirsten and Sartorious (2002) studied the link between agribusiness and small-scale farmers in developing countries argued that farmers lost their autonomy as they operate under centralized control system under contracting farming scheme. Also the increase of farmer production risk as they diversify from traditional to non-traditional crops and due to needs of meeting the contractual obligations of the integrator. The study cautioned the decreasing in food production and increased food security in developing countries as the results of concentrating in contracts crops. Furthermore the study argued that farmers income were reduced due to their revenues being affected by change in cost structure as farmers were incurring additional cost as they need to coordinate their production to suit the integrator as well as to liaise for the use of company inputs and services.

2.5 Structure of Contract Farming System in Tanzania

2.5.1 Small-scale growers

Small-scale growers in Tanzania are operating under the umbrella of primary cooperative unions in their area of locations. The estimated 344 cooperatives unions in Tanzania are operating under six major zonal unions (TTB, 2006). These are: the Western Zone Tobacco Growers Cooperation Union Ltd (WETCU) which include tobacco growers in Tabora and Kigoma regions; The Kahama Cooperative Union Ltd (KACU) which involves tobacco growers in Shinyanga region; the Chunya Tobacco Growers Cooperative Union Ltd (CHTUCU) which involves tobacco growers in Mbeya region; the Lake Tanganyika Tobacco Cooperative Union Ltd (LATCU) which involves tobacco growers in Rukwa region; Songea and Namtumbo Cooperative Union Ltd (SONAMCU) which involves tobacco growers in Songea and Namtumbo districts, Ruvuma region; and the Central Tobacco Cooperative Union Ltd (CETCU) which involves tobacco growers in Manyoni district, Singida region (TTB, 2006).

2.5.2 Farmers cooperative societies

In Tanzania, cooperative unions involves all small producer/farmers, woman and youth, who on their own cannot compete in the market as traders (TTCA, 2007). Tobacco primary cooperatives societies are institutions formed by tobacco farmers themselves with the purpose of selling their agricultural products. Their main responsibilities are:-

(i)   To register the number of tobacco growers from their particular primary association.

(ii)   To prepare estimates of inputs needs for each cooperative association with regards to each farmer needs.

(iii) To look for efficient sources of inputs and distribute the inputs to their members. To keep records of input costs, receipt and use of inputs.

(iv)   To monitor the use of delivered inputs with help of extension services.

(v)   To monitor tree plantations and other environment protections.

(vi)   To prepare for centres of tobacco marketing with help of tobacco board and buyers.

(vii) To collect payments for the inputs debts and tobacco farmers sells due to their particular cooperatives unions.

2.5.3   Tanzania tobacco board

The Tanzania Tobacco Board (TTB) is a government organization which was established by the division II, act 3-(1) and (2) by the parliament act No 24 in year 2001 (TTB, 2006 and TTC, 2007). The tobacco board is an instrument through which the government regulates the industry. All individual farmers and their cooperative societies need to be registered to the tobacco board pre to start tobacco productions. The board monitors, evaluates the contracts between growers and the tobacco companies; and sees through good practices of tobacco cultivation; and protection of environment. The TTB head quarter is located in Morogoro region (TTB, 2006).

2.5.4 Tobacco companies

Improving the availability of market due to free market economy there are three big companies, which are participating in tobacco buying inside the country and selling to domestic cigarettes manufacturing companies and exporting. The companies are Tanzania Leaf Tobacco Company - Top Serve (TLTC-TS) which is the agency of Universal Leaf Co from USA, Alliance One Tobacco Tanzania Ltd (AOTTL) which was known as Dimon Morogoro Tobacco Processors Limited and Wood Slide Company Limited, which is agency of Son-leaf from Britain (TTB, 2006; TTC, 2007). There are three tobacco processors industries in Tanzania which are capable of processing 78 000 tonnes of tobacco, these industries are Tanzania Tobacco Processors Limited, Alliance One Tobacco Tanzania Ltd and Songea Tobacco Processors Company Ltd. There are three cigarettes manufacturing companies in Tanzania which are Tanzania Cigarette Company (TCC/Japanese Tobacco International), Mastermind (T) Ltd and Zanzibar Cigarette Company which is located in Zanzibar (TTB, 2006).

2.5.5 Association of Tanzania tobacco traders

The marketing system procedure is designed to ensure effective control and efficiency in input supply, green tobacco procurement and timely payment to the producers. To achieve this goal, the major tobacco companies formed association of Tanzania tobacco traders (ATTT). Each year tobacco companies order inputs from abroad. The inputs are handed to ATTT, which distributes them to the primary cooperative societies. The societies in turn distribute them to farmers on credit. The

credit is recovered at the time of selling green tobacco. The ATTT is the sole buyer of the Tanzania tobacco crop; it receives DFC, VCF and Burley tobacco from the cooperatives unions at the collection or marketing centres for delivery to the factory for processing before exporting it. ATTT procures appropriate consignments and delivers them to respective buyers as per contract. Producer price in the tobacco industry is determined in a consultative process involving the key players in the system. These include representatives of producers, buyers and processors and TTB. These three categories of stakeholders constitute what is known as the Tobacco Council of Tanzania (TTB, 2006; TTC, 2007).

2.6 Tobacco Production in Songea District

The history of tobacco production in Songea district, came long way back then in 1930, after being introduced from Malawi by British colonials in Ruvuma region (TTC, 2007). The first type of tobacco to be introduced in the region was dark fired cured tobacco. The cultivation of DFC tobacco was with a lot of success due to the contribution of the Ngoni-Matengo Farmer Cooperative Union (NGOMATI), which was operating at that time. The union was responsible for controlling production, marketing of tobacco and payment to farmers for selling their tobacco to the union. The efficiency of the union, attracted most of the smallholder farmers in the region to engage in the tobacco production and this enhanced the increase of production in the region (TTCA, 2007; TTC, 2007). The achievements made tobacco to be the most important cash crop in the region. Due to the increased production, the union constructed tobacco-curing factory in Songea urban town in year 1951 under

NGOMATI (Ngoni-Matengo Cooperative Union LTD), which is currently known as Songea Tobacco Processing Factory Limited (SONTOP LTD) (TTB, 2006; TTCA, 2007).

The period after Tanganyika independence came along with many structural changes on the countries policies and had impact on the tobacco cultivations in Tanzania (TTC, 2007). The operations of cooperative unions were restructured late 1960's, followed by establishment of the Tanzania Authority for Tobacco crop (TAT) in 1971, re-establishment of farmer cooperatives societies in 1984 and in 1993 the cooperative movement of Tanzania passed a bill for free market operation in the tobacco sector (TTCA, 2007; TTC, 2007). In Ruvuma region where Songea district is located some 23 000 farmers are involved in tobacco production, these farmers are the source of livelihood for their own family members who are estimated to be about 115 000 in Namtumbo and Songea district (TTC, 2007). Tobacco farming in Songea district is practiced in contract arrangement between the farmer's cooperatives societies and tobacco buyers. The Songea district cooperatives societies work under the umbrella of Songea and Namtumbo cooperative unions (SONAMCU LTD), the unions involves 43 farmers cooperatives societies from the two district cultivating tobacco in 108 villages where by 53 villages in Namtumbo, Songea 50 and three villages in Mbinga where tobacco is cultivated in low amount (TTCA, 2007). Farmers under the unions cultivate all the three types of tobacco (DFC, VFC and Burley) as instructed by the TTB. The DFC tobacco is the most cultivated type in the union while VFC and Burley tobacco are still under trial practices (TTCA, 2007; TTC, 2007). Through tobacco farming the growers earn about Tsh 173 000 per season. Songea districts levies 1 to 5 percent of total tobacco sold on each season.

For the past three seasons, Songea district earned an average amount of 183 millions Tanzanian shillings per year (TTCA, 2007; TTC, 2007). The collected amount is used for the community development in the Songea district and Ruvuma region (TTC, 2007; URT, 2007).

Songea district accounts for about 99% of DFC tobacco produced in Tanzania (URT, 2007; TTB, 2007). Currently production of DFC tobacco in Songea district has been declining with average tobacco yield per hectare less than 1000 compared to 1 140 kg in other tobacco producing regions (MAFS, 2006). Farmers in the district are estimated to produce only 10 millions kg beside the total demand for DFC tobacco in the world market of estimated 50 millions tonnes (TTC, 2007). Appendix 2 presents the trend in production of Burley and VFC tobacco produced in Ruvuma region.

CHAPTER THREE

METHODOLOGY

3.0 Overview

This chapter presents the methodology used. It covers the conceptual framework of contract farming as is practiced in the study area, description of the study areas, performance and drawbacks of tobacco production under contract arrangement in Songea district. Study design: type and source of data collected; sampling procedure, sample size and tools of data analysis.

3.1 Contract Farming Conceptual Framework

The conceptual framework presented in figure 1 is adopted from multipartite project in China by Eaton and Shepherd (2001), illustrates that contract farming acts as an institutional framework for delivering incentives, technology and agricultural inputs to the small-scale growers. The structure of framework which is in practice in

Tanzania tobacco contract farming is a multipartite model which aid farmers group to attain economies of scale and sell their produce collectively (Kalamata, 2006; Mbwana, 2007). According to Eaton and Shepherd (2001), the term "multipartite arrangement" is used to emphasize the participation of several factors; multipartite model usually involves statuary bodies and private companies jointly participating with farmers. Multipartite contract farming may have separate organizations responsible for credit provision; production and management; processing and marketing.

```
┌──────────────────────────┐   ┌──────────────────────────┐
│          TTB             │   │    Tobacco companies     │
│ (Regulates and monitor   │   │ (Processing and          │
│   tobacco sector)        │   │   exporting)             │
└──────────────────────────┘   └──────────────────────────┘

        ┌──────────────────────────────────┐
        │              TTC                 │
        │   (Represents all stakeholders)  │
        └──────────────────────────────────┘

                    ┌──────────────────────────┐
                    │           ATTT           │
                    │    (Field management)    │
                    └──────────────────────────┘

        ┌──────────────────────────────────┐
        │            Contract              │
        └──────────────────────────────────┘

        ┌──────────────────────────────────┐
        │        Village committees        │
        │      (Farmer management)         │
        └──────────────────────────────────┘
```

```
              ↑
    ┌─────────────────────────┐
    │        **Farmers**       │
    │     Tobacco production   │
    └─────────────────────────┘
```
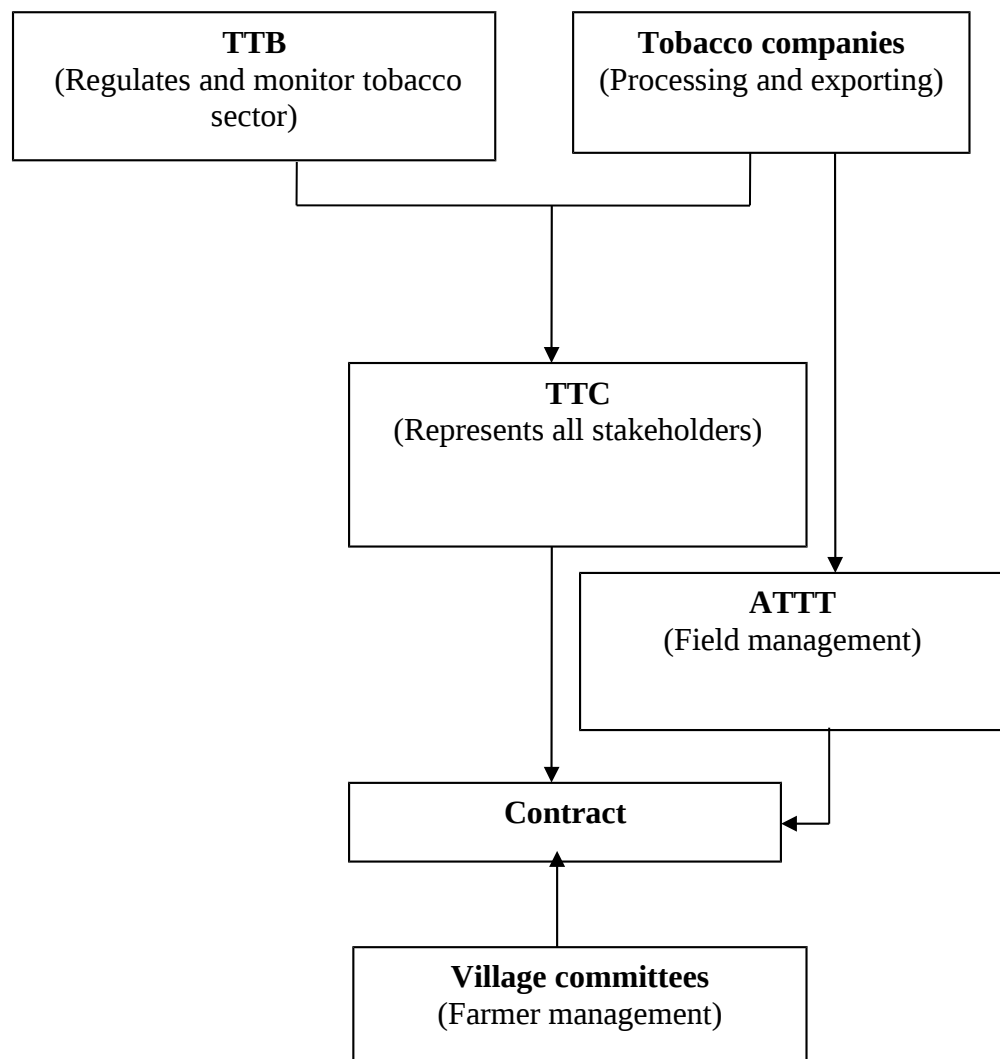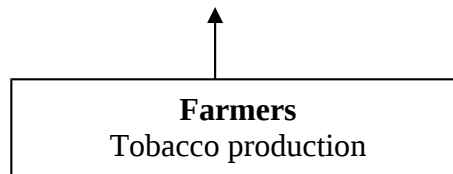
Figure 1:   A Multipartite model contract farming framework

In Tanzania, tobacco growers and tobacco companies have formed a forum known as Tanzania Tobacco Council (TTC), for tobacco stakeholders to negotiate various matters concerning the tobacco sector. Alliance One Tobacco Tanzania Limited Company (AOTLL) which is operating in Songea district is an international firm having a branch in Tanzania. The latter is responsible for getting into contract with tobacco growers through their cooperatives society in Songea district while AOTLL is in contracts with farmers cooperative society through an association known as Association of Tanzania Tobacco Traders (ATTT). ATTT represents tobacco buying companies and it is responsible for implementing and maintaining the terms and specifications of the agreement while assisting in managing the farmers in the fields through their agronomists and field technicians. There are formal contracts between the AOTLL and ATTT; and written contracts between the ATTT and the farmer cooperatives societies; but only a verbal understanding between farmers and their respective cooperative societies (TTB, 2006; TTC, 2007). Farmer cooperatives in principle are the ideal institution for integrating all stages of the production process and marketing of members produce while ensuring farmers are fully represented in the entire process (Baumann, 2005). Although farmer cooperatives face setbacks due to poor management skills, multipartite arrangement schemes in general are welcomed by small scale farmers, as they significantly reduce both the risks in

production and marketing while reducing the company's cost of dealing with individual farmers with less extra-contractual marketing (Eaton and Shepherd, 2001).

3.2 Description of Songea District

3.2.1   Geographical and factor location

Songea district is one of the five districts in Ruvuma region. Local government act no. 7 of 1982 established the Songea district in 1 July 2002. The district's area of jurisdiction is 16 727 sq km. The district shares borders with the republic of Mozambique in Southern west, Mbinga district in the west, Namtumbo district in the east and Ulanga (Morogoro region) and Njombe (Iringa region) in the North (URT, 2007).

3.2.2   Climate

The district is characterized by a cool climate with an average annual rainfall of between 800mm and 1 200mm, which is generally favourable for agriculture. There is a variation of temperature, which ranges from 20˚C to 25˚C during the hot season and between 15˚C to 17˚C during night. The geographical location of Songea district has a lot of impact on its operation (URT, 2007).

3.2.3   Human population

The district has a total population of 156 930 (males 76 898 and female 80 032) according to the year 2002 national population census. The district counts 71 villages grouped into 14 wards (URT, 2007).

3.2.4   Social and economic overview

As far as the agriculture sector is concerned the Songea district economy is based on the agricultural industry. This sector has employed about 90% of Songea district's population. The district has an area of 1 345 000 hectares of which 1 316 000 hectares are arable land. Area under crop cultivation is only 137 887 hectares, which is 10.5% of arable land. There are large farms as well as small farms: Large farms amount to 36 470 hectares and small farms amounts to 101 417 hectares (URT, 2007).

The main sources of income are agriculture with very little animal husbandry. Agriculture practices are still very traditional (shifting cultivation) with low yields per hectare. Small individual peasant farmers undertake farming especially crop production. Cash crops are maize, tobacco, sunflower, simsim, cashew and coffee. Large part of population in Songea district is actively engaged in maize, paddy, cassava and mixed farming. The remained portion is employed in private sector such as trade, carpentry, masonry, mining, fishing, and bee-keeping. The regional per capita income in 2001 was Tsh 222 339.00 while per capita income for Songea district is estimated to be less than Tsh 120 000.00 in 2002. Poverty is characterized by high morbidity and mortality, poor education and nutritional status (URT, 2007).

3.3 Study Design

The study used cross sectional single visit survey method, where data for the production period of 2006/07 were collected by administering a detailed questionnaire to a representative sample of the population. This design is chosen

because it is suitable for description purposes as well as the determination of relationship between variables.

3.4 Study Area

The study was conducted in Ruvuma, Songea district in Peramiho, Mpitimbi, Undendeule, Ruvuma and Muhukura divisions. The divisions were selected purposively due to the distribution of tobacco farmers who grow the three types of tobacco and due to the location of their primary cooperatives society.

3.5 Sampling Design

The targeted population was tobacco farmers residing in Songea district in Ruvuma region. A multi-stage sampling technique; purposive sampling, and stratification random sampling were employed. The multi-staged sampling was used because it took into cognizance the delineation of the study area into districts, divisions, wards and villages scattered in a wide geographical area (Oakshot, 1994), cited by Kalamata (2006). Purposive sampling was used to select tobacco cultivating divisions in Songea district, where tobacco farmers' cooperatives societies had their active members. The random sampling was used to select tobacco farmers from their respective primary cooperative societies. Then tobacco farmers were stratified according to the type of tobacco that they grew. The purposive sampling was employed due to the dispersion of tobacco farmers in the district, it facilitated to sample only the primary cooperative society that grew the three types of tobacco and due to their accessibility.

3.6 Sample Size

The study aimed to interview 120 tobacco farmers; 50 (VFC and Burley) with 70 (DFC). DFC tobacco is the main tobacco type cultivated by growers in the study area (TTC, 2007). However, tobacco farmers interviewed for this study were VFC and Burley (47) and DFC (65) respondents, due to the fact that most small-scale farmers abandoning tobacco cultivation in the study area (TTCA, 2007; TTC, 2007) and the allocation of most of tobacco farmers is scattered in the highlands and was not easy reaching them. Though the sample size was limited to 112 farmers but it was enough for the study statistical analysis.

3.7 Data Collection

3.7.1   Primary data

Primary data was collected through informal and formal surveys such as focus group discussions that were carried out to get an in depth understanding of issues related to all the primary cooperatives and cropping of three tobacco varieties. The formal survey involved personal interviews using pre-tested questionnaire. The information collected included socio-economic data, organization of primary cooperatives, nature of contracts, farming inputs and practices as well as outputs and productivity.

3.7.2   Secondary data

Secondary data significant to this study were collected to complement the information obtained from the sample farmers. Reports and other documentary materials were obtained from the relevant bodies/institutions such as TTB (Morogoro and Songea branch), AOTTL Songea office, SONAMCO and Sokoine

National Agricultural Library. The secondary data aimed at forming an overview on what has been done in relation to the interest of the study and identified gaps in information.

3.8 Tools for Data Analysis

Data were analysed using statistical package for social scientists (SPSS version 11.5) computer program both descriptive and quantitative analysis was carried out. The statistical procedures used in the analysis of the each of the four hypotheses are described in each of the respective hypothesis below.

3.8.1   Descriptive statistics

Descriptive statistics used as part of the data exploration to describe the characteristics of the studied population. Statistics such as means, frequency distribution, percentage, average and cross tabulation were computed. Cross tabulation analysis was used to segregate respondents characteristics based on a type of tobacco and primary cooperatives in order to determine whether or not the variable were statistically independent.

3.8.2   Institutional analysis

Institutional analysis was conducted to assess the performance of tobacco growers under contract farming in promoting production and marketing and problems they encountered. Assessed aspects were format of contract farming practiced, number of

farmers enrolled, performance of input delivery system, effectiveness of extension service, ways price are set to farmers in enhancing production and marketing activities. Other aspects were role of farmers' cooperatives, contractor and the farmers in the sustainability of contract farming.

3.8.3   Quantitative analysis

3.8.3.1   Gross margin analysis

The gross margin analysis was applied to analyse the first objective concerning analysis of the cost and returns of the contract tobacco producers due to the DFC, VFC and Burley tobacco. Then one way analysis of variance (ANOVA) was used to test if there is a significance in gross margin difference among different varieties. Gross margins are determined by deducting total variable costs from the gross farm income of a crop. They are not precise measures for farm profits as they do not include fixed costs. However they provide a useful tool in terms of farm budgeting and estimating the likely returns or losses of a particular crop. Rweyemamu (2003) employed gross margin analysis in order to establish the relative economic profitability of tobacco and maize; while Mathania (2007) used gross margin analysis to compare production and marketing potential of paprika as an alternative to tobacco production and Mshiu (2007) used gross margin analysis to determine and compare the profitability of tobacco and cotton under the contract farming arrangement.

Gross margin model:

$$GM = \sum TR_i - TVC_i \ \text{…....…………………………………………………..…...}$$

(1)

Where: GM= Gross margin per hectare.

TR= Total revenue per hectare.

TVC = Total variable costs per hectare. Where by   i = i[th] crop

3.8.3.2 Regression analysis

Regression analysis was applied to assess the significance of responsiveness of production yield to the factor of production and contract farming characteristics for the tobacco farmers in contract farming. This study adopted the production function from Eaton and Shepherd (2001), and Dileep *et al.* (2002). To analyze the estimated production yield, Cobb-Douglas production function model below (2) was adopted as the best fit over linear to estimate the production observation by the tobacco growers who are in contract with the tobacco companies. The regression coefficients equal the elasticities of output with respect to the various input used in the production. The elasticities are also independent of the unit of measurements.

$$Y = AX_i^{b_i} \ell^u \ \text{……………………………………………………….…..(2)}$$

Where

A= constant term of the regression

Y_i= total output of tobacco of the ith farm (Tshs)

b_i= elasticity of production with respect to the ith input

X_i= i[th] input used in the production process

μ= is the error term.

$\mathcal{C}$ = Euler's constant

The following is the general form of the Cobb-Douglas production function that was adopted in this study. For the sake of estimation the equation was log transformed to become a linear form. The model is therefore, a linear regression and is derived from the basic assumption that the error term satisfies the basic stochastic assumption µ is E (µ) =0; E (µ²) =δ² µ constant variance (Homoskedasticity) E (µⱼ) =0 (i≠j) serial independence. Transforming the equation into the logarithmic form helped to adjust for the effect of heteroskedasticity problem, Gujarat (1995) cited by Mbwana (2007). The following linear model was specified for the purpose of statistical estimation of the parameter of the Cobb-Douglas production function.

$$\ln Y = \ln A + b_1 \ln Age + b_2 \ln FL + b_3 \ln HL + b_4 \ln FERT + b_5 \ln EXTS + b_6 \ln YI +$$

$$+ b_7 \ln FS + b_8 \ln CP + LC + U \quad \text{……………………………………..........(3)}$$

Where in by:-

Ln=natural logarithm

Y= Yield production of tobacco (kilogram per acre),

Age=Farmers age,

FL=Family labour (Tshs per season),

HL= Hired labour (Tshs per season),

FERT=Fertilizers (Tshs for number of bags per acre),

FS= Farm size (Acre per farm),

EXTS=Extension services (Number of visits/training per season from an extension officer),

YI=Years in contract farming (sum for number of seasons per a farmer)

CP=Contracted price (Tshs per kilogram)

With Company in contract (LC) as dummy variable and U is the error term while

b_i= are the regression coefficients of factors inputs.

3.8.3.3 Marginal value productivity

The resource use efficiency was judged basing on the marginal value productivity

(MVP), which indicates the increase in the gross return from the use of additional

unit of a given input while keeping the level of other inputs constants. Objective (iii)

of the study (To examine the resource use efficiency for the tobacco growers under

the contract farming) was analyzed using the marginal value productivity (MVP).

The marginal value product (MVP) of the ith input factor was estimated by using the

following formula:

$$MVP = b_i \left(\frac{\overline{Y}}{\overline{X}_i} \right) P_y \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4)$$

Where by:

$\overline{Y} =$ Average yield of tobacco per hectare at geometric mean levels of all inputs.

$\overline{X}_i =$ Geometric mean level of ith resource, $b_i =$ Production elasticity of ith input

$Py =$ Price of the product

The resources use efficiency was studied by comparing the MVPs of each resource

with corresponding factor costs at which each resource was procured.

3.8.3.4 Yield and price uncertainty ratios

The yield and price uncertainties ratios were applied for analysis of objective (iv) of

the study (To analyses the yield and price uncertainties involved in the tobacco

production and marketing by the small-scale contracts farmers). The method is adopted from Dileep *et al*. (2002) and was modified to fit in this study. The yield uncertainty ratios (YUR) and price uncertainty ratios (PUR) were calculated as follows

Yield uncertainty ratio (YUR) $= \dfrac{AHPEY - ALPEY}{AMPEY}$ …………….....................(5)

Price uncertainty ration (PUR) $= \dfrac{AHPEP - ALPEP}{AMPEP}$ ………………...…….......

(6)

Where by

AHPEY-Average Highest Probable Expected Yield,

ALPEY-Average Lowest Probable Expected Yield,

AMPEY-Average Maximum Probable Expected Yield,

AHPEP-Average Highest Probable Expected Price,

ALPEP-Average Lowest Probable Expected Price, and

AMPEP-Average Maximum Probable Expected Price.

Where by the production ratio under contract farming are supposed to be zero or less than 0.5 as production risks are shared between farmers and contract companies with price uncertainty ratio or marketing risks suppose to be nil as farmers in contract are assured with pre-agreed marketing prices at the start of each season (Eaton and Shepherd, 2001; Dileep *et al*., 2002).

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Overview

This chapter presents analytical results and discussion for the data obtained from the

formal, informal and key informant survey. First section presents the contract

farming profile as is practiced by small-scale tobacco farmers in their primary

cooperatives. The second section presents descriptive statistics showing

characteristics of small-scale tobacco farmers involved in the study; it then describes

and assesses the tobacco production operations of small-scale tobacco farmers with

respect to inputs allocation, provision of extension services and marketing of raw harvested tobacco. The third section presents the empirical results from gross margins; linear regression and uncertainty ratio analysis which were used for testing the required hypothesis respectively and finally the views of contract farming in perspective of tobacco farmers participating in the arrangement.

4.1 Tobacco Production in Songea District

4.1.1 Tobacco contract farming in Songea district

Tobacco farming in Songea district is carried out under contract farming arrangements; involving tobacco-buying companies and cooperatives societies, the latter represents all registered tobacco farmers associated with primary cooperatives. The arrangement is resource format of contract farming as the firm in contract supplies the inputs and technical services to growers and at the end buys the produce at pre-agreed price. The contract organizational chain is "Firms + Cooperative + Farmers". This structure represents the multipartite model type of contract and according to Guo *et al.* (2005), the model is associated with high performance rate. In Multipartite model contract, cooperative acts as a bridge linking tobacco farmers and tobacco buying companies.

In Songea district, AOTLL is the only buyer of green leaf tobacco. The company through tobacco companies unions ATTT provides inputs and extension services to various farmers' cooperative societies that distribute inputs to farmers who in turn supply raw tobacco to ATTT. At the start of each season all tobacco farmers are registered at their respective cooperatives. This helps to evaluate their number and

type of tobacco they are going to cultivate with the amount of inputs they will require on that given season. Farmers through cooperative society enter a one-year contract with tobacco companies, the important terms of the contract is that farmers cooperative on behalf of its farmers has to be provided with inputs on credit at the start of the season and extension services at the prevailing of the crop season. On the other hand, farmer's cooperatives have to sell all of the tobacco harvested from their members to the contracted buyer in order to pay the inputs credit at 100%, thereafter divide the remaining share of sales to its members.

4.1.2 Farmer cooperative society profile

There are about 37 tobacco farmers' cooperatives with estimated membership of 22 300 small-scale tobacco farmers in Namtumbo and Songea district who are practicing tobacco farming in contract arrangement. However, a number of these cooperative societies are not active in operation as most of their members stop cultivating tobacco due to farmers having long-term debts hence detached from inputs credits by their cooperatives. Appendix 5 presents the distribution of farmers and total amount of tobacco produced in the operating farmer cooperative society in Songea district for the season 2006/07. On average each cooperative society registered 234 tobacco farmers in the study area producing total yield of 57 tonnes of tobacco on average. The average output per farmer in each cooperative society was 243.28 kg/hectare less the amount of tobacco expected to be harvested 800-1200 kg/ hectare (TTCA, 2007).

Leaders of cooperative societies described the situation as the result of farmers stopped tobacco cultivation to grow other food and cash crops. Tobacco growers in the cooperative societies are discouraged by poor management of primary cooperative, PC leaders practice vices behaviours such as: selling inputs to farmers growing other crops and distributing inputs to non-members. The debts clearance arrangement is another reason as every cooperative society has to clear its input debts at the end of each crop season from the total sales obtained by its member's, which led some farmers to be cut-off their payment to clear the cooperative society input debts, hence reducing their revenue and funds for cultivating tobacco in coming season (researcher-cooperatives leaders discussion).

4.2 Respondent Profile

4.2.1   Respondent sample distribution

Table 1 presents the distributions of respondents and tobacco variety by cooperatives in Songea district. There were respondents for DFC (65), VFC (27) and Burley (20). Mpamali cooperative had DFC (27), VFC (7) and Burley tobacco (6) respondents while Mpiki cooperative registered a large number of Burley tobacco respondents (9), with VFC (11). Silipema cooperative registered, 12 respondents cultivating DFC tobacco, Burley (5) and VFC (5). Juhudi cooperative registered 14 respondents cultivating DFC and 4 VFC tobacco and there were no respondent from Juhudi cooperative ventured in Burley tobacco.

Table 1: Songea district: Respondents distribution by cooperatives and tobacco variety

PCs	Burley	VFC	DFC	Total

Juhudi	0(0.0)	4(14.8)	14(21.5)	18(16.1)
Mpamali	6(30.0)	7(25.9)	27(41.5)	40(35.7)
Mpiki	9(45.0)	11(40.7)	12(18.5)	32(28.6)
Silipema	5(25.0)	5(18.5)	12(18.5)	22(19.6)
Total	20(100.0)	27(100.0)	65(100.0)	112(100.0)

Figures in parentheses represent percentages

4.2.2 Gender and marital status distribution

Table 2 shows, Male farmers own 94.6% of tobacco farms enterprises while only 5.4% were under female's ownership. The small percentage of female owned tobacco farms is explained by the fact that in the study area and Tanzania generally men still control most of the resources of the family. This observation supports Kalamata's findings who found out that in Urambo district 96.6% of tobacco growers are male (Kalamata, 2005). The study shows that there is high level of marriage in the study area at 97.3% while unmarried farmers only accounted for 2.5% of the respondents.

Table 2: Songea district: Gender of respondents

Sex	Frequency (N=112)	Percent (%)
Female	6	5.4
Male	106	94.6

4.2.3 Age of respondents

The average age of male respondent in the study is 45 years with maximum age being 77 years old and minimum being 20 years while for female farmers the average age is 48 years with maximum age being 55 and minimum age being 34 years. Table 3 shows that most of farmers are above 20 years old implying that there was little involvement of youth in tobacco farming, with 62.5% of respondent

consists of active age group from 20-49 years while 47.5% consisted of 50 and above years which imply that tobacco farming involves most of economically active work force. The involvement of most of older people in tobacco farming is probably due to the fact that they are the ones who own resources as young people tend to involve them selves with off-farm activities or migrate to urban areas.

Table 3: Songea district: Age of respondent

Age	Farmers number (N=112)	Percent (%)
20-29 years	15	13.4
30-39 years	29	25.9
40-49 years	26	23.2
50-59 years	27	24.1
60 years and above	15	13.4

4.2.4   Respondents education level

According to Asfaw and Admassie (2004), and Nyasatu (2006), education is essential to farmers in capturing innovation skills and knowledge of good farming and crop management practices needed by farmers to improve crop production as well as managing their enterprises more profitable. Table 4, shows that there is a large proportion of farmers with primary education as 70.5% of respondent had attended primary education, 16.1% attended adults literacy classes while 6.3% attended secondary education and 5.4% had not attained any formal education. Those whose education level was above secondary were only 1.8%. The result implies that most respondents are conversant with tobacco farming practices. Although Mc Falls Jr (2003) argues that population that is comprised of old people coupled with low level of education tends to resist change and lack initiatives. This

situation creates particular problems in offering advisory service like extension services consequently declines of total farm output.

Table 4: Songea district: Respondent education level

Education level	Frequency (N=112)	Percent (%)
None	6	5.4
Adulty literacy	18	16.1
Primary education	79	70.5
Secondary education	7	6.3
Post secondary education	2	1.8

4.2.5 Economic activities

Table 5, shows that crop production is the main socio-economic activity, with 70.5% of respondent cultivating tobacco and food crops this is due to the fact that tobacco farmers in contract are provided by companies in contract with fertilizer for food crops production especially maize (TTC, 2007), 14.3% cultivating food crops and practicing livestock husbandry while 9.8% are involved with casual employment and only 5.4% of all farmers have permanent employment. The result indicates the importance of crop production to majority in the study area as for most of respondent crop production is their only source of income needed to raise up their standard of living hence escaping poverty.

Table 5: Songea district: Respondent economic activities

Socio-economic activities	Frequency (N=112)	Percent (%)
Tobacco and food crops	79	70.5
Livestock and food crops	16	14.3
Casual employment	11	9.8
Permanent employment	6	5.4

4.3 Farmer's Awareness of Contract Farming

4.3.1   Incentives to engage in contract farming

Contract farming provides growers with an assured market, stable income, access to firms services and technical knowledge and assures good supply of raw materials at less fixed investment and low cost. Table 6, illustrates key potential incentives mentioned by respondent that attracts farmers to engage in contract farming, 26.9% strongly stated the need to improve their income, while 24.1% said assurance of getting their sales payments, 19.4% pointed out of readily market access and 12% identified access of inputs and extension services as the incentives that attracted them to engage into contract farming. However, 15.7% of respondents revealed that they had no other alternatives of practicing tobacco farming as contracting is the only arrangement of growing tobacco farming in Songea district. This shows the awareness of farmers with regards to the potentials of contract farming arrangement as a means of farmers accessing market as well as assurance of payments. This improves their income and reduces rural poverty. Abdallah (2006) and Mshiu (2007) found that farmers are motivated to produce or engage in tobacco production because the crop has relatively higher prices to alternative cash generating crops.

Table 6: Songea district: Respondents incentives to engage in contract farming

Incentives to engage CF	Juhudi	Mpamali	Mpiki	Silipema	Total (%)
No other alternatives	3	4	7	3	15.7
Improving farmers income	5	10	8	8	28.7
Readily market access	2	7	8	4	19.4
Sure of and bonus payments	5	12	6	3	24.1
Access of inputs and services	2	6	3	2	12.0
Total	17	39	32	20	100

4.3.2   Respondent experience practicing contract farming system

The period which farmers have been involved with contract farming plays an important role in awareness of contract arrangement practices. The average number of seasons that farmers in the study have been in contract farming arrangement is about six seasons. Table 7 show that 20.8% have been in the arrangement for one to three seasons. About 37.7% for four to six seasons while 7.5% are respondents in contract farming for about six to eight seasons and about 14.2% are those who have been in the practices of contract farming for about eight to ten seasons while 19.8% are respondents in contract for more than ten seasons. This shows that tobacco farming grew slowly with majority joining the system within the recent seasons.

Table 7: Songea district: Proportion of farmers with experience in practicing contract farming system by number of seasons.

Number of season	Frequency (N=106)	Percent (%)
≤3 Seasons	22	20.8
4-6 Seasons	40	37.7
6-8 Seasons	8	7.5
8-10 Seasons	15	14.2
≥10 Seasons	21	19.8

4.4 Resources Distribution and Uses by Respondents

The section presents the proportion of family and hired labours used by farmers growing per season for all three type of tobacco in 2006/2007 season. Human labour was based on the number of people recorded from the household members and hired labourers per hectare, who were employed to work on various stages of tobacco cultivation.

4.4.1   Human labour

4.4.1.1 Family labour

The average size of the household for farmers involved in the study was six people; a large number of household members implies that there are many individuals in the family that can be engaged in farming production (Abdallah, 2006; Mutakubwa, 2007). Table 8 indicates that about 6.2% of DFC farmers used 1 to 3 labourers per acre, 84.6% used 4 to 8 family members and 9.2% used more than eight family members per hectare. For VFC tobacco, 85.7% used 4 to 8 family members, 14.3% used more than eight and 80% of Burley farmers used 4 to 8 family members and 20% used more than eight family members. The results show that use of family members as source of labour is common due to the easy gathering of family members who were capable of working in tobacco farms.

4.4.1.1.1.

4.4.1.2 Hired labour

The average number of hired labourers per acre was five labourers for DFC farmers and four labourers for VFC tobacco farmers (Table 8). Proportion of respondent who relied only on family labour for tobacco cultivation was 7.7% (DFC) and 7.5% (Burley). While 6.2% of respondent (DFC) used 1 to 3 labourers with 63.1% hired 4 to 8 labourers and 23.1% hired more than eight labourers. About 84.7% of respondents (VFC) hired 4 to 8 labourers and 14.3% hired more than eight labourers. As for Burley respondents 2.5% hired 1 to 3 labourers and 84.6% hired more than eight labourers. The result in Table 8 signifies the necessity of hired and family labour in tobacco production. Hired labours are paid at the end of the season when the crop is sold. The analysis indicates that VFC and DFC tobacco are the

more labour intensive type of tobacco compared to Burley tobacco and are nicknamed as "*mans-tobacco*" by respondents.

Table 8: Songea district: Proportion of labour allocation in tobacco farms by tobacco variety per acre

Labourer	Family labour			Hired labour		
	Burley	VFC	DFC	Burley	VFC	DFC
0 labourers	NA	NA	NA	7.5	-	7.7
1-3 labourers	-	-	6.2	2.5	-	6.2
4-6 labourers	50.0	71.4	63.1	40.0	71.4	43.1
7-8 labourers	30.0	14.3	21.5	15.0	14.3	20.0
>8 labourers	20.0	14.3	9.2	35.0	14.3	23.1

NA-Not available

4.4.1.3 Availability of fertilizer and seeds to growers

Table 9 summarizes the amounts of fertilizer and improved seeds that farmer required compared to the actual amount supplied from which the ratio of shortages/extra supply is calculated, as was adopted from Kalamata, (2006) and then confirmed for this study. Results show that farmer experienced shortage of the amount of fertilizer bags supplied by 4.1% (DFC), 13.7% (VFC) and 6% (Burley) while on the amount of seeds the shortage was reported by 2.6% (DFC) and 20% (Burley) with excess delivery by 25.7% (VFC). Generally results show that there was deficit in overall supply by 6.8% (amount of fertilizer) and 7.4% (amount of seeds).

Table 9: Songea district: Comparisons of input supply to respondents by tobacco varieties

Characters	DFC	VFC	Burley	Total
Number of farmers	65	27	20	112
Amount of land	107.5	44.8	27	179.2
Inputs required				
Amount of fertilizer	344	146	100	590
Amount of seeds	192	74	45	311
Inputs supplied				
Amount of fertilizer	330	126	94	550
Amount of seeds	197	55	36	288
***Differences fertilizer %**	-4.1	-13.7	-6	-6.8
***Difference seeds %**	2.6	-25.7	-20	-7.4

*A ratio calculated as a percentage difference between amounts supplied to amounts required

4.4.1.4 Inputs distribution and sufficiency to farmers

Inputs distribution is a critical factor in contract arrangement that directly affects farmer's intentions of meeting effective growth. Table 10 shows proportion of inputs distribution to respondent by their cooperatives. The result shows that 78.9% received enough inputs of which 65.4% received the inputs on time for the start of the new season while 39.2% reported the shortages they had was due to poor estimates by the organizer (Cooperative society) and 31.4% said was due to the respondent failing to clear their inputs-debt from the previous seasons and 21.7% mentioned late distribution of inputs to farmers as a reason for inputs shortages.

Table 10: Songea district: Proportion of respondents with sufficiency and shortages of inputs supply

Inputs supply	Frequency (N=107)	Percent (%)
No	37	35.0
Yes	70	65.0
Inputs sufficiency	**(N=109)**	
No	23	21.1
Yes	86	78.9
Shortages of inputs	**(N=51)**	
Poor estimates	20	39.2

Limited stocks	11	21.6
Farmer indebtedness	16	31.4
Late disbursements	4	7.8

4.4.2   Extension services

4.4.2.1 Provision of extension services

Extension services are important in raising productivity of the agricultural sector.

Agricultural extension bridges the gap between available technology and farmers

practices through the provision of technical advice, information and training. Lack

or delay of the service to farmers would affect farmer's adoption of new technology

and crop varieties, which ultimately would affect their production and incomes

(Mkude, 2003; Kalamata, 2006). The results in Table 11, show that 27 (VFC) and 20

(Burley) respondents received extension services while only 10.2% (DFC) did not

receive extension services provided.

Table 11: Songea district: Provision of extension services for tobacco farmers

Received training	Burley	VFC	DFC
NO	0 (0.0)	0 (0.0)	7 (10.8)
YES	20 (100.0)	27 (100.0)	58 (89.2)
Training visits per season	**(n=19)**	**(n=27)**	**(n=62)**
Once	2 (10.5)	2 (7.4)	14 (22.6)
2-3 times	7 (36.8)	7 (25.9)	27 (43.5)
4-5 time	1 (5.3)	3 (11.1)	7 (11.3)
More than 5	9 (47.4)	15 (55.6)	12 (19.4)
None	0 (0.0)	0 (0.0)	2 (3.2)

Figures in parentheses represent percentages

For respondents who grew DFC tobacco, 43.5% received extension service 2-3

times while 19.4% received the service more than five times and 3.2% did not

receive extension services while for those who grew Burley all farmers received

extension services with 47.4% of them received extension services more than fives

times. All respondent who grew VFC tobacco received extension service with

55.6% of them receiving the service more than fives times, 25.9% receiving the services two up three times and only 7.4% receiving the extension services once for the whole season.

According to TTC (2007), in Ruvuma region there about 72 extension officers' with farmer: extension officer ratio of 320 to 1 which is not sufficient enough to cover all tobacco growers in the district. Tobacco farmers in Songea districts are dispersed located in highlands hence reaching them needs a motorcycle or four wheel drive vehicle especially in rainy season. The needs for a transportation service and other working kits is essential so as farmers can be provided with extension services effectively at vital moments.

4.4.2.2 Type of extension services provided to respondents

Table 12 shows that 44.1% of respondents received training on managing their tobacco farms, 39.2% received training on grading and bailing tobacco leaves before delivering it to the market floors; and 16.7% were trained in marketing skills. Results also shows the location where respondent received the extension service, 71.3% received the extension training on their farm plots while 23.1% received through their farmers groups. Respondent were provided with training by the extension officers allocated by the tobacco companies in contract, the training enhances on crop and farm management practices. The location where extension service is delivered has impact on farmer adoptions on the given training.

Table 12: Songea district: Delivery of extension services to respondents

Training on	Frequency (N=102)	Percent (%)
Crop and farm management	45	44.1
Tobacco grading and bailing	40	39.2
Marketing skills	17	16.7
Location	**(N=108)**	
Training centre	2	1.9
Farmers plot	77	71.3
Demonstration plot	1	0.9
During meetings	3	2.8
Farmers group	25	23.1

4.4.2.3 Effectiveness of extension services

Respondent were asked to mention the advantages due to receiving extension services provided by the tobacco companies. Table 13 shows the advantages experienced where by 60% of farmers said good quality of tobacco harvests, 19% stated good crop management skills while 15.2% mentioned access to extension services as results of availability of extension services delivered by the companies in contract. However farmer acknowledged poor provision of services as the latter were not delivered on time and insufficient while some of instruction were misleading for example farmers said that the guidelines which were provided by the extension officers on grading and bailing tobacco leaves were contrary to those which are considered in the market floor during grading and selling raw tobacco (researcher-farmers conversation).

Table 13: Advantages of provision of extension services

Advantages	Frequency (N=99)	Percent (%)
Quality tobacco	63	60.0
Crop management	20	19.0
Access of Services	16	15.2

4.5 Economics of Tobacco Production

4.5.1 Production costs

The calculation of production cost excludes all inputs provided under contract arrangement by tobacco companies such as seeds and extension services except labour charges. This evict the costs of the mentioned items at respondents total variable cost, which comprised of human labour, fertilizers and on farm management costs. Therefore results in appendix 6 of the one-way ANOVA analysis show that there is enough evidence to support the null hypothesis that the average variable costs between tobacco farmers in the study are significantly equal; that is the random variation in variable costs between tobacco farmers is not statistically significant ($P>0.05$) and it is probably only due to sample differences (Arsham, 1988). Table 14 shows the variable cost for respondents growing tobacco were Tsh 384 278.7 (VFC), Tsh 328 982.9 (DFC) and Tsh 300 103.8 (Burley) respectively. Fertilizer costs incurred by respondents were very high and accounted for a large proportion of variable costs: fertilizer costs for Burley, VFC and DFC were Tsh 133 253.8, Tsh 149 586.1 and Tsh 141 778.5 respectively, which accounted for 48.5%, 40.7% and 43.8% respectively.

Table 14: Songea district: GMA by tobacco variety for growers

Particulars	Burley	Virginia Flue cured	Dark-Fired cured	Overall
1 Revenue =(a . b)	412 968	490 526	401 256	418 830.87
(a) Production yield(kg)	392.2	516.9	455.3	436.6
(b) Price Tshs/kg	1 053.0	949.0	881.3	961.1
2 Variable cost =(c+d+e)	300 104	384 279	328 982.9	337 788.5

(c) Fertilizer cost	133 254	149 586	141 778.5	141 539.5
	(44.4)	(38.4)	(43.1)	(41.9)
(d) Farm management	70 700	113 519	55 612.7	79 943.7
cost	(23.5)	(29.5)	(16.9)	(23.7)
(e) Labour cost	96 150	121 174	131 591.7	116 305.3
	(32.0)	(31.5)	(40.0)	(34.4)
3 Gross margin =(1-2)	112 864	106 248	72 273	81 042.4

Figures in parentheses are percentages of fertilizer, cultivation and labour costs to the total variable costs

The results support those obtained by Mathania (2007) and Mshiu (2007) who observed that DFC tobacco farmers incurred high labour cost of Tsh 13 1591.7, which was 40% of the total variable cost while proportion of labour costs for farmer cultivating Burley and VFC tobacco were 32% and 31.5% respectively. However the figures of labour costs are lower compared to that obtained by Mathania (2007) which were far beyond the average amount of about Tsh 100 000 usually paid for hired labour at the end of a season.

4.5.2   Tobacco yields and returns for respondents

Appendix 6 the one way ANOVA analysis results show that there is enough evidence to support the null hypothesis that average yields and gross returns for tobacco farmers are significantly equal (P>0.05). The result implies that the variation in average yields and gross returns between the tobacco farmers is not statistically significant and according to Arsham (1988) it is probably only due to sample differences. The average overall yields were 436 kg per acre of raw green tobacco at average price of Tsh 961.1 gives average overall revenue of Tsh 418 830.9. Table 14 shows that respondent who cultivated VFC tobacco had average

yield 516.9 kg per acre of raw green tobacco with average revenues of Tsh 490 526.0 while Burley respondent had 392 kg per acre yield with average revenue of Tsh 412 968.0 and DFC tobacco respondent had 400.6 kg yield per acre with average revenue of Tsh 401 256.0 which is the lowest among the three varieties of tobacco.

The results show that DFC tobacco farmers had higher yield per acre but lower price per kg that resulted to lower average revenue compared to that of Burley. However the higher price per kg for Burley gives higher gross returns per acre compared to that of VFC and DFC. The gross return per acre for the three tobacco varieties were Tsh 112 864.0 (Burley), Tsh 1 056 248.0 (VFC), and Tsh 72 273.0 (DFC) respectively. It should be noted that the average yields per acre obtained is by far-short compared to the expected average yield 1000-1200 kg per hectare attained under recommended good husbandry practices. The difference in yield from the potential yield per hectare is due to late plantation, insufficient application of fertilizer to the required amount per hectare, tobacco leaves not picked and cured as required and incorrectly storage (Mathania, 2007; TTB, 2006).

4.5.3   Estimation of production function in tobacco production

The model summary presented in Table 15 shows the linear regression result of the Cobb-Douglas production function for tobacco farmers studied. The production model was used to determine the impact of the factors of production and contract farming characteristics on tobacco yield.

Table 15: Regression analysis results for sampled tobacco farmers

Variables	Coefficients	Standard Error	t-values	Significance
(Constant)	21.178	1.310	16.171	0.000***
Age	0.026	0.008	3.174	0.002**
Education	0.419	0.133	3.150	0.003**
Experience	0.069	0.010	7.249	0.000***
Fertilizer	0.971	0.277	3.503	0.001**
Land	0.370	0.136	2.724	0.009**
Family labour	0.544	0.422	1.290	0.202 ns
Hired labour	-0.778	0.701	-1.109	0.272 ns
Extension services	-0.674	0.184	-3.668	0.001***
Contracted price	0.002	0.001	2.568	0.013**

R-square=0.784   F=22.189*** $\sum b_i$=1.435

Note: Dependent variable is output per acre

Significance level of 1% and 5% are indicated by *** and **

The R-square of the production model shows that observed independent variables were able to explain about 78.4% of the factors that determine tobacco yields. Also the return to scale parameter which is summations of coefficients for all variables (b_i) in the production model was 1.4 and is significant more than a unit which indicated increasing returns to scale, implying the efficiency of variables included in the contract farming production model. The results indicates the value of the constant–intercept in the analysis being very high 21.2 and significant implying the predicted mean level of tobacco production if units of independent variables used in tobacco production were valued to zero.

Age of farmer cultivating tobacco had a positive effect on amount of yield produced as expected and was statistically significant (P<0.01). This implies that older farmers performed better compared to young farmers due to their experience in tobacco farming and their access to resources to practice farming activities. Most of young people in the study area were only involved in tobacco farming as hired labourers or opt to practice off-farm activities.

Education; the number of years that a farmer attended for education had a positive influence on the amount of tobacco that a farmer produced and was statistically significant (P<0.05). The results imply that majority of tobacco farmers had basic education needed to catch-up with new tobacco farming technologies offered by extension officers and also understanding the procedure of contracting arrangements. Number of years that a farmer attended for education was expected to have positive impact on sustainable use of inputs and hence efficiency production.

Experience; the number of years that a farmer has been cultivating tobacco under contract farming as expected was statistically significant and had positive influence to the amount of yield produced by tobacco farmers (P<0.01). The result indicates that the number of years spent by tobacco farmers in tobacco production under the contract farming had significant effect on increasing production yields. This is probably due to the familiarity that a farmer gained through practicing contract farming procedures as well as practicing good husbandry practices and hence being able to improve production and get high income.

Amount of fertilizer used by tobacco farmers in tobacco production had a positive significant influence on amount of yield produced by tobacco farmers under contract farming (P<0.01). The result indicates that as amount of fertilizer used increases the yield of tobacco. From the regression model a unit percent increase in fertilizer amount accounts for 0.971% increases in yield harvested by tobacco farmers under contract farming.

Area; the size of land used by farmer for tobacco production had a positive impact as expected and was statistically significant in determining the amount of yield obtained by tobacco farmer under contract farming (P<0.05). The result indicates that increasing the area of cultivation by one acre will results into 0.370% increase in amount of output. This means that yield increases as the farm size increases (Mkude, 2003).

Family labour; the number of family members participated in farming activities as expected had a positive impact in tobacco production however the value was insignificant (P>0.05). Probably this is due to constant number of family members gathered to participate in tobacco production among respondents. However size of household member has important socio-economic implication in family members' ability to participate in production activities (Mutakubwa, 2007).

Hired labour; cost of hired labourers had a negative influence on tobacco production and was statistically insignificant (P>0.05). The coefficient was expected to be either negative or positive. Probably the results imply inefficient use of hired labour as tobacco farmers in the study incurred higher labour costs due to tobacco being

high labour intensive crop. Also as the costs of hiring labourers increases farmers tend to organise themselves into groups and assist one another in farming activities.

Extension services provided to tobacco farmers by tobacco companies in contract had a negative sign but statistically significant on tobacco production (P<0.01) contrary to the expected results. The negative sign may be probably interpreted as due to shortage of equipments, unskilled extension officers and poor linkage between tobacco farmers and extension officers and hence insufficient provision of extension services.

Contract price; as expected pre-agreed price between tobacco farmers and companies had positive influence on tobacco production and was statistically significant (P<0.05). Farmers know the premium price for their product before the marketing period which influences them to cultivate aiming to achieve that price hence getting high profit as better price stimulates efficient production.

4.5.4 Resource use efficiency in tobacco production

The ratio MVP to MFC presents the value of returns obtained as a result of the cost in shillings that were incurred for the particular resources employed by farmers during the tobacco production season. The results show that there is no enough evidence to support the null hypothesis that tobacco farmers in the study were significantly employing their resource inefficiently, hence accepting the alternative hypothesis that tobacco farmers were statistically significantly employing their

resource efficiently under contract farming (P<0.01). Table 16 shows the overall ratio for respondents of all three varieties of tobacco being greater than twice, signifying that the returns due to farmers in tobacco production were twice the cost incurred.

Table 16: Songea district: Resource use efficiency ratio in tobacco production

INPUTS	Bi=MPP	VFC MPV:MFC	DFC MPV:MFC	Burley MPV:MFC	Overall Average ratio
Fertilizer	0.97	2.73	2.03	2.37	2.38
Land	0.37	9.62	5.87	7.16	7.55
Family labour	0.54	2.27	1.69	1.65	1.87
Hired labour	-0.78	-1.21	-0.96	-0.87	-1.01
Overall ratio		3.35	2.16	2.58	

T-test value=53.839***

Resource use efficiency levels for the factors of production employed by farmers growing the three varieties of tobacco are shown in Table 16. The table results show that fertilizer ratio is positive and greater than a unit which implies that efficient use of fertilizer in their cultivation of tobacco, family labour the ratio was twice for VFC while resource use efficiency ratio for DFC and Burley is greater than a unit. But for hired labour the ratio is negative and less than a unit indicating inefficient use of hired labour signifying the need to limit and control the use of that resource. The ratio is positive and more than double for the size of land used for tobacco cultivation, the result is probably due to low cost of acquiring land or being cost free as it was inherited by respondent.

4.5.5   Uncertainty in tobacco contract farming

Uncertainties refer to the future events where the parameters of probability distribution cannot be determined empirically or quantitatively (Dileep et al., 2002). However, it is very difficult to measure the uncertainty with any acceptable degree of accuracy. An attempt has been made in this study to estimate the yield and price uncertainty ratios. The yield uncertainty ratios for DFC, VFC and Burley tobacco are presented in the Table 17, which shows that farmers cultivating tobacco significantly experienced uncertainty in their tobacco production in the season 2005/06. The One way ANOVA results in Appendix 7 show that there were enough evidence to accept the null hypothesis that tobacco farmers in contracting farming are experiencing uncertainty in tobacco production ($P>0.05$). The uncertainty level describes the probability that growers fails to attain the specific expected yield or the contracted price. The calculated average yield uncertainty level for the farmers of the three tobacco varieties in Table 17 were high for Burley (0.68) and VFC (0.63) compared to that of DFC (0.50) respectively.

Tobacco farmers are more familiar with DFC tobacco production compared to Burley and VFC tobacco varieties as it has been cultivated since the time of colonials in Songea district while Burley and VFC tobacco varieties have just been introduced in recent years (TTC, 2007). The results are supported with the facts that agricultural investment involves risks. The most likely causes of farmers being insecure on the volume of their yield as reported by Eaton and Shepherd (2001); TTC (2007) are poor crop management, climatic calamities, pest epidemics, market collapses and price fluctuation.

Table 17: Songea district: Yield uncertainties ratios for the tobacco varieties

Tobacco varieties	Average expected yield (kg/acre)			
	highest expected yield	most expected yield	lowest expected yield	uncertainty ratio
Burley	882	594	476	0.68
VFC	738	625	343	0.63
DFC	815	654	488	0.50
Overall	832	666	401	0.65

Although under contract farming farmers have fixed contracted price for procurement of green tobacco leaf but still results show that there is enough evidence to accept the null hypothesis that respondents experienced price uncertainty for the marketing season 2005/06 (P>0.05) (Appendix 7). The results in Table 18, show that average price uncertainty levels for tobacco farmers were low as 0.34 (DFC), 0.41 (VFC) compared to 0.50 (Burley) respectively. Generally tobacco farmers faced low price uncertainty level (0.21) this is probably due to growers under contract farming being assured of selling price by tobacco companies at the start of the farming season, although most of respondent fails to achieve the premium contracted price (TTC, 2007).

One of the reasons of farmers not being sure to sell their tobacco at the premium contracted price is poor quality of marketed raw tobacco. Most of tobacco farmers are not able to produce higher-grade of raw tobacco to attain premium-contracted price hence ending selling their yields at lower market price. Other causes are poor classification procedures, such as under classifying farmer's tobacco with the contracted price offered in terms of US dollar which its exchange rates are fluctuating caused by unstable economic condition in the country (TTC, 2007).

Table 18: Songea district: Price uncertainties ratios for the tobacco varieties

Tobacco varieties	Average expected price (Tshs/kg)			
	Highest expected price	most expected price	lowest expected price	uncertainty ratio
Burley	1 246	990	525	0.49
VFC	1 287	1 057	558	0.41
DFC	1 244	1 066	533	0.34
Overall	1 239	1 126	549	0.21

4.6 Respondents Views on Performance of Contract Farming

4.6.1   Production trend

The arrangement of contract implementations has impacts on the production capacity of growers; respondents were asked to report on their production progress since engaged on contract farming. Table 19 shows that 38% of all respondent stated that their production increased, while 31% said decreased. The percentage trends for the various varieties as shown in the table. Tanzania tobacco board report for the season 2001/02 to 2004/05 shows the increase in average production for VFC and DFC tobacco mainly; VFC tobacco production rose from 848 kg to 1 055 kg per hectare and DFC tobacco production rose from 367 kg to 634 kg per hectare respectively (TTB, 2006).

Table 19: Songea district: Respondent's tobacco production trend

Trend	Burley	VFC	DFC	Overall
Decreased	50.0	14.3	29.5	31.0
Increasing	35.0	28.6	49.2	38.0
Moderate	15.0	42.9	21.3	26.0
No effect	-	14.3	-	14.0

4.6.2   Tobacco classifications and marketing

Most of farmer's tobacco are classified and marketed at the company's warehouses. Respondents complained about marketing procedure which they said are in favours of tobacco companies. Due to means of transporting the harvested tobacco to the cooperative society and companies' warehouses, tobacco deteriorates and looses its quality resulting into farmers receiving low grades and low prices hence less revenues.

4.6.3   Respondents grading knowledge

The classification process has been a critical issue on the marketing of tobacco. Results in Table 20 show that although respondents were aware of the criteria for getting better tobacco price at the market floor still 92% were not able to meet the required criteria. About 87% of respondents blamed classification personnel for poor classification while about 5% and 9% reported that the tobacco buyers and leaf men respectively were the cause of farmers not getting higher grades during selling of their tobaccos. Respondents complained that classifiers and leaf men give low grade for farmers tobacco so that leaf buyers can buy the tobacco at lower prices. About 71% of respondent said that classification method was discouraging while 29.5% stated that the grading procedure was fair. According to Rweyemamu (2003) authorized classifiers from TTB are closer to leaf dealers than farmers hence favouring the companies by down-grading the tobacco at market centers.

Table 20: Songea district: Respondents views on the classification procedure

Respondents meeting criteria	Frequency (N=112)	Percent (%)
Yes	9	8.0
No	103	92.0
Classification individual	**(N=112)**	**Percent (%)**
Classification personnel	97	87.0
Buyers	5	5.0
Leaf man	10	9.0
Respondent concerns	**(N=112)**	**Percent (%)**
Fair	33	30.0
Discouraging	79	70.0

4.6.4   Respondents views on the prices offered for their tobacco

Tobacco farmers had mixed views about raw tobacco prices at the market floor.

Table 21 shows that 47.3% of farmers said that tobacco market price was good, 20%

stated the price was favourable while 32.7% said was discouraging. The results

concur with the recent report provided by Tanzania tobacco board that; the average

tobacco price has been increasing for VFC and DFC tobacco, the report shows that

the average raw tobacco price for VFC has risen by 81% from Tsh 543.40 to Tsh

1000.18 per kg while that of DFC tobacco increased by 45% from Tsh 518.65 to Tsh

752.25 per kg for 2001/02 to 2004/05 seasons (TTB, 2006).

Table 21: Songea district: Respondents views on the prices offered for their tobacco

Views	Frequency (N=110)	Percent (%)
Good	52	47.0
Favorable	22	20.0
Discouraging	36	33.0

4.6.5   Farmers input-loan payments

Table 22 presents the percentage of whether respondent paid the input-loan or not.

Results shows, 93% of respondent paid the loan and only 7% of respondent did not

pay. Where as about 91% paid the whole amount of the loan, 3% paid half amount and 4.3% paid a quarter of the loan while 1.1% did not pay the whole amount. TTC (2007) in the season of 2006/07 reports that only 66% of the total input loan was paid by the FC's. The reason for growers not paying the input loan were due to poor harvest, poor sales which lead to less revenue and one farmer did not pay as his farm was burnt by fire. Respondent claimed that the current arrangement of loan payments affects their revenues as their tobacco sales accounted for those members in their particular cooperatives who did not sale according to the projection hence not paying their part of input loan.

Table 22: Songea district: Respondent input-loan payment status

Payment status	Frequency (N=94)	Percent (%)
No	7	7.0
Yes	87	93.0
Amount paid	**(N=92)**	**Percent (%)**
All amount	84	91.3
Half amount	3	3.3
Quarter amount	4	4.3
None	1	1.1

4.6.6   Respondents views on the benefits due to practicing contract farming

Farmer's motives to join in contract farming are influenced by the benefits from the arrangements. Table 23 presents benefits experienced by respondents for the period they have been under contract arrangement. Analysis shows that 37% had their incomes increased, 31% reported to have quality of their tobacco improved and 7% reduced their farming costs while 6% did not experience any advantage.

Table 23 also presents disadvantages experienced by respondent under contract farming. According to the study 30% of respondents stated that they had experienced higher prices of inputs, 26% pointed out the problem of biasness in classification of raw tobacco at the market floor while 15% said that some of farmers were dishonest by practicing mis-chief habits during packing their raw tobacco resulting into rejects and losses to their primary cooperatives sales and 19% mentioned poor management in their farmers cooperative society as part of their experience under contract farming.

Table 23: Songea district: Effect in practicing contract farming for respondents

Advantages	Frequency (N=109)	Percent (%)
No advantages	6	6.0
Improve of crop quality	34	31.0
Reduction of farmers costs	8	7.0
Improve farmers income	40	37.0
Disadvantages	**(N=102)**	**Percent (%)**
Farmers dishonest	15	15.0
Delay of payments	11	11.0
Higher input prices	31	30.0
Unfair classification	26	26.0
Poor management	19	19.0

4.6.7   Occurrence and causes of conflicts in cooperatives

Distribution of occurrences for conflicts and their causes are presented in the Table 24, results shows that 59% of all respondents said that they never experienced conflicts while 32% very often and 9% rarely experienced conflicts in their cooperatives. According to TTCA (2007), occurrence of disputes in cooperatives has

been one of the major drawbacks in practicing crop production under contract farming

Results in Table 24 shows that, across all selected cooperatives 36% of respondent mentioned tobacco sales payments as one of the major causes of conflicts in farmer cooperatives as farmers had either been paid less amount or delayed on their payment others were pricing procedures (33%), grading procedures (15%) and farmer's negligence (4%) that is farmers' poor knowledge of procedures and terms under contract arrangement.

Table 24: Songea district: Causes and occurrences of conflicts in FC's

Occurrence	Juhudi	Mpamali	Mpiki	Silipema	Overall
Never	66.7	61.5	66.7	42.1	59.0
Rarely	11.1	10.3	3.3	10.5	9.0
Often	22.2	28.2	30	47.4	32.0
Conflicts causes					
Farmers negligence	5.6	2.6	3.2	-	4.0
Pricing procedure	33.3	48.7	15.4	33.3	33.0
Grading procedure	16.7	15.4	12.9	28.6	15.0
Payments	44.4	33.3	29	2.8	36.0

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The overall objective of the study was to assess the performance of contract farming arrangements from the perspective of small-scale tobacco producers in Songea district, Ruvuma region. Specifically the study went on to analyse the nature of contractual arrangement practiced by tobacco growers and firms; production costs and profit margins incurred by growers; efficient resource utilization; price and yield uncertainties level experienced by growers under contract farming scheme in the study area and lastly examined the tobacco farmers view concerning tobacco production under contractual arrangement. The data obtained were analysed using Cobb-Douglas production function and one way ANOVA.

5.1.1　　　　　**Findings of the study**

5.1.1.1 Production cost and returns

The study shows that there is enough evidence to conclude that the average production costs and returns to tobacco (VFC, DFC and Burley) growers under contract farming are not statistically different (P>0.05). The average variable cost per hectare for the respondent cultivating the three tobacco varieties were Tsh 384 278.7 (VFC), Tsh 328 982.9 (DFC) and Tsh 300 103.8 (Burley) while returns were VFC (Tsh 203.23), Burley (Tsh 200.05) and DFC (Tsh 59.95) respectively, probably the variation in returns is due to sample differences. Results show that tobacco farmers in contract farming incurred higher costs of production due to extreme cost of fertilizer and labour costs.

5.1.1.2 Impact of variable factors on production

The result shows that the period during which a farmer has been practicing contract farming, had significant impact on tobacco production. Results implies that though contract-farming characteristics (extension service, fertilizer credits, experience and contract price) are essential in tobacco production but still the factors of production (labour, land and capital) statistically had significant influence in tobacco production ($P>0.05$). The functional analysis revealed that there is significant scope to increase the production of tobacco through efficient use of factors of production along with contract farming characteristics particularly extension services.

5.1.1.3 Resource use efficiency

The study show that there is enough evidence to conclude that tobacco growers are employing their resource efficiently under contract farming ($P<0.05$). The returns due to cost of resources employed in tobacco production by tobacco farmers were twice the cost incurred. The resource used efficiently were amount of fertilizer, family labour and farm size as their ratio of MVP to MFC were positive and more than a unit while for hired labour was negative and less than a unit which indicated the inefficiency use of hired labour in the cultivation of tobacco.

5.1.1.4 Production and price uncertainties

The results of the study show that there is enough evidence to conclude that tobacco farmers of the three-tobacco varieties (DFC, VFC and Burley) are not certain about their production and marketing of their tobacco. Tobacco farmers experienced high level of production uncertainty (0.65) while price uncertainty level were low as 0.20. The result implies that growers had less probability of success in their production and marketing of their harvest due to poor technical knowledge in farm management and poor quality of marketed tobacco.

5.2 Recommendations

Based on the findings of the study the following recommendations are made towards improving performance of growers under contract arrangement in order to capture benefits of contract farming.

5.2.1   Contract farming practices

There is a need for comprehensive and open contract farming arrangements between farmers and companies in contract. Government, companies and cooperatives should be heavily involved in monitoring, facilitating and encouraging growers in contractual arrangement. Government and crops boards need to enforce guidelines for proper practices of contract farming to small-scale farmers. Stakeholders should be given opportunity to contribute on the drafting and nurturing the formats of the contract instead of just ending up signing them. Growers have to agree with their cooperatives societies on the formal legal contract not just operating on the mutual trusts which have been one of the causes for confusion and misunderstanding when agreements are not clearly explained between the contract actors. TTB, TTC and

ATTT needs to formulate means on evaluating the effectiveness of contract farming as a desirable means for growers income stability, technology transfer, market access and agricultural development.

5.2.2 Primary cooperatives society

Poor performance of farmer cooperatives is also a critical problem in contract arrangement implementations accompanied with never-ending disputes between cooperatives leaders and members. Primary cooperatives play an important role in organizing farmers for cultivations, arranging inputs distributions, delivery of extension services and organizing marketing centres for farmers to sell their crops. Also primary cooperatives are responsible in payment of tobacco sales to their particular members and payments of inputs debts to the companies. To promote and strengthen the implementation rate of contract farming, cooperatives leaders have to perform their duties extensively by reaching all of their members. The union needs to establish an effective mechanism on monitoring activities and performance of all farmers' cooperatives.

5.2.3 Inputs supply and distributions

There should exist a well-organized linkage between inputs supplier (ATTT), distributor (cooperatives) and tobacco farmers as the user of the inputs. Adequate timed inputs supply particularly fertilizer, improved seeds and pesticides are crucial in sustaining growers' effective production system under contract farming. ATTT should take a special consideration on shortage and delays of inputs noted by

tobacco farmers in order to improve production and reduce production uncertainty due to inputs shortages.

5.2.4 Provision of extension service

The tobacco companies and farmers' cooperatives need to lessen shortage of extension officers which cause inadequate extension services to growers. The extension officers skills should be enhanced, equipments and extension officers coverage should be allocated according to the number of growers in the district. Growers have to be trained on contract specifications, quality standards, pricing criteria to improve their technical knowledge and reduce contract violations so as to increase performance of contractual system.

5.2.5 Provision of training and services to farmers

Apart from small scale farmers being provided with straightforward technology through provision of extension service there is a need of farmers being trained on how the markets works and commercialise their enterprises, so they may earn more income and improve their wellbeing. Working capital credit which is provided in kind by firms through supply of inputs need to be enhanced along with growers may be offered investment credit for acquisition of machines, tractors in order to increase size of their cultivation enterprises and resulting to bulky farming outputs hence reducing production risks.

5.2.6   **Improvements of marketing arrangements**

Farmer's cooperatives and the Unions need to improve roads in various farmer locations along with establishment of permanent accessible marketing centres where farmers will bring their produce easily, safely and timely. Although currently cooperatives have been gathering tobacco in farms and transport to the marketing centre, but not all farmers were reached at an appropriate time or not reached at all, hence needed to carry the products to the market centres at their own costs. Growers should be given a chance to participate fully during grading and selling of their produce so as to minimize loss of autonomy upon their produce. Leaf mans and other grading personnel should not act on biases and prioritising buyer's benefits while leaving farmers in grieves.

REFERENCES

Abdallah, J. M. (2006). Economic and productive efficiency analysis of tobacco and impact on the Miombo Woodlands of Iringa Region in Tanzania. Thesis submitted for the Degree of Doctor of Philosophy at Sokoine University of Agriculture, Morogoro, Tanzania, 252pp.

Arsham, H. (1988). Kuipers P-value as a measuring tool and decision procedure for the goodness-of-fit test. *Journal of Applied Statistics*, 15(3):131-135

Asfaw, A. and Admassie, A. (2004). The role of education on the adaptation of chemical fertilizer under different socioeconomic environment in Ethiopia. *Journal of Agricultural Economics* 30(3): 215-228

Asokan, S. R. and Singh, G. (2003). Role and constraints of contract farming in Agro-processing Industry. *Indian Journal of Agriculture Economics* 58(3): 11pp.

Baumann, P. (2005). Equity and efficiency in contract farming schemes. The Experience of Agriculture Tree Crops. *Overseas Development*

Institute Working Paper. [http://www.odi.org.uk/publications/ working papers] site visited on 01/07 2007

Chang, C., Chi, C., Chin, M. and, Wei, C. (2006). *Is Contract Farming More Profitable and Efficient than Non Contract Farming. A Survey Study of Rice Farms in Taiwan.* Selected paper prepared for Presentation at the American Agricultural Economics Association Annual Meeting, Long Beach, California, July 23-26, 2006. 21pp.

Dileep, B. K., Grover, R. K. and Rai, K. N. (2002). An economic analysis of contract farming in Tomato. *Indian Journal of Agriculture Economics* 57 (2): 197-210.

Doriye, J. (1990). Inflation in Tanzania policies measures, trends and prospects. *Tanzania Economic Trends* 3(3): 4-13 October 1990. Economic Research Bureau of the University of Dar es Salaam and the Planning Commission.

Eaton, C. and Sherphed, A.W. (2001). *Contract Farming Partnership for Growth*. *A Guide*. Food and Agricultural Organization of the United Nations. Agricultural Service Bulletin 145. Rome, FAO. 165pp.

FAO (2001). Contract Farming Partnership for Growth. A Guide. Agricultural Service Bulletin 145. Rome, FAO [http//www.fao.org] site visited on 14/05/2007

Gabagambi, D. M. and Lymo-Macha, J. G. (2005). Tobacco marketing in Tanzania, background paper for the situation analysis of tobacco control policy and research in Tanzania. (Unpublished). 13pp.

Glover, D. (1994). Contract farming and commercialization of agriculture in developing countries [http/www.ifpri.org/pubs/books/vonbraun94/] site visited on 04/07/ 2007.

Gujarati, D. N. (1995). *Basic Econometrics*. 3rd Edition, Mc Graw-Hill publishing Company. New York, USA, 1002pp

Guo, G., Jolly, W. R. and Zhu, J. (2005). *Contract Farming in China: Supply Chain or Ball and Chain?* Selected paper prepared for the presentation at the Minnesota International Economic Development Conference, University Of Minnesota, 29-30 April, 2005. 52pp.

Harvey, S. J., Klein, P. G. and Sykuta, E. M. (2005). *Markets, Contracts, or Integration? The Adoption, Diffusion, and Evolution of*

Organizational Form. Selected paper prepared for Presentation at the American Agricultural Economics Association Annual Meeting, Providence, Rhode Island, 24-27 June, 2005. 27pp.

Kalamata, S. (2006). Performance assessment of extension service under contract farming arrangement: A case study of Flue cured-Virginia Tobacco growers in Urambo District. Dissertation for Award of MSc Degree at Sokoine University of Agriculture. Morogoro, Tanzania, 150pp.

Key, N. and Runsten, D. (1999). Contract farming smallholders and rural development in Latin America: Organisation of agro-processing firms and the scale of out-grower production. *World Development* 27(2):338-401

Kirsten, J. and Sartorius, K. (2002). Linking agribusiness and small-scale farmers in developing countries: Is there a new role for contract farming? *Working Paper:* 25pp.

KIT (2006). Chain empowerment supporting Africa farmers to develop markets. Royal Tropical Institute. [http/www.kit.nl/smartsite.shmt/] site visited on 04/07/2007.

MAFS (2006). Performance analysis of agriculture sector under the third phase Government period, 1994-2005. Ministry of Agriculture and Food Security, Tanzania National Website visited on 01/02/2007.

Mathania, J. A. (2007). Analysis of production and marketing potential for paprika as an alternative crop to tobacco in Urambo District, Tabora, Tanzania. Dissertation for Award of MSc. Degree at Sokoine University of Agriculture. Morogoro, Tanzania, 81pp.

Mbise, M. (2007). Analysis of coffee marketing system in Arumeru District of Tanzania. Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 81pp.

Mboma, G. (2006). How tobacco companies are discouraging tobacco growers in Tanzania [http//www.ippmedia.com/] site visited on 15/05/2007.

Mbwana, M. (2007). Institutional and economical analysis of small farmers contract farming. A case study of Manyara region Tanzania. Dissertation for Award of Msc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 144pp.

Mc falls Jr, J. A. (2003). *Population: A lively introduction*. 4th Edition Population Edition Bulletin 58(4): 44pp

Mkude, C. D. (2003). Economic analysis of smallholder cashew nuts production and marketing under market liberalization. A case study of Coast Region. Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 155pp.

Mshiu, L. S. (2007). Comparative analysis of contract farming modalities in Tanzania. A case study of Mtibwa sugarcane farming in Morogoro Region and tobacco farming in Tabora Region. Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 100pp.

Mutakubwa, E. B. (2007). Production and marketing analysis of cassava in the Coast Region of Tanzania. Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 96pp.

Mwikila, T. (1992). Economic analysis of factors influencing flue-cured tobacco production in Tanzania. A case study of Iringa Districts. Dissertation

for Award of Msc. Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 122 pp.

NEPAD (2006). Contracts farming fresh hopes for Africa's declining agriculture [http//www.relma.org/pdfs/] site visited on 03/07/ 2007.

Nyasatu, D. P. (2006). The Role of on Farm Processing in Generating Farmers Income. The case of oilseeds in Kongwa District, Dodoma Region. Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 81pp.

Oakshot, L. (1994). E*ssential Elements of Business Statistics*. DP Publication Ltd, South Bringham, England.144pp

Rweyemamu, D. (2001). Economic analysis of cash crop production and marketing in Tanzania under liberalized market economy. A case study of tobacco in Songea District. Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 122pp.

Shabani, A. (2007). Economic analysis of constraints faced by smallholder farmers in crop production. A case study of Kisarawe District, Coast Region,

Tanzania. Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 130pp.

Silva, C. (2005). *The Growing Role of Contract Farming in Agricultural System Development. Driver's Theory and Practices.* Agricultural Management, Marketing and Finance Service. FAO, Rome. 30pp.

Simmons, P. (2003). Overview of smallholder contract farming in developing countries. University of New England, Armidale, Australia. [http//www.fao.org/docrep/fao/] site visited on 14/08/2007.

Simmons, P., Winters, P. and Patrick, I. (2005). An Analysis of Contract Farming in East Java, Bali and Lombok, Indonesia. *Journal Agricultural Economics* 33(3): 513-529.

Singh, S. (2000). Contract farming for agricultural diversification in the Indian Punjab; A study of performance and problems. *Indian Journal of Agriculture Economics* 55(3): 283-294.

TISA (2007). Agricultural diversification and alternative crops to tobacco. Submitted by the Tobacco Institute of South Africa on behalf of Tobacco Grower Organizations in Sub-Saharan Africa for the WHO FCTC Public Hearing. February, 2007. [www.tobaccoleaf.org.] site visited on 10/07/2007.

TTB (2006). *Tanzania Tobacco Sector Performance Analysis Report for 2000/01 to 2004/05*, Tanzania Tobacco Board. Morogoro, Tanzania.17pp.

TTB (2007). The Importance of Tanzania Tobacco Sector. Tanzania Tobacco Board. Morogoro, Tanzania. 6pp.

TTB (2007). *Tobacco Marketing Report in Ruvuma Region for Season 2007/2008*. REF.NO. TTB/RUV/T.9/VOL.III/214. 11pp.

TTC (2007). Review on Dark Fired Cured Tobacco production in Songea and Namtumbo Districts, Ruvuma Region, and Tanzania. Tanzania Tobacco Council, Morogoro, Tanzania. 22pp.

TTCA (2007). The situation analysis for co-operatives unions in tobacco production in Ruvuma Region. Tanzania Tobacco Cooperative Apex Limited. Morogoro, Tanzania. 10pp.

URT (2001). *Agricultural Sector Development Strategy*. National Printing Company, Dar es Salaam, Tanzania. 82pp.

URT (2007). *Songea District Council Strategic Plan 2007-2010*. Prime Ministers Office Regional Administration and Local Government. Government printers, Dar es Salaam, Tanzania. 34pp.

URT (2007). *Socio-Economic Profile –Ruvuma region*. National Bureau of Statistics (NBS) and Planning Commission, Dar es Salaam. 195pp

URT (2007). *The Economic Survey 2006*. The Ministry of Planning Economy and Empowerment. Government Printers, Dar es Salaam Tanzania. June 2007.

Warning, M. and Wendy, H. (2000). *The Impact of Contract Farming on Income Distribution: Theory and Evidence*. Paper prepared for Presentation at the Western Economics Association International Annual Meetings. June, 2000. 26pp. [http://www.ups.edu/eco/working papers] site visited on 10/07/2007.

Warning, M., Key, N. and Wendy, H. (2002). Small Farmer Participation in Contract Farming (Unpublished draft). University of Washington.18pp.

World Bank (2005). Reform Experience with the Tanzanian Cotton Sector. [www.worldbank.org/afr/findings] site visited on 03/07/2007.

APPENDICES

Appendix 1: Farmers questionnaire

Economic Analysis of Contract Farming for Small-scale tobacco producers in Songea district, Ruvuma region.

I Farmer's characteristics

Farmers name………………………………Questionnaire No:…….

Division………………………………..Ward…………………………..

Village……………………………………Primary

society/association………………..

1. Age………………years

2. Gender

     1. Male   2. Female

3. Marital status.

     1. Single   2.Married   3.Widowed

     4.Divorced.

4. Education level attained (Number of years in school).

     1. None   2. Primary educations……   3. Secondary education……….

     4. Tertiary education………   5. Adult literary classes…………

     6. Others (Specify)…….

5. Respondent main economic activity

     1. Tobacco farming   2.Livestock and Food cropping

     3. Casual Employment   4. Permanent Employment

6. Farmers household composition

Age group	Males(number)	Females(number)
Below 17		
17-50 years		
Above 50 years		

7. If yes, name the tobacco company you are in contract with…………………..

8. Farmer period in growing tobacco.

     1. Less than 3 season   2.4-6 seasons   3.6-8 seasons

     4.8-10 seasons   5.More than 10 seasons

9. Farmer reasons to join contract farming.

………………………………………………………………

………………………………………………………………

....

10. Mention any advantage or disadvantage of being a tobacco contract grower.

………………………………………………………………

………………………………………………………………

………………………………………………………………

II Farm Resource and Input Availability and Use

(a) Land acquisitions

1. What is the size of the land owned by the farmer………. (Hectares)

2. How did you acquire it?

      1. Inherited.   2. Bought.   3. Hired.   4. Accessed as a free land

      5. Given by village government.

3. The size of land used for tobacco cultivation………. (Hectares)

(b) Labour availability and use

4. Indicate the number of available laborers in the farmer's household for tobacco Production

Age Group	Males	Females	Total
<10 years			
10-14 years			
15-18 years			
19-50 years			
> 50 years			

(c) Labour use

5. Indicate labour use for input used in tobacco productions

Activity	Family labour	Hired labour	Total payment (Tshs)
Nursery work			
Firewood collection			
Barn constructions and maintenance			
Land preparations& ridging			
Transplanting			
Fertilizer and pesticides application			
Topping & desuckering			
Harvesting			
Curing			
Sorting, grading, bailing and marketing			
Other works			

III SERVICES

(a) Inputs supply and Prices

1. Name the company that supplies you with the inputs…………………….

2. Types of inputs supplied by the tobacco company

Types of inputs	Source	Quantity required	Quantity supplied	Price/unit	Total costs
Tobacco seed(packets)					
Fertilizer NPK(Bags)					
Fertilizer(CAN)					
Hessian cloth(meters)					
Jute twine					
Insecticides					
Firewood					
Tractor services					
Hired labour					

3. Were the inputs supplied in times?

      1. Yes   2.No

4. If No, what was the reason for the delays? (Mention)

…………………………………..

………………………………….

4. Were the inputs supplied to you sufficient for the tobacco farming requirements?

     1. Yes   2.No

5 .What was the shortage of inputs list them

……………………………………………….

……………………………………………….

……………………………………………….

6. Reasons for shortage supply of inputs

     1. Poor estimates   2. Limited stock by the company

     3. Farmers indebtness   4. Late distribution of inputs to grower

     5. Other specify………………………………..

7. What is the trend of input prices compared with the previous seasons?

     1. Increased   2.Decreased   3.Constant

(b) Services

8. Were you provided with any extension service?

     1. Yes   2.No

9. If No why …………………..

10. If yes name the provider and the services

………………………...............................

…………………………………………..

…………………………………………..

11. If yes, how many times

     1. Once per season   2.2-3 times per season 3. 4-5 times per season

     4. 4-5 times per season   5. More than 5 times

12. Where do you receive the extension services?

     1. Training centre   2. Farmers plot   3.Demonstrations plot

     4. During meetings   5. Farmers group

13. Did you get input loan?

     1. Yes   2.No

14. What was the amount................................? (Tshs)

15. Mention the provider of the input loan.

     1. Government   2.Leaf   Dealers……………   3.Bank

………………….

16. Have you paid the debt?

     1. Yes   2.No

17. How much of the debt have been paid

     1. All amount   2.Half amount   3.Quarter amount   4.None

18. If none, what are the reasons for not repaying the loan?

     …………………………………………………
     …………………………………………………
     …………………………………………………

IV Production Capacity

1. What was the amount of yield obtained in the given seasons and their expectations?

Years (season)	Area cultivated (hectares)	Actual outputs (kgs)	Highest Expected output(kgs)	Maximum Expected output(kgs)	Lowest expected output(kgs)
2005/2006					
2006/2007					

2. How is production capacity after engaging in contract farming?

     1. Increased   2.Decreased   3.Moderate

     4.Satisfactory

3. What are the views about contract farming arrangements?

     1. Good   2.Excellent   3.Bad   4.No effect

4. What are the reasons for the concerns in (3) above? (Mention them)

     ………………………………………………….
     ………………………………………………….
     ………………………………………………….

V Marketing

1. How do you classify your tobacco for marketing (rank the criteria).

      1. Colour   2.Size   3.Weight   4. Moisture contents

2. Who is responsible for classifications?

      1. Farmer   2.Classfiers   3.Leaf buyer's   4.Primary cooperatives

3. Where does classification takes places

      1. Market floor   2.At the farm   3.Primary cooperative offices

4. What are your concerns about classification procedures?

      1. Reasonable   2.Good   3.Favorable   4.Discouraging

5. Tobacco price schedule.

Years (season)	Contracted price (kgs)	Maximum Expected price (kgs)	Highest Expected price (kgs)	Lowest expected price (kgs)
2005/2006				
2006/2007				

6. Whose is responsible for determining tobacco market prices?

      1. Farmer   2.Primary cooperatives societies   3.Leaf dealers

      4.Classfiers

7. What are your views about the prices?

      1. Reasonable   2.Good   3.Favorable   4.Discouraging

8. How often does a conflict occur in your FC'S?

      1. Never   2.Rarely   3.Often

9. What are the causes of conflicts in FC'S?

      1. Farmers Negligence   2.Pricing Terms   3.Grading Terms

      4.Payment Time

Farmer's General Comments about Contract Farming

What are the comments about the performance of the whole contract arrangements?

      ……………………………………………………………………………………

      ……………………………………………………………………………………

      ……………………………………………………………………………………

      ……………………………………………………………………………………

      THANKS FOR YOUR PARTICIPATION

Appendix 2: Tobacco production for SONAMCO in 2001/02 to 2007/08 seasons

Farming season	Type of tobacco(kg)						Total Production	
	DFC	%	VFC	%	BURLEY	%	Kg	%
2001/02	4 671 609.0						4 671 609.0	
2002/03	2 841 341.0	-39					2 841 341.0	-39
2003/04	5 100 690.0	79	61 597.0		1 406.0		5 163 693.0	82
2004/05	4 862 837.0	-5	152 599.0	148	6 084.0	333	5 021 520.0	-3
2005/06	3 536 465.0	-27	265 766.0	74	187 299.0	30	3 989 530.0	-21
2007/08	967 923.0	-72	169 848.0	-36	169 817.0	-9	1 307 588.0	-67

Source; URT, 2007

Appendix 3: Production trend for cash crops 2005/2006

No	Crop	2005/2006		2006/2007	
		Implementation (Ha)	Production (Tons)	Implementation (Ha)	Production (Ton)
1	Coffee	716	107	791	134
2	Cashew	124	26	159	42
3	Tobacco	973	533	1 560	780
4	Simsim	3 532	1 766	3 964	2 144
5	Sunflower	974	682	1 200	1 013
6	Groundnuts	2 403	1 206	3 630	2 289
7	Soya	696	346	781	399
8	Paprika	26	64	145	179

Source: URT 2007

Appendix 4: Distribution for tobacco farmers in cooperative society

PCS	Farmers (Number)	Average Output (Kg)	Total Output (Kg)
Juhudi	105.00	450.56	47 309.00
Silipema	178.00	131.78	23 457.00
Lumbole	423.00	287.74	121 712.00
Mpitimbi	97.00	270.45	26 234.00
Malima	260.00	99.33	25 825.00
Mpiki	200.00	164.59	32 918.00
Mpamali	374.00	322.97	120 791.00
Total	**1 637.00**	1 727.42	**398 246.00**
Average	**233.86**	246.77	**56 892.29**

Source SONAMCO, 2007

Appendix 5: One way ANOVA results for GMA for variable cost, yields and returns for tobacco varieties

		Sum of Squares	df	Mean Square	F	Sig.
Variable costs	Between varieties	1.12×10^{11}	2	5.57×10^{10}	1.355	0.262 ns
	Within varieties	4.48×10^{13}	109	4.11×10^{10}		
	Total	4.59×10^{12}	111			
Yields	Between varieties	272522.704	2	136261.4	1.050	0.354 ns
	Within varieties	1.29×10^{7}	100	129814.8		
	Total	1.32×10^{7}	102			
Gross margins	Between varieties	1.01×10^{11}	2	5.06×10^{10}	0.406	0.668 ns
	Within varieties	8.98×10^{12}	72	1.24×10^{11}		
	Total	9.08×10^{12}	74			

Appendix 6: Songea district: One way ANOVA results for production and price uncertainty ratio for tobacco farmers

Uncertainty ratio		Sum of squares	Degree of freedom	Mean square	F	Sig.
Output ratio	Between varieties	0.061	2	0.030	0.544	0.582 ns
	Within varieties	5.827	104	0.056		
	Total	5.888	106			
Price ratio	Between varieties	0.216	2	0.108	0.470	0.627 ns
	Within varieties	17.453	76	0.230		
	Total	17.669	78			

ns indicates not significant