

**AN EVALUATION OF SMALLHOLDER COTTON MARKETING IN MALAWI: A
CASE OF SALIMA AND BALAKA RURAL DEVELOPMENT PROJECTS, MALAWI**

HELLEN CHIMWEMWE MWATUWA

**A Thesis submitted to the Graduate School in Partial Fulfilment for the Requirements of
the Collaborative Master of Science Degree in Agricultural and Applied Economics
(CMAAE) of Egerton University**

EGERTON UNIVERSITY

NOVEMBER, 2009

DECLARATION AND RECOMMENDATION

Declaration

I hereby declare that this is my original work and has not been presented in this or any other university for the award of a degree.

Hellen Chimwemwe Mwatwa
(KM17/2016/07)

Sign: -----

Date: -----

Recommendation

This work has been submitted with our approval as supervisors.

Dr. Benjamin. K. Mutai (Department of Agricultural Economics, Egerton University, Kenya)

Sign: -----

Date: -----

Prof .A.K. Edriss (Department of Agricultural Economics, Bunda college of Agriculture,
University of Malawi)

Sign: -----


Date: -----

COPYRIGHT

Copy©2009

Hellen Chimwemwe Mwatwa

All rights reserved, no part of this may be reproduced ,stored in any retrieval system or transmitted in any form or any means including electronic , recording , photocopying or otherwise the prior written permission of the author or Egerton University on behalf of the author.

DEDICATION

I dedicate this work to my beloved parents Zeno Antonio and Veronica. You first appreciated the great need of education for a woman, and you choose right for me. To you I say thank you and may God Bless you always.

ACKNOWLEDGEMENTS

I wish to express my heart felt thanks to my supervisors Dr B.K. Mutai and Professor A.K. Edriss for their technical support. Their comments and criticisms have greatly improved the quality of this work. My special appreciation goes to members of staff of Salima and Balaka RDPs for their willingness to help, and to farmers for being cooperative in giving out information that has enabled completion of this work. I also thank staff from various organizations who were my key informants during my survey.

I am also grateful to CMAAE, my sponsor, for the financial support provided during my second year of study. Without their support, my education in Kenya would have been hard. Special thanks also go to AGECE/AGBM department for the support rendered to me during the course of this study. Much gratitude should go to Dr B.K. Njehia for being so understanding and extremely helpful in giving freely his time to advice and comment on the successive drafts of this report. Furthermore, I would like to thank my course-mates for sharing their knowledge and life experience with me.

Last but not least , I am indebted (and do feel to express my esteemed thanks) to my husband Daniel and daughter Michelle whose love, support , patience and care during the entire period of study gave me the courage to move on , even in times of hopelessness. I would also like to give special thanks to my parents, sisters and brothers for their great encouragement and support, which they have given me through out my lifetime. Above all I would like to thank God the almighty for the gift of life and for seeing me through at all times.

ABSTRACT

Liberalization of the Cotton market in Malawi permitted private sector participation in the market. As such it was expected that the liberalized market would afford both the sellers as well as the buyers of cotton a fair return on investment as compared to the days when the Government was controlling the cotton prices. A major consequence of the market liberalization policy was that a new market structure has emerged because of the entrance of individuals firms and corporate organizations that now support production and marketing of Cotton in Malawi. However, there is very little empirical evidence on how this development in the Cotton market affected the performance of the market in terms of its efficiency. It is with this background that a study to analyse the performance of Cotton marketing in Salima and Balaka Rural Development Projects (RDP) was conducted. A total of 120 cotton producers, 30 traders and 4 cotton ginning companies were interviewed. A price spread method was used to determine marketing margins of private traders and ginners and measure marketing efficiency. The Hirfindahl Hirshman index was used to measure the concentration level and competitiveness of the cotton market in the two RDPs. A modified production function analysis using ordinary least squares was carried out to analyse factors influencing the quantity of cotton produced. Analysis of the structure of the cotton market revealed that the cotton market is less competitive in nature. Market margin analysis indicated that the cotton market would be efficient if producers sell their cotton through farmers' organizations. Results on regression indicated that land allocated to cotton, household income invested, amount of pesticides used in cotton production and gender as being main determinants of cotton produced and sold. All these factors were significant at 5% level. Key recommendations of the study includes; improved access to market information, encourage farmers and traders to form cooperatives /associations and enhanced accessibility to credit facilities and create policy environment that facilitate active participation of private traders and ginners in the marketing of cotton.

TABLE OF CONTENTS

DECLARATION AND RECOMMENDATION	I
COPYRIGHT	II
DEDICATION.....	III
ACKNOWLEDGEMENTS	IV
ABSTRACT.....	V
TABLE OF CONTENTS	VI
LIST OF TABLES	IX
LIST OF FIGURES	X
CHAPTER ONE:INTRODUCTION	1
1.1 BACKGROUND INFORMATION	1
1.2 AGRICULTURE POLICY FRAMEWORK.....	1
1.3 COTTON SUB-SECTOR	2
1.4 STATEMENT OF THE PROBLEM	5
1.5 OBJECTIVE OF THE STUDY.....	5
1.5.1 Overall Objective.....	5
1.5.2 Specific Objectives	5
1.5.3 Hypotheses of the Study	6
1.6 SIGNIFICANCE OF THE STUDY	6
1.7 LIMITATIONS OF THE STUDY	6
1.8 DEFINITION OF TERMS	7
CHAPTER TWO:LITERATURE REVIEW.....	8
2.1 WORLD COTTON MARKET	8
2.2 SMALLHOLDER COTTON PRODUCTION AND MARKETING IN MALAWI.....	9
2.3 MARKET LIBERALIZATION	10
2.4 PAST RELATED STUDIES	12

2.5 MARKET STRUCTURE CONDUCT AND PERFORMANCE PARADIGM.....	13
2.5.1 Market Structure	13
2.5.2 Market Conduct	14
2.5.3 Performance	15
2.5.4. Conceptual Framework.....	16
CHAPTER THREE:RESEARCH METHODOLOGY	19
3.1 STUDY AREA.....	19
3.2 SOURCES OF DATA	20
3.3 SAMPLING PROCEDURE	20
3.4 DATA PROCESSING.....	22
3.5 EMPIRICAL ANALYSIS	22
3.5.1 Assessment of the Structure of Cotton Marketing System in Salima and Balaka Rural Development Projects	22
3.5.2 Analysis of the Conduct of Cotton Market Players in Salima and Balaka Development Projects.....	23
3.5.3 Analysing the Efficiency of Cotton Marketing in Salima and Balaka Rural Development Projects.	24
3.5.4 To Analyse Factors determining cotton productivity in Salima and Balaka Rural Development Projects	26
CHAPTER FOUR:RESULTS AND DISCUSSIONS.....	29
4.1 DESCRIPTIVE ANALYSIS.....	29
4.1.1 Socio-Demographic Characteristics of Cotton Producers and Traders	29
4.1.2 Gender of Household Head.....	31
4.1.3 Cotton Crop Specific Analysis.....	31
4.1.3.1 Producers Perception towards Cotton as a Cash Crop.....	31
4.1.3.2 Cropping Patterns.....	32
4.1.3.3 Constraints in Cotton Production.....	33
4.1.3.4 Access to Extension Services.....	34
4.1.4 Cotton Traders Socio Economic Characteristics Gender, Age and Literacy Level.....	35
4.1.4.1 Type of Private Traders	35

4.1.5 Source of Income for Cotton Producers and Capital for Traders	36
4. 1.6 Cotton Marketing Functions	37
4.1.6.1 Exchange Functions	37
4.1.6.2 Physical Marketing functions	38
4.1.6.3 Facilitating Functions.....	41
4.1.7 Cotton Marketing Agents and Marketing Channels	45
4.1.7.1 Cotton Marketing Agents and their Role	45
4.1.7.2 Marketing Channels for Cotton	45
4.1.8 Policy and Trade Issues in Cotton Marketing.....	49
4.2 EMPIRICAL ANALYSIS: ANALYSIS OF STRUCTURE, CONDUCT AND	
PERFORMANCE OF COTTON MARKETING	50
4.2.1 Market Structure Analysis	50
4.2.1.1 Organization of the Market in terms of Marketing Channels	50
4.2.1.2 Market Shares distribution in Cotton Marketing	51
4.2.2 Cotton Market Conduct.....	54
4.2.3 Cotton Market Performance Analysis.....	57
4.2.3.1 Gross Market Margins for Salima and Balaka Markets.....	57
4.2.4 Modified Cobb-Douglas Production Function Analysis for factors affecting quantities of cotton produced	62
CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS	67
5.1 CONCLUSIONS	67
5.2 RECOMMENDATIONS	68
REFERENCES.....	71
APPENDICES.....	77

LIST OF TABLES

Table 1: Selected Characteristics of Household Head In 2007/2008 Season	29
Table 2: Percentage of Household Heads by Gender (Sex) And Rdps.....	31
Table 3: Preference for Growing Cotton	32
Table 4: Constraints in Cotton Production and Marketing	33
Table 5: Access to Extension Services	35
Table 6: Levels of Education of Cotton Traders.....	35
Table 7: Major Source of Household Income for Producers and Capital for Traders	37
Table 8: Factors Influencing Pricing Decisions.....	38
Table 9: Storage Period of Cotton by Producers before Sale	39
Table 10: Mode of Transport by RDP	40
Table 11: Percentages of Cotton Producers who graded their Cotton Before Selling.....	41
Table 12: Source of Farm Input Loan Received by Cotton Producers	44
Table 13: Proposed Policy Issues to Promote Cotton Marketing	49
Table 14: Market Shares	51
Table 15: Herfindahl Hirschman Indices for Buyer Concentration in Balaka and Salima.....	52
Table 16: Average Selling Prices (MK/Kg) for Salima and Balaka Markets.....	57
Table 17: Gross Market Margins	58
Table 18: Price Spread Analysis	59
Table 19: Results of Production Function	63

LIST OF FIGURES

Figure 1: Production Trend of Seed Cotton 1997-2008.....	4
Figure 2: Conceptual Framework	18
Figure 3: Map of Malawi	19
Figure 4: Types of Private Traders	36
Figure 5: Sources of Market Information by Traders and Producers	42
Figure 6: Percent Distribution of Major Buyers of Cotton in Salima And Balaka RDP	46
Figure 7: Cotton Marketing Channels for Salima and Balaka Market	47
Figure 8: Quantities of Seed Cotton sold per Marketing Channel in 2007/2008 Season.	51

LIST OF ACRONYMS AND ABBREVIATIONS

ADD	Agriculture Development Division
ADMARC	Agriculture Development and Marketing Cooperation
ADP	Agriculture Development Programme
AGOA	Africa Growth and Opportunity Act
CMAAE	Collaborative Masters Degree in Agricultural and Applied Economics
EPA	Extension Planning Areas
GDP	Gross Domestic Product
GoM	Government of Malawi
HHI	Herfindahl Hirschman Index
MCCCI	Malawi Confederation of Chambers of Commerce and Industry
MGDS	Malawi Growth and Development Strategy
MK	Malawi Kwacha
MoAFS	Ministry of Agriculture and Food Security
RDP	Rural Development Projects
SAP	Structural Adjustment Program
S-C-P	Structure- Conduct- Performance
TGMM	Total Gross Marketing Margin
GOT	Ginning Out Turn

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Agriculture is the most important sector of the economy and will remain the mainstay of the economy in Malawi in the short to medium term. Currently, agriculture employs over 80 percent of the country's labour force including subsistence farmers and contributes over 80 percent of foreign exchange earnings and supplies more than 65 percent of the raw materials most needed by the manufacturing sector. It accounts for 39 percent of the Gross Domestic Product (GDP) and contributes significantly to national and household food security (GoM, 2005).

The agriculture sector is dominated by the production of tobacco, sugar and tea, which are the main foreign exchange earners. At present, the tobacco industry which is the main stay of the Malawi's economy is facing a lot of challenges due to the anti-smoking lobby and other factors. As a result other crops are slowly becoming important sources of foreign exchange in Malawi; among such cash crops that have high potential to expand particularly in the smallholder sub-sector is cotton (GoM, 2005). Similarly, despite several challenges in agriculture the government anticipates to open up the economy to trade. This would be done through implementation of various programmes and policies that are outward-looking and export-oriented rather than import-substituting. Agriculture will therefore need to concentrate more on the production of commodities in which Malawi has competitiveness and export growth potential .e.g. cotton. This would be done through a commercial approach that emphasizes on efficient utilization of resources through more private initiatives and greater commercialisation of smallholder agriculture through linkages. Special focus is on increasing importance of the agro-processing industries that would require complementary growth in agricultural output for reliable and sufficient supply of inputs and raw materials (GoM, 2005).

1.2 Agriculture Policy Framework

The Malawi Growth and Development Strategy (MGDS) concentrate on agriculture as the driver of economic growth and recognise that food security is a prerequisite for economic

growth and poverty alleviation. The Strategy focuses on increasing agricultural productivity and integrating smallholder farmers into commercial activities. Among some of the crops targeted here include tobacco, sugar, tea and cotton.

According to the MGDS (2005), the long-term goal is to develop a vibrant cotton growing and processing industry. In the medium term, the country's policy aims at increasing production of garments made from locally woven cotton cloth as opposed to imported synthetic fabrics. This will require development of a local textile industry to increase the flow of cotton from growers and ginneries, thereby having a positive impact on the cotton sub-sector and opening up textile products for export. Currently, the linkages between the cotton sub-sector (production of lint cotton) and textile and garment production (manufacturing) are weak.

The Ministry of Agriculture and Food Security (MoAFS), noting the recurrent food crises and erratic sectoral growth rates has also developed an Agriculture Development Programme (ADP) framework which is going to guide investments for the sector for the next five years (GoM 2008). Similarly in this framework, the ministry prioritizes key areas for immediate intervention in order for the sector to grow sustainably while reducing malnutrition and poverty. Specific in this framework, under its agri-business component is also cotton among other high value crops targeted for meaningful investment.

1.3 Cotton Sub-sector

Cotton is one of the most important cash crops in Malawi. It ranks fourth as a foreign exchange earner for the country contributing 1.8% of the total foreign exchange earnings after tobacco 47.5%, sugar 11.5%, and tea 8.6% (GoM, 2008). In addition, cotton has immediate potential impact on growth because of the following reasons; four private ginning companies have invested in the last six years and have plans for further investment to revitalise cotton growing by smallholder growers through providing access to inputs and technical support and AGOA has created more opportunities for exports of garments to the USA and stimulated demand for textiles and cotton lint in the region, particularly in South Africa (GoM, 2005).

The major growing areas are; the Lower Shire Valley accounting for up to 50% of national production, the southern region upland areas around Balaka accounting for 30% of production and the Lakeshore area around Salima accounting for the remaining 20% (RATES, 2003). Cotton is predominantly grown by smallholders and it supports up to 90,000 farm families and it is approximately grown under 30,000 hectares. There were attempts by large commercial farms to cultivate cotton but most of them have stopped growing because of low profitability in the face of poor international prices over the past five years (GoM, 2004).

Malawi has been a Cotton growing country since the colonial era. The cotton sector was vibrant for many years but started to slump in the early 1990's due to among other reasons, the decline in global prices of the crop and the increasing cost of production, which eroded the profitability for small and marginal farmers (MCCCI website, 2008). Other problems includes high input requirements for cotton growing, including herbicides, pesticides and spraying equipment, high labour input required for weeding, spraying and picking, Poor credit discipline, which resulted in withdrawal of credit facilities, reduction in the number of buying points close to farmers and the increased role of traders who have generally taken advantage of smallholder farmers and problems with quality and availability of seed. Figure 1 below show the trend of cotton production for the past 10 years. This is against a benchmark of 70,000 metric tones of cotton that was produced in Malawi during the years 1986-1990 (Rates, 2003).

One of the major challenges faced by cotton farmers is the low seed cotton farm gate price on the market. From mid 1960's Agriculture Development and Marketing Corporation (ADMARC) was the sole buyer of seed cotton until 1994 when the market was liberalized following the adoption of an economic Structural Adjustment Program (SAP) with the World Bank. To a large extent as well, the sector was affected by market liberalization which led to a heavy influx of finished textile goods and garments hence pushing out of business the only and biggest company, then called David Whitehead and Sons in the manufacturing sub-sector (GoM, 2003). As such ADMARC scaled down its involvement and sold its ginneries.

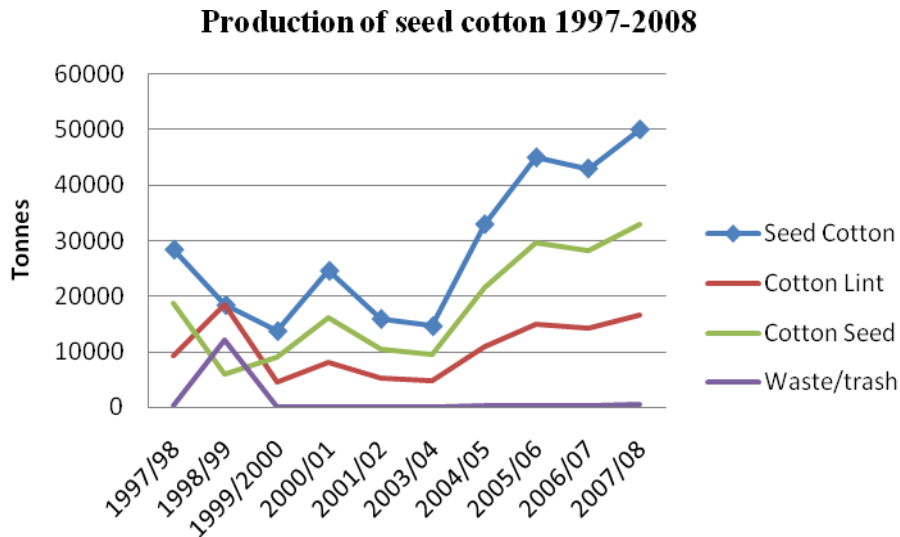


Figure 1: Production Trend of Seed Cotton¹ 1997-2008

Source: Great Lakes, 2009

On the other hand, the market liberalization permitted private participation in the marketing of cotton. This resulted into the coming of private cotton companies like Great Lakes, Cargill, Iponga, NAHDI and Tolesa cotton Companies. These companies came in with the hope of increasing competition in the buying of seed cotton. However, instead of competing to buy seed cotton these companies colluded and in the process offered low farm gate prices (GOM, 2005). Virtually all the cotton crop is sold within Malawi to the above mentioned ginning companies despite the fact that there are claims that some of the seed cotton is exported to Mozambique through private traders. Therefore, this study was intended to evaluate the overall performance of cotton marketing in Malawi specifically during the post liberalization period. The Study was purposively carried out in Salima and Balaka Districts which is among the major cotton producing districts in Malawi.

¹ Seed cotton is the cotton that is harvested. Cotton Seed is the seed used for planting or crushing

1.4 Statement of the Problem

The deregulation of the cotton market permitted private participation in the market and it was expected that it would afford both the sellers as well as the buyers of cotton a fair return on investment as compared to the days when the government was controlling the cotton prices. A major consequence of the market liberalization policy was that a new market structure has emerged because of the entrance of individuals firms and corporate organizations that now support production and marketing of cotton in Malawi. However, there is limited empirical evidence on how this development in the cotton market affected competitiveness and efficiency. Currently, the government and private sector through their statements have created a picture that price is a major factor determining performance of cotton marketing. On the other hand, no studies have been undertaken to verify this. Therefore, this research work intends to fill the knowledge gap on cotton marketing especially on institutional and management factors that are critical in influencing cotton marketing efficiency. The study would also help to give a clear understanding as to why cotton production levels are still declining despite several interventions from the government and private sector.

1.5 Objective of the Study

1.5.1 Overall Objective

To examine the performance of smallholder cotton marketing in Malawi

1.5.2 Specific Objectives

- i. To assess the structure of cotton marketing system in Salima and Balaka Rural Development Projects.
- ii. To analyse the conduct of cotton market players in Salima and Balaka Development Projects.
- iii. To determine the efficiency of cotton marketing in Salima and Balaka Rural Development Projects.
- iv. To determine factors affecting the quantity of cotton produced and sold in Salima and Balaka Rural Development Projects.

1.5.3 Hypotheses of the Study

- i. Cotton Marketing system in Salima and Balaka Rural Development Projects is not competitive.
- ii. There are no price collusion tendencies in the cotton marketing system.
- iii. Cotton marketing systems in Salima and Balaka Rural Development Projects are inefficient.
- iv. The total farm size, per capita income invested, quantity of pesticides and labour, has no major influence on the quantities of cotton produced and sold in Salima and Balaka Rural Development Projects

1.6 Significance of the Study

The study will generate knowledge that will be used to improve Cotton marketing in Malawi. This will lead to more informed decisions by farmers, traders and policy makers. Furthermore, it will facilitate the ease with which the sources of inefficiency can be traced and find the possible ways to minimize loopholes in the marketing system .The findings of the study will also help potential investors, producers, traders, processors, governmental and non-governmental organizations that have a stake in cotton marketing system and want to intervene in it in the future.

Consequently, assessment of smallholder cotton marketing in Malawi will be of paramount importance as development of efficient markets enables farmers to increase income .This will provide farmers an incentive to adopt improved technologies and improve rural and urban food security.

1.7 Limitations of the Study

This study was limited to 2 major producing areas of cotton in Salima and Balaka Rural Development Projects in Malawi. The analysis was based on cross sectional price and production data of cotton collected from the 2 cotton markets. The data covered information of cotton marketing for the past 5 years(2004-2008) .The study focused on marketing of seed cotton, cottonseed, and lint starting from the farmers up to the ginners in the two districts. However, the study was based on information provided by farmers, traders and ginners and was assumed to be correct.

1.8 Definition of Terms

Market conduct: Refers to the patterns of behavior that firms follow in adapting or adjusting to the markets in which they sell or buy. Examining the relationship between the factors of market structure and these price-setting practices, it may be possible to make some predictions about the consequences of these behavioral patterns on performance (Pomeroy and Trinidad, 1995).

Market efficiency: analyzes the profits (net marketing margins) of market actors, looking at whether price differences across time and space are less than or equal to transaction costs.

Market performance: Refers to the impact of structure and conduct as measured in terms of variables such as prices, costs and volume of output (Bresslerand King, 1970). By analysing the level of marketing margins and their cost components, it is possible to evaluate the impact of the structure and conduct characteristics on market performance (Pomeroy and Trinidad, 1995).

Market structure: This is defined as characteristics of the organisation of a market, which seem to influence strategically the nature of competition and pricing behavior within the market. Structural characteristics may be used as a basis for classifying markets into perfectly competitive, monopolistic or oligopolistic (Bain, 1968).

Price spread: The difference between price paid by the consumer and price received by the producer for an equivalent quantity of farm produce (Archaya, 1986)

Smallholder farmer: These are farmers who own land that is less than 5 hectares (GoM, 2008).

CHAPTER TWO

LITERATURE REVIEW

2.1 World Cotton Market

The world cotton price has been declining throughout history although the pattern of the decline has always been fluctuating. According to Baffes (2004), it is indicated that one kilogram of cotton in early 1950s was 5 US dollar, but in 2000s, it declined to almost 1 US dollar. This is due to the following reasons; an increase in subsidies paid to cotton farmers in the United States, long term inroad of synthetics fibers, recent slow down in economic activity, fluctuation in exchange rate, and large subsidies granted from key industrialized countries influence of US and China's high degree of market importance (CFC, 2005). The other cause is the advent of various marketing and trade interventions through domestic market activities and dramatic increase in the trade of secondhand clothing during the last two decades. These factors caused price distortion in the cotton market. It is indicated that substantial concentration of global cotton market power has occurred in China. The combination of China's potential market power in the global textiles market and market power in the cotton fibers market may have added to the downward pressure on global cotton prices that was already there from global increases in supply (World Agriculture outlook Board, 2009).

The Liverpool A-index is the most commonly followed international price index based on a Cost Insurance Freight Europe basis and is probably the most useful indicator of global trends. The world price is obviously beyond the control of the Malawi cotton industry, as it is only a minor producer in the global market. However, the Ginning-Out-Turn (GOT) is a very important determinant of price. The lower the GOT, the lower the price to the farmers, as the crop is less valuable to the ginners. In Malawi the GOT is approximately 33-35 per cent, which is low by international standards (GoM, 2004).

In addition, it is anticipated that Global cotton trade is forecast to decline 26 % to 28.6 million bales in 2008/09. The weak trade forecast is driven largely by a combination of relatively low production and weak international demand. China, the world's leading cotton, is estimated to import 7 million bales in 2008/09, down 39 % from a year ago. Exports from India, the world's

second largest cotton exporter after the United States, are expected to decline 72 % to 2 million bales in 2008/09—after exporting a record 7 million bales in 2007/08 (USDA,2009).

2.2 Smallholder Cotton Production and Marketing in Malawi

Production of cotton has been fluctuating in the recent past due to the price change trend, the dominance of the public sector in the purchasing of cotton and decreasing smallholder productivity (Kaunda, 2004). This has led most farmers to substitute other cash crops for cotton, but this is difficult as other small farmers grow cotton out of tradition and lack of an alternative cash crop that can grow in low lying areas particularly the Shire valley.

The production, processing and marketing of cotton in Malawi is by law, governed by the cotton act (CAP 65:04) that was enacted in 1951 and amended through out the years, until the last amendment in 1971. There has been no amendment to the act despite the liberalization of the agriculture marketing (Lungu et.al, 1996 cited in Magreta, 2006). Hence, to strengthen Malawi's cotton sub sector the government of Malawi should complete liberalization of Cotton marketing process.

In general, lack of competition among the major buyers and / suppliers has affected agricultural marketing because of limited players in the agricultural markets ,those few buyers tend not to compete fully monopolistic in some areas, to allow gainful participation and mutual terms between the farmers and the buyers/suppliers (Nakhumwa ,2001). This situation result into depressed market prices particularly in remote and inaccessible areas. Regulatory bodies or policies to allow commodity floor prices could assist to reverse the trend (GoM, 2006). Poor crop prices, lack of affordable transportation cost, lack of appropriate poor harvest storage capacity have characterized crop marketing for small scale farmers under the Malawian liberalized market (RATES, 2003). The shrinking of the domestic textile industry since the 1990s also resulted into reduced domestic demand for cotton lint consequently leading into low production. This has also been worsened by the influx of second-hand clothes, which most Malawians prefer to purchase because they are cheaper at the expense of the agro-industry (GoM, 2008). However, the revival of the local textile industry could further increase the flow of Malawi cotton from growers and ginner upstream.

On the other hand, South Africa is the major outlet of Malawi's cotton, having the biggest textile and garment industry in the region (Desai, 2003). However, Malawi has a biggest disadvantage of higher transport cost into South Africa. Therefore, Malawi needs to focus on how to achieve continuous reductions in the cost of production and higher productivity over time.

ADMARC (2001) final report indicates that the existence of two ginning companies only in the cotton sector has resulted in duopoly and collusion in setting seed cotton producer prices. Due to liberalization of the agricultural marketing and high potential for produce diversification neither ginning company appears ready to develop relationship with the smallholder cotton growers. Existence of only 2 ginning companies has not favored both the farmers and buyers in terms of transportation costs.

2.3 Market Liberalization

Many development countries liberalized the marketing of agricultural produce or inputs within the framework of structural adjustment programs. This is based on the rationale that state marketing agencies crippled the operation of the market mechanism by restricting competition resulting inefficiency of state marketing agencies and unrealistic prices to producers (Chirwa, 2005). Liberalization of agricultural markets has ranged from liberalization of marketing services to privatization of state marketing agencies. The results from agricultural marketing liberalization have however been mixed. Cooksey (2003) argues that liberalization of both inputs and outputs has resulted in market failures. Others have provided evidence that the private marketing system is dominated by petty traders with substantial financial and capacity constraints and inter-seasonal and inter-regional arbitrage does not form part of the activities of this class of traders (Fafchamps and Gabre-Madhin, 2001 cited in Chirwa 2005).

In general, it is accepted that policy changes have led to considerably greater competition at the farm-gate level and to initially higher producer prices. This has generally (though not always) been associated with increases in national cotton production, at least in Anglophone countries (Farolfi, 1999). On the other hand, declines in export crop quality suggest that liberalization has given rise to serious quality control problems. According to Doward et.al (1998) these arise largely from the dismantling of parastatal marketing institutions, which

previously played the key coordinating role in the marketing chain. Despite the considerable criticism to which it was subjected, the single-channel marketing system had the advantage that input credit could be recovered at source, while quality could be controlled and monitored at every stage of the system. As noted by Shepherd and Farolfi (1999), few of the newly liberalized marketing systems offer farmers quality premiums and grading is rarely carried out. For instance, in Tanzanian cotton sector, where evidence suggests that newly established buying companies followed policies of maximizing their purchases, notwithstanding quality, as long as they could re-sell the produce. Whilst high level of effective competition and higher seed cotton prices for farmers emerged after liberalization, grading at the primary marketing stage was rarely carried out because a large number of buyers purchased seed cotton regardless of quality, forcing all others to use the same strategy.

The most problematic area with the private marketing system is that it has adversely affected the incentive structure of smallholder farmers in terms of business practices. The fact that private marketing is completely unregulated, combined with the monopsonistic or monopolistic tendencies of private traders in most sites, fair trading practices have not evolved over time (Chirwa, 2005). The most cited challenge associated with the private traders is the cheating on measurement and weights. Farmers are not allowed to verify private traders' weighing scales as compared to ADMARC where farmers can verify the weighing scales and the weight of their produce. The other form of cheating is the announced prices versus the actual prices paid to farmers. Vendors tend to announce better producer prices, but they actually pay the farmer less than the announced price when trade takes place. On the contrary, ADMARC displays the prices for all the farmers and abide by the announced prices (Ng'ongola, 2001).

Furthermore, RATES (2003) noted that although smallholder producer market has been liberalized , it will take considerable length of time before worthiness of the product can be realized by farmers due to the smallholder produce prices been depressed for too long and though the private traders may offer higher prices than ADMARC , still the prices do not reflect the production costs incurred to accommodate a reasonable profit margin for the farmers and the poor market infrastructure, lending institutions and poorly developed transformed market limit greatly the effectiveness of the market liberalization.

2.4 Past Related Studies

Price risk of cotton (price fluctuation) is reported to be one of the entry barriers in cotton marketing and processing in Ethiopia. The study made clear that about 17 percent of assemblers considered price fluctuation as the entry barrier to cotton marketing. Similarly, a study held in Mali showed that all of the farmers identified price as the major determining factor that affects their decision as to whom to sell their seed cotton. Hence, this is an indication of absence of competitive pricing system, which in turn indicates that the deviation of cotton market from the norm of competitive market. Usually, they lack reliable market information and because of this, they are usually unable to decide or influence the market price (Tegegne, 2008).

A number of studies pointed out factors that centrally affect marketable supply of agricultural commodities. For example, Wolday (1994) identified major factors that affect maize and wheat in Ethiopia. He studied the relationship of farm level Marketable supply of the cereals using cross-sectional data. To capture the influence of the independent variables on the marketable supply of food grain, he adopted production Function analysis with both dummy and continuous variables as independent variables. He found out that the size of output, access to market and family size had affected marketable supply of food grain.

According to Onu (2008), it was found that marketing cost, marketing margins and profit margins of different rice traders are major indicators for the efficiency of the functioning of the rice market. The Margins vary dramatically across traders. Some market players appear to be incurring massive losses while others make windfall profits. The variation also suggests that unit agricultural trade is extremely volatile. It can be summarized that higher margins are needed to cover tax and transport costs. An increase in transportation and storage cost brings higher operating costs. Similar findings are also observed in a rice marketing study in Malawi floodplain systems (Njiwa, 2007) where depending on market channel, the producer surplus was continuously tightened due to higher marketing costs. This is also the case with a cotton market study done in Ethiopia that found out that Transportation is a major problem especially for farmers who stay far away from the ginnery in the study sites (Tegegne, 2008).

2.5 Market Structure Conduct and Performance Paradigm

The study was built upon S-C-P paradigm in industrial organization studies that was invented by Mason in 1939 and Bain in 1968. The approach is widely used to analyse competitive conditions in industries by examining how the structure of industry relates to the market conduct and performance. The current version of the SCP model states that the complexity of two way relationships between structure-conduct and performance are elaborated where the structure affects conduct, conduct affects performance and performance in turn affects conduct which jointly affects the structure of the market (Clarke, 1985).

2.5.1 Market Structure

Market structure shows a selected number of organizational characteristics of a market that establishes relationship between buyers and sellers of a homogeneous product (Archaya, 1986). Market structure indicators are used to show the characteristics of an industry, which include level of market concentration, competitiveness and market power as well as entry barriers in the industry (APEC, 2008). These indicators measure the scope of deviations from the perfectly competitive norm, thus the larger the deviation, the more imperfectly competitive the market is. An extreme case would be monopoly. There are a number of measures of market power and concentration. These include: The Lerner Index of Monopoly power (LMP), the four-firm concentration ratio and the Herfindahl-Hirschman Index (HHI).

Lerner Index of Monopoly power

In a competitive firm, price equals marginal cost, but price exceeds marginal cost for the firm with monopoly power (Byrns and Stone, 1995). Therefore, a natural way to measure monopoly power is to examine the extent to which the profit-maximizing price exceeds marginal cost. Analysis of monopoly suggests that market power creates a gap between marginal cost and price. Hence the LMP is given as follows:

$$LMP = \frac{(\text{Price} - \text{Marginal cost})}{(\text{price})}$$

The LMP is equal to zero for pure competition because price equals marginal cost. The exercise of market power increases the Lerner Index because the equilibrium gap between price and marginal cost rises (Byrns and Stone, 1995). While a rising LMP may reflect growing

market power, the marginal cost data required to calculate this index are not generally available. The other drawbacks of the LMP index are that pure competitors that temporarily enjoy economic profits are interpreted as monopolistic and established firms may restrict prices to inhibit entry, hence the LMP would interpret such cuts in price relative to marginal or average costs as diminished market power.

Four Firm concentration ratio

CR₄ is the sum of market shares of the 4 largest firms in the industry to the total market shares of the four largest firms in the industry.

$$CR_4 = \sum_{i=1}^4 s_i$$

Where; s_i = the market share of firm i belonging to k largest firms

Concentration ratios have the advantage of being relatively easy to understand. It ranges from a value of zero for a perfectly competitive industry to a value of 100% of market share, for a monopoly. The CR₄ falls in the quartiles of 75-100%, the industry is considered as highly concentrated, moderately concentrated if in quartile 50-75%, slightly concentrated if 25-50%, and atomistic if in a quartile of 0-25% (APEC, 2008). However, Bain (1968) criticized the concentration ratio because it ignores size inequalities between the leading group and all other firms. He claimed that the relationship between concentration ratio and firm number is viable and ambiguous. Furthermore, this measure is used to estimate concentration ratios for an industry's biggest four firms (Byrns and Stone, 1995 in Mkandawire, 2003). Therefore, the two methods could not be used in this study.

2.5.2 Market Conduct

Market conduct is defined as the pattern of behavior that firms follow in adopting or adjusting to the market in which they operate to achieve well defined goal or goals (Bain, 1968). This also refers to the coordination of decision making in order to determine what prices to charge, what outputs to produce, what product design to offer, and what actual or potential competitors to discourage (Suter and Henneberry, 1996 cited in APEC, 2008). The two

definitions imply the analysis of human behavioral patterns that are not readily identified, obtainable or quantifiable. Thus, in the absence of a theoretical framework for market analysis, there is a tendency to treat conduct variables in a descriptive manner or as a spill-over in the assessment of market performance (Tegegne, 2008).

2.5.3 Performance

Market performance is the composite end result which firms in any market arrive at; in pursuing whatever lines of conduct they espouse (APEC 2008). Performance measure is primarily used to monitor the outcomes resulting from competition among firms, within an industry, market and the entire economy. It shows how a firm or a system is performing and identifies the trends of performance over time. In an industry performance is directly impacted by the structure and conducts of the industry and can ultimately be used as a measure of success of the firms. Performance is therefore a function of firms' conducts and industry structure.

Generally, Market performance is measured in terms of variables such as prices, costs and volume of output (Bressler and King, 1970). Furthermore, it is also possible to evaluate the impact of structure and conduct characteristics on market performance by analyzing the level of market margins and their cost components (Bain, 1968). By definition, Market margin is the difference between prices at two market levels. It measures the difference between producer and consumer prices of an equivalent quantity and quality of a commodity. Conversely, it may also describe price differences between other points in the marketing chain (Scaborough and Kydd, 1992). Oftentimes, market margins may fluctuate due to the perishable nature of the product, the number of levels of participants in the marketing channel, the marketing services provided and the risk and uncertainty borne by each of the market participants (Pomeroy and Trinidad, 1995). In normal cases, high marketing margins do imply an above average return on the cost of providing marketing services. Hence existence of elevated marketing margins can be disadvantageous to producers, in the form of low producer prices, to consumers in the form of high retail prices or both. Such high margins result from imperfectly competitive market conditions (Pomeroy et al, 1995). This could also mean that farmers have no bargaining power to set reasonable prices for their products. The danger is that unscrupulous middlemen may exploit them.

On the other hand, Market integration analysis is another indicator of efficiency in marketing. Price transmission is the passing through of prices through either in the vertical or spatial marketing system and is related to the pricing behavior of different market participants. If the market system is well integrated, then price increases should be transmitted to the same extent as the price decreases i.e. there is no rigidity in price adjustment in the marketing system (Goletti and Babu, 1994). The concept of market integration is developed from the idea of a perfectly competitive market, which has a large number of buyers and sellers, perfect flow of information especially on prices, homogeneity of product and no barriers to entry. Such a market is said to be efficient and a single price will prevail (Negassa, 1998) and any deviation from this norm implies some sort of inefficiencies. In spatially integrated markets, prices do change in relation to storage and transfer costs incurred as a commodity moves from one market to the other so that prices fluctuate together in the long run. Thus co-movement of prices is the underlying principle behind market integration (Ngugi, 2003). Several measures like correlation of price levels, correlation of price differences and co- integration analysis, can be used to compute market integration.

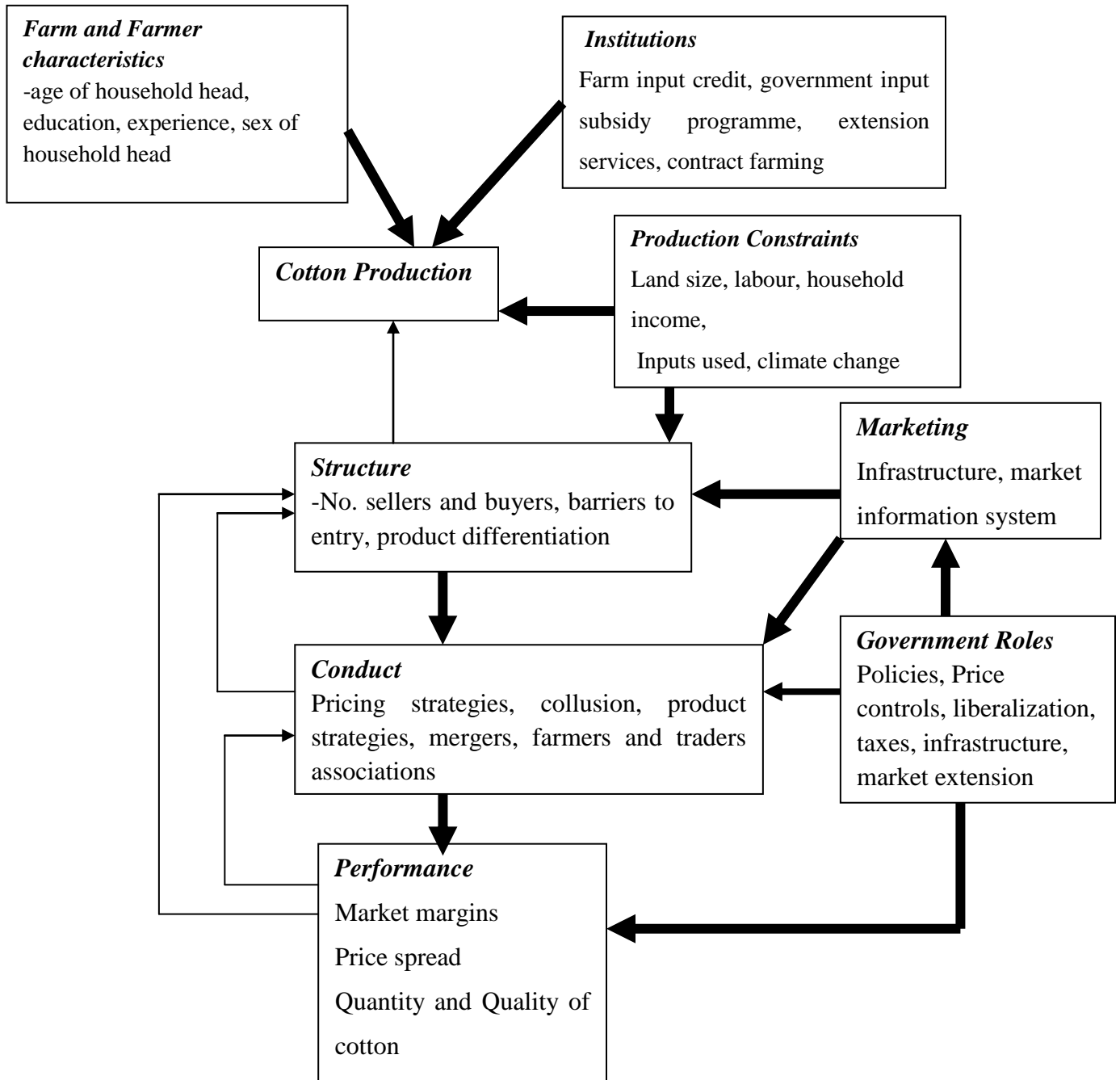
Many previous studies have used price correlation of price levels as a measure of market integration, despite the many criticisms raised against it. Many researchers have argued that the use of the coefficients mask the presence of synchronous factors such as inflation, seasonality and public policy (Goletti and Babu, 1994). However, Maritim (1982) as cited in Ngugi (1997) suggests using coefficients of 0.7 or above , while others suggest use of price difference (Goletti and Babu,1994).As a result , due to these limitations, bivariate correlation coefficients are mostly used as a measure of market integration (Ngugi,1997). Most of these measures require the use of time series data hence could not be used in the study due to lack of time series data.

2.5.4. Conceptual Framework

The adopted SCP model suggests that farmer characteristics and institutions may lead to cotton production. The quantities of cotton produced are affected by production constraints like Labour, size of land, per capita household income and inputs that may be used by the farmer. In such a case the farmer is supposed to make a decision on how much to produce for the market

and how to produce so as to meet the requirements of the market. All these factors have a great effect on the quantities of cotton to produce for the market. Furthermore, if the market is organized it may attract more farmers to produce and supply more to the market. This implies that there will be more sellers and buyers operating in the market hence making the market competitive in terms of pricing, buying and selling. On the other hand , since there will be much competition on the market the market players will try their best to add value to their products so as to attract more buyers. Likewise, if the market is competitive there will be reduced barriers to enter the market. Similarly, the structure characteristics of the market have a direct effect on the behavior of market players. This involves aspects like collusion, mergers, and on pricing and product promotion strategies.

Finally, both the structural characteristics of the market and the conduct of market participants in turn influence the performance of the market. Marketing performance is assessed largely in form of whether marketing margins charged by various actors in the marketing system are consistent with costs. The total marketing margin is the difference between what the consumer pays and what the producer/farmer receives for his produce, in other words it is the difference between retail price and farm price. A wide margin means usually high prices to consumers and low prices to producers. It is envisaged that market performance has a feedback effect on both the Conduct of market participants' and the structure of the market. In addition, government roles have a direct effect on the overall structure conduct and performance of the market. The table below shows the modified model of Structure-Conduct and Performance Paradigm.



Note: **————** Direct effect **—————** Feedback effect

Figure 2: Conceptual Framework

Source: Modified from APEC, 2008

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Study Area

The study was conducted in Salima and Balaka Rural Development Projects (RDP). The two RDPs are under Salima and Machinga Agriculture Development Divisions (ADD) respectively. These areas were chosen because they are the major producing areas of cotton in Malawi i.e. Balaka and Salima produces 30% and 20% of the total cotton produced in Malawi, respectively. Machinga RDP lies to the west of Shire River in the southern region of Malawi. It has temperatures that range between 18-30⁰c and receives an annual rainfall of between 500-700mm. The area is dominant of clay soils that favor cotton production. Salima RDP is located in the central region of Malawi and lies along the western side of the lakeshore flood plain of Lake Malawi at about 200m above sea level. It has temperatures that range between 18⁰c and 35⁰ c and receives an annual rainfall of 600- 1000mm. The Figure below shows the map of Malawi and the specific locations of the two study areas.

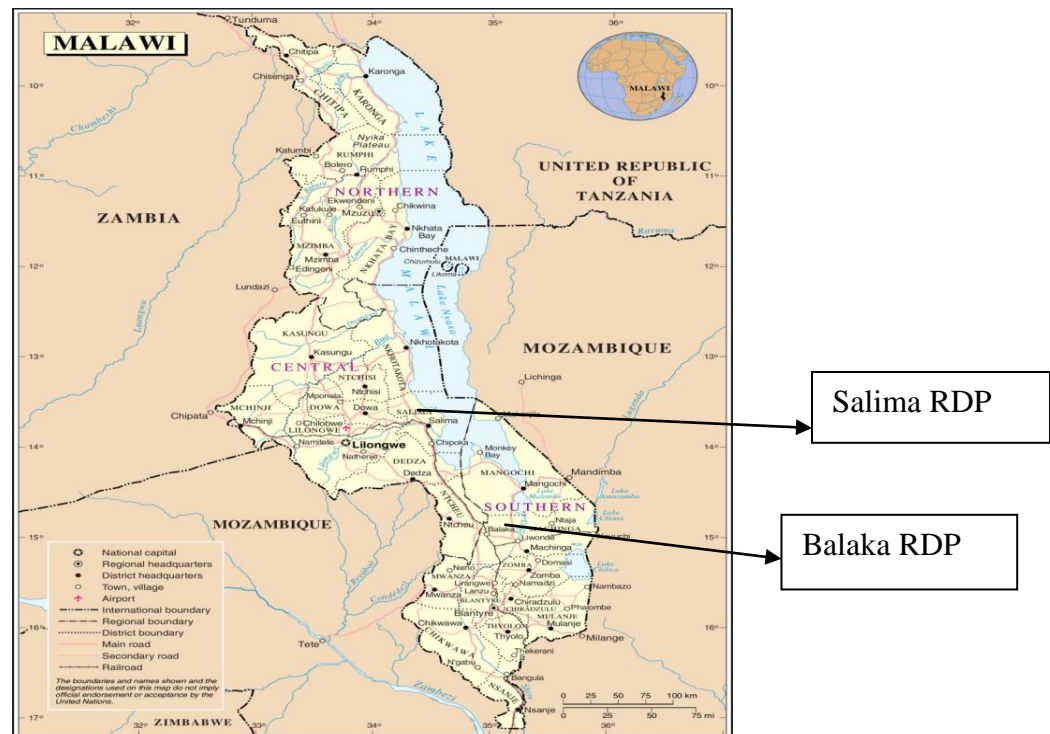


Figure 3: Map of Malawi

Source: <http://www.goggle.com/> / map of Malawi, 2009

3.2 Sources of Data

This study was based on data obtained from both primary and secondary sources. The Secondary sources of data included extensive review of relevant literature such as Market information system, monthly bulletins and other published materials by the Ministry of Agriculture, Ministry of Trade, Malawi Confederation Chambers of Commerce and Industry (MCCCI), reports from relevant NGOs, policy documents and past surveys.

The primary sources included the rural household survey conducted on cotton farmers and traders from Salima and Balaka RDPs .Among others, the following information was collected from producers, middlemen and ginners of cotton: social-economic status, cropping and farming characteristics of the households, production estimates and costs, transport costs, handling costs, farm-gate and selling prices, constraints faced in production and marketing of cotton, organisational flow and marketing channels for cotton, nature of extension services in the area as well as information on the availability and accessibility to markets. Focus group discussions and key informant interviews were also done with farmer associations, local leaders and non- governmental organizations working with the cotton farmers in the area.

3.3 Sampling Procedure

Sample Size Determination

The following formula was employed to come up with an appropriate sample size of Cotton Smallholder farmers for the study. This is because the variance of the population between the two RDPs is not known.

$$n = \frac{z^2}{e^2} \frac{p \cdot q \cdot N}{(N - 1) + z^2 \cdot p \cdot q}$$

Where: n = sample size, P = proportion of the population containing the major interest, q = 1-P, z = standard variate at a given confidence level ($\alpha = 0.1$), e = acceptable error (precision) and N is the population of interest (Kothari, 2004)

In this case; N = 95,898 for Balaka and 66,342 for Salima, Total N= 162,240 (from Agriculture statistical bulletin of Malawi, 2008)

$$P = 0.5 \quad Z = 1.65 \quad e = 0.08 \quad q = 0.5$$

This results to a sample of 107 cotton farmers. There was an additional 12 (12% of 107 farmers) respondents to cater for non-response and spoilt questionnaires thus the total number of cotton farmers to be interviewed was 120. In order to come up with the actual sample size per RDP proportions were used to cater for the differences in the size of the population between the 2 RDPs. This was done as follows;

Balaka n : $(95898/162240)*120 = 71$ Cotton producers

Salima n : $(66342/162240)*120 = 49$ Cotton Producers (rounded off to 50 producers)

The sample sizes were considered large since were more than 30, the recommended size for group sample according to central limit theorem. Given this fact and the number of variables in the model, a sample size of 120 farmers was statistically justifiable in the study.

Sampling Design

A Multistage sampling procedure was employed to select the sampling units. The first stage involved purposive sampling procedure, whereby Salima and Balaka Rural Development projects (RDP) were chosen out of the 24 RDPs in the country. Secondly, Simple random sampling procedure was employed to select 3 Extension Planning Areas (EPAs) from each RDP. Salima RDP comprises of 6 Extension Planning Areas whilst Balaka has 5 Extension Planning Areas. Hence, the study utilized 3 EPAs from each RDP. In Salima RDP the following EPAs were chosen; Chinguluwe, Matenje and Tembwe. While in Balaka RDP Bazale, Mpilisi and Ulongwe EPAs were chosen. Thirdly, simple random sampling procedure was also used to select 3 villages from each EPA. This makes a total of 9 villages per RDP. The following villages were selected in Salima RDP; Chikaonga, Mtanda, Kachifumbu, Mbalame, Tembwe west, S3, S5 and Sanga. Furthermore, in Balaka RDP, Ngasale, Kanyoza, Sosola, Chasintha, Kambadi, William, Weleya, Ndenga and Razalo were selected as villages. Fourthly, stratified sampling procedure was used among the sampled villages. Two strata were formed of cotton producers and traders. Under the stratum of cotton producers simple random sampling procedure was used to select 71 households from the 9 villages in Balaka and 50 households in Salima RDP making a total of 120 producers from the two RDPs.

As for Cotton traders, systematic sampling procedure was used to select 30 traders from the two RDPs .The source list of middlemen was obtained from the cotton traders' association. Finally all ginners that operate in the two RDPs were incorporated in the sample as they were very few to be sampled. These included Great Lakes, Cargill, Iponga and Toleza.

3.4 Data Processing

The data collected was processed using Statistical Package for Social Scientists (SPSS) 13.0 version and Microsoft Excel. This included aspects like editing, coding, classification and tabulations. Processing of data yielded to descriptive analysis i.e. Means, percentages, frequencies and crosstabs that were computed to generate social economic profiles of sampled producers and traders. The statistics were used in further analysis by use of models. In addition, t-test was used to find out the probability that one would expect to see a difference in the two sample means under comparison (Maddala, 1998). Based on sampling distribution of the t-test statistic, one can calculate the probability that the difference at least as large as the observed would occur if the two population means (μ_1 and μ_2) were equal. The probability in this case is referred to as significance level. Smaller observed significance levels indicate that the two means are not equal.

3.5 Empirical Analysis

The study estimated certain analytical techniques measures like production function analysis, Hirfindahl Hirschman Index, marketing margins and price spread analysis. These indices helped to search for patterns of relationship that exists among variables.

3.5.1 Assessment of the Structure of Cotton Marketing System in Salima and Balaka Rural Development Projects

The structure of the marketing system was evaluated in terms of market concentration level and entry and exit conditions so as to find out how the market is strategically organized. The study used the Herfindahl-Hirschman Index (HHI) that used market shares of a single firm to establish the extent of market concentration (Pociask, 2001). This is because the HHI is more complex and contains additional information about the size of the largest firms. It would change, if there are shifts in market shares between the largest firms. The HHI was calculated as follows:

$$HHI = \sum_{i=1}^k MS_i^2$$

Where:

MS_i = market share of seller i k = is the number of sellers in the market

The HHI is a measure of dispersion as it takes into account the number and all the shares of all the firms producing for the market. The higher the value index the less likely the industry will exhibit competitive behavior and become more in equal in firm sizes. A small index indicates a competitive industry with no dominant players (Hirschman, 1964 cited in APEC, 2008). The HHI can determine market structures by dividing them into 3 categories, which are:

$HHI < 1000$ = Concentrated

$1000 < HHI < 1800$ = moderately concentrated

$HHI > 1800$ = highly concentrated

The market shares were estimated based on the amount of cotton handled by each buyer.

$$MS_i = \frac{V_i}{\sum_{i=0}^n V_i}$$

Where;

MS_i = Market share of buyer i. V_i = amount of cotton handled by buyer (Kg)

$\sum_{i=0}^n V_i$ = Total amount of cotton handled in the market (Kg).

3.5.2 Analysis of the Conduct of Cotton Market Players in Salima and Balaka Development Projects

The study explored any kind of actions that were alleged to articulate unfair relationship between producers and buyers in the two RDPs. On the other hand since there are no agreed procedures for analyzing the elements of market conduct, qualitative data was collected from farmers, traders and ginners ' in order to detect buying and selling practices and pricing behavior. In analyzing the buying and selling practices, questions were asked on the source of product, the existence of formal and informal marketing groups that affect the bargaining power,

the nature of the buying/selling practices in place, the distribution channels used, and observed trading practices that were unethical in the marketing process.

Furthermore analysis of pricing behavior included questions on ; the chief determinants of price (one buyer or many buyers), price setting mechanisms, factors that influence the setting of price (example, basic supply and demand conditions or artificial price restraint), the basis for price differentiation , who sets prices and the availability of price information as well as its impact on prevailing prices. Price collusion was manifested using the target price offered by the biggest market shareholder .As a result, statistical analysis in form of one sample t- test was used to assess if there is any observed variance from the target price that was offered by the price leader.

3.5.3 Analysing the Efficiency of Cotton Marketing in Salima and Balaka Rural Development Projects.

Marketing Margins Analysis

In this study, market margin analysis was carried out in all marketing points in Salima and Balaka RDPs. The major focus was to follow the product from production areas to the final point of sale (consumption zones) so as to indicate where in the market chain value is added and profits are made. The margins were calculated by finding the price variations at different segments and then comparing them with the final price to the consumer (ginner price). The consumer price then was the base or common denominator for all marketing margins. The total gross marketing margin (TGMM) was related to the final price or the price paid by the end consumer and was expressed as a percentage.

$$TGMM = \frac{\text{Consumerprice} - \text{Farmersprice}}{\text{Consumerprice}} * 100$$

The idea of producer participation (or farmers' portion/ Producers Gross Margin) was also introduced in the calculations. This was the portion of the price paid by the end consumer that belonged to the farmer as a producer. Hence the producers' margin was calculated as a difference:

$$\text{Producers Gross Marketing Margin (GMMp)} = \frac{\text{Consumer price} - \text{Marketing Gross Margin}}{\text{Consumer price}} * 100$$

Note: Consumer price² of cotton was taken from purchase price of Ginners.

Note that the marketing margin was being referred to as “gross marketing margin” because precise marketing costs are frequently difficult to determine in many agricultural marketing chains, hence the gross and not the net marketing margins was calculated. The study considered that longer the marketing chain the higher the marketing costs. Therefore by just comparing the farmers prices with the final price (ginner price), it could be a poor indication of market efficiency hence performance. This is attributed to the fact that the costs involved in moving cotton along the marketing chain from farmer to ginner were not taken into account. As a result the major costs involved, needed to be taken care of, when comparing the producer and ginner prices. In such a way we could assess if the marketing system was inefficient or the high marketing margins were justified. As such the study used price spread analysis to cover the costs.

Price Spread Analysis

This involved estimating various cost components that influence the selling price. The cost components included handling costs, storage costs, transport costs, labour costs and producer prices. Price spread method provides a simple way of determining market efficiency of the market in terms of price. Focus was on the traders’ surplus as a percentage of total cost. If the computed ratio is more than 30% of the total costs without any improvement in the services provided, it means the trader is making supernormal profit (Hay and Morris , 1979 as cited in Nakhumwa ,2003).In this case the marketing of that particular good is said to be inefficient. Price spread method used a common equation as below;

$$TS = SP - TC$$

Where

TS = Traders’ surplus (MK/kg); SP = Selling price (MK/kg); TC = Total costs (MK/kg).

² *Lint cotton value + cotton seed value*

The study intended to estimate simple correlation coefficients between prices in pairs of markets as a quantitative measure of spatial market integration. However this was not possible due to unavailability of time series data on prices.

3.5.4 To Analyse Factors determining cotton productivity in Salima and Balaka Rural Development Projects

A production function was used to identify the critical factors in the production of cotton in the study areas during 2007/2008 season. This is important in order to advise farmers on which input they should invest more to enhance cotton yield by mitigating any negative effects and maximize the output. In this study, the output was used as a proxy measure to the amount of cotton that was sold to the market holding other factors constant. This is attributed to the fact that; cotton is a specific crop of which the farmer does not have any other alternative use apart from supplying the total quantity produced to the market. The study held all market supply factors constant.

A function could estimate elasticity of production and marginal productivity of critical factors of production (Chavas and Cox, 1992) as cited in Abler and Shortle (1995). According to Cobb and Douglas (1928), the general form of production function model can be presented as:

$$\varphi_i = \theta \lambda_1^{\alpha_1} \lambda_2^{\alpha_2} \lambda_3^{\alpha_3} \lambda_4^{\alpha_4} \dots \lambda_n^{\alpha_n} \dots \dots \dots (1)$$

Where: φ_i = Quantity of Output I; λ = Vector of variable resource with j = 1, 2, 3n

θ = Constant; α_k = Coefficients with k 1, 2...n: which estimate the elasticity of transformation ratio for the inputs λ . Estimation of constant and coefficients for the establishment of elasticities involved transformation of equation 1 to a logarithmic linear function as below:

$$\ln \varphi_i = \ln \theta + \alpha_1 \ln \lambda_1 + \alpha_2 \ln \lambda_2 \dots \dots \dots + \alpha_n \ln \lambda_n \dots \dots \dots (2)$$

The Cobb-Douglas production function has some desirable properties, which makes it more appropriate for this study. i.e. The use of α_k to estimate the partial elasticity's of cotton output with respect to the inputs .In other words the α_k measures the percentage change in that particular input while holding other inputs constant (Gujarati,1988).The quantities of cotton

produced could therefore be inferred using these coefficients. It is possible to calculate returns to scale, that is the response of φ_i to a proportionate change in λ_j inputs (Gujarati, 1988). This could also be used to explain the factors influencing the quantity of cotton produced and sold.

Specification of the Model

Generally, in Malawi the common factors of production employed by smallholder farmers have been established to be labour, land, fertiliser and seed (Ngoma, 2003). Nevertheless in this study, the estimated production function will include both physical factors of production (land, labour, income and pesticides) as well as non physical factors (Household characteristics such as sex, extension, education level of household head and access to credit) as the factors that would determine cotton production. The output of the model will be used as a proxy to quantities sold holding all supply factors constant. The following modified form of production model was estimated: Using logarithmic linear function expressed as below:

$$\ln \varphi_c = \ln \theta + \alpha_1 \ln \lambda_1 + \alpha_2 \ln \lambda_2 + \alpha_3 \ln \lambda_3 + \alpha_4 \ln \lambda_4 + \beta_1 \phi_1 + \beta_2 \phi_2 + \dots + \beta_9 \phi_9 + \varepsilon \dots \dots (3)$$

Where:

φ_c = Total quantity of cotton (kg);

λ_1 = Total farm size allocated to cotton (ha);

λ_2 = Total Income of household used in cotton production (MK);

λ_3 = Total amount of pesticides applied to cotton crop (litres);

λ_4 = Total family labour used in cotton production (number of active persons);

ϕ_1 = Gender of household head (dummy: 0 – male and 1 – female);

ϕ_2 = Education level of household head (Years);

ϕ_3 = Access to farm inputs credit (dummy: 0= access and 1=no access);

ϕ_4 = Access to extension messages (dummy: 0= access and 1= no access);

ϕ_5 = Association Membership (dummy: 0=membership and 1= otherwise);

ϕ_6 = Variety of cotton planted (dummy: 0=local and 1= improved)

ϕ_7 = District of respondent (dummy: 0=Salima and 1= Balaka)

$\theta, \alpha_1, \alpha_2, \alpha_3, \alpha_4, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9$ were parameters to be estimated in the model. The above equation was estimated using Ordinary least square method (OLS) to estimate the α_k and β_k in the model and then tested for the individual significance using t- test while F value was used to test the overall significance of the λ_j and ϕ_i in the model. Only endogenous factors were included in the model, and these include the farm household factors that influence an individual's capacity to produce. These were those variables that were under farmers' control.

The model was assumed to satisfy the assumptions of the classical linear regression model. The coefficient of determination (R^2) was used to measure the proportion of total variation in φ_c that has been accounted by regressing φ_c on the whole set of λ_j and ϕ_i . The F value measured the overall effect of the factors on φ_c , which also indicates the goodness of fit of the model. Standardized coefficients of regressors were reported for the model. For testing the significance of single variable in the model, if the calculated t-value is greater than the tabulated t-value then the variable is significant. For testing the overall effects or significance of variables in the model, if calculated F-value is greater than the tabulated F-value then the model is significant. In addition, before the variables were used in the analysis, a collinearity diagnostics was done using a simple regression matrix of the variables. Variance Inflation Factor (VIF) was used to check for tolerance level of multicollinearity. The average VIF of less than 10 implied that the variables in the model had no serious multicollinearity. The rule of thumb is if VIF is greater than ten, which corresponds to $R^2 > 90\%$, be concerned of multicollinearity (Edriss, 2003). The study used Durbin Watson test (DW) to test for serial autocorrelation that is normally brought about due to omission of explanatory variables and mis-specification of the mathematical model.

CHAPTER FOUR
RESULTS AND DISCUSSIONS

4.1 DESCRIPTIVE ANALYSIS

4.1.1 Socio-Demographic Characteristics of Cotton Producers and Traders

This chapter aim is to provide the general description of the socioeconomic characteristics of cotton producers and traders in Salima and Balaka RDP. This is attributed to the fact that these socio economic characteristics affect production and marketing decisions of both producers and private traders. Table 1 provides a summary of key characteristics of the household head in the study areas during 2007/2008 season.

Table 1: Selected Characteristics of Household Head in 2007/2008 Season

Characteristics of Household Head	Salima Producers (n=49)	RDP Balaka RDP Producers (n=71)	Totals (n=121)	Critical t- value
Mean Age of Household Head (years)	42.38	41.80	42.09	.240
Mean No. of years of education (years)	6.08	6.5	6.29	-.682
Mean size of household (no. of persons)	5.42	5.96	5.69	-1.199
Mean family labourers (no. of active persons)	2.98	3.56	3.27	-1.749*
Mean land holding size (ha)	2.1	1.3	1.7	4.027**
Mean Household Income (MK)	60423	62753	61588	-.211
Mean quantity cotton produced 2007/08 season (Kg)	456.8	433.7	445.3	.257

*Significant at the 5% level

$t_{0.025} = 1.96$

$p = 0.05$

** Significant at the 10% level

$t_{0.05} = 1.654$

$p = 0.10$

During 2007/08 season, Table 1 indicates that the average age for the producers from the two RDPs was 42.09 years. Household heads for Cotton producers from Salima had an average age of 42.38 years while the household heads for Balaka had an average age of 41.8 years. This implies that most cotton growers are in their active age of their life cycle. This could be attributed to the fact that cotton is a labour demanding crop that needs someone who is strong and active. There was however no significant difference in mean age of household head between the two RDPs using t-statistics ($t_c = 0.240 < t_{0.05} = 1.96$) at 5% significant level. Similarly, the mean age for traders was 43.38.

The mean number of formal education for the two household heads was 6.29 years. Household heads in Salima had a mean of 6.05 years of formal education while in Balaka had 6.5 .Statistically, these differences were not significant at 5% and 10% levels ($t_c = -0.682 < t_{0.05} = 1.96$). This indicates that education had no bearing on the decision making process of households on whether to grow and market cotton.

The mean size of household size for the two RDPs was 5.69 people per household. In both Districts the household sizes were away above the 1998 census which found that the mean household size was 4 for Balaka and Salima (NSO, 2002).This implies that cotton producers in Salima and Balaka have larger households than average Malawian households. On the other hand the mean number of active family labour was 3.27 people per household. The difference in the active number of household members who were involved in cotton production and marketing was significantly different in the two RDPs at 10% level ($t_c = -1.873 > t_{0.05} = 1.645$) .This implied that households in Salima dedicated less labour to Cotton production unlike in Balaka. A large household for example is expected to supply more labour as demanded by cotton production.

Both household heads had a mean land size of 1.7 hectares. Household heads from Salima had the mean land holding size of 2.1 while those from Balaka had a mean land holding size of 1.3.The difference in mean land holding size was highly significant at $p < 0.05$ ($t_c = 4.027 > t_{0.025} = 1.96$).This meant that households in Salima have a chance of allocating more land to cotton production than farmers in Salima .As such this would influence the total quantity of

cotton produced per unit increase of land dedicated to cotton. Hence more cotton supplied to the market. For example the study found out that producers in Salima allocated an average of 0.92 ha to cotton production as compared to 0.75ha allocated by producers in Balaka. Small land holdings have an impact on the decision with regard which crops to be grown and the consequent productivity. In addition the study found that there is no significant difference on the quantity of cotton being produced in the two RDP.

The mean household income for both household heads was 61,688 Malawi Kwacha (MK). Household heads in Salima who produces cotton had a mean income of MK 60,423 as compared to MK 62,753 in Balaka. The difference in mean household income was however, not significant at; $p < 0.05 (t_c = -0.211 > t_{0.025} = 1.96)$.

4.1.2 Gender of Household Head

The study established that the cotton industry was dominated by male headed households with a cumulative of 95% males and 5% females respectively. This may be attributed to the fact that Cotton production is labour demanding hence few women are involved. In addition the multiple responsibilities in the household prevent women from being actively involved in income generating activities (Tembo, 2007).

Table 2: Percentage of Household Heads by Gender (sex) and RDPs

Description	Male headed		Female headed		Total
	Frequency	%	Frequency	%	
Salima Producers (n=71)	47	94	3	6	100
Balaka Producers (n= 50)	68	95.8	3	4.2	100
Balaka and Salima Producers (n=121)	115	95	6	5	100

4.1.3 Cotton Crop Specific Analysis

4.1.3.1 Producers Perception towards Cotton as a Cash Crop

Generally, farmers preferred growing cotton among other cash crops due to the fact that it does not demand more inputs like fertilizer unlike other cash crops. This was reported by 57.7%

and 85.5% of the farmers in Salima and Balaka RDPs respectively. This means that farmers are able to produce cotton and use the proceeds to buy more maize that could sustain them all year round. In addition, other farmers preferred producing cotton because they perceived it as a traditional crop which they adopted from their parents. Similarly 3.8% and 5.8 % of the farmers in Salima and Balaka RDPs respectively preferred growing cotton because the market is readily available at the end of each growing season. This implies that development of a good marketing system will ensure that farmers have a stable source of income and would also act as an incentive to increase cotton production.

Table 3: Preference for growing Cotton

RDP Name	Reason for preferring cotton		
	Salima (%) (n=50)	Balaka (%) (n=71)	Total (n=121)
Does not demand more resources	57.7	85.5	73.6
Traditional Crop	38.5	4.3	19
Market readily available	3.8	5.8	5
Favorable climate	-	1.4	.8
Crop diversification	-	2.9	1.7
Total	100	100	100

Among the several varieties of cotton produced by farmers in the two RDPs, 80.8% and 91.3% of the farmers in Salima and Balaka, respectively, did not know the specific type of varieties they are growing. This could be a major indication of ignorance among the farmers. It could also be that there are no sensitization campaigns on the best cotton varieties being promoted by the ginners to farmers in the two districts. However, 73.1% and 72.5 % of the farmers in Salima and Balaka RDPs said that they normally grow improved varieties of cotton which they receive on a loan basis from ginners.

4.1.3.2 Cropping Patterns

The predominant cropping patterns practiced in the two districts are monocropping and intercropping. The study showed that 76.9% and 73.9% of the farmers in Salima and Balaka district respectively do practice monocropping. This is attributed to the fact that 47.5% and 50.9% in Salima and Balaka RDPs believed that crops that are grown under monocropping system produces high yields.

Intercropping system was dominant in Balaka (26.1%) as compared to Salima (23.1%). This could be because of small landholdings in Balaka district hence the farmers wanted to utilize their land up to a maximum capacity as reported by 61.1% of farmers in Balaka. Similarly, 22.5% thought that the method is labour saving. Therefore, from these findings it can be assumed that farmers practice intercropping pattern as one way of reducing risk in case of uncertainties like crop failure.

4.1.3.3 Constraints in Cotton Production

The table below illustrates that low producer price is a major constraint in cotton production in Malawi as it was indicated by 100% and 83.1% of farmers in Salima and Balaka Rural Development projects, respectively. Most farmers complained that they did not make much profit during the last growing season. As such they were demotivated to produce more, as it is a norm that all farmers have a tendency of basing current production on previous year's producer price. This entails that increased producer prices would act as an incentive for them to increase cotton production. This would also lead to increased income and improved living standards of the farmers (Kohls and Uhl, 1990).

Table 4: Constraints in Cotton Production and Marketing

Constraints in production and Marketing	RDP%		Total
	Salima (n=50)	Balaka (n=71)	(n=121)
Low producer Prices	100	83.1	91.55
Labour demanding	73.8	49.2	61.5
Delays in delivery of inputs	41	57.6	49.3
Lack of seed	9.8	30.5	20.15
Lack of markets	16.4	6.8	11.6
Lack of land	4.9	3.4	4.15
Delays in opening of markets	-	18.6	-
Expired drugs	-	6.8	-
High prices of inputs	3.3	-	-

Note that the percentages are more than 100 because of multiple responses

The other major constraint was excessive labour required in cotton production. This was exemplified by 73.8% of the farmers in Salima and 49.2% of the farmers in Balaka RDPs. This could be because producers grew other crops that consumed a larger proportion of their labour

force e.g. maize which is the staple food. As such it was difficult for them to divide and balance labour requirement among all crops especially during the peak season. Other problems included delayed opening of cotton marketing season by the ginners, late delivery of pesticides to farmers, expired drugs and lack of good cotton varieties. It was further observed that late opening of markets forced farmers to sale their cotton to intermediate buyers at a low price. This was because the producers run away from the risk of storing the cotton in their houses for a long time as lint tend to loose weight with time. It is also because stored cotton is vulnerable to fire breakouts that damages cotton easily.

In trying to come up with solutions to some of the constraints 91.8 % and 93% of producers in Salima and Balaka suggested that ginners should improve producer prices so that they would be able to make some profits. They also suggested that the government should improve on road infrastructure and should introduce new cotton varieties through research.

4.1.3.4 Access to Extension Services

The results revealed that 91.7% of the sampled farmers received extension messages that helped them in cotton production and marketing in Salima and Balaka RDPs. However, only 16.5% of the farmers had access to market related messages and the rest received messages on crop husbandry. This indicates that there is an emphasis on crop husbandly practices in our extension system as compared to market related messages. It should be noted that market liberalization has brought a new microeconomic environment to farmers. Hence, they need more information and new skills on how to market their produce. As such, extension messages have to be reoriented to include messages on marketing issues .In other words, as farmers become more market oriented, so extension workers need to be in a position to advise them, not only on how to grow crops, but also on how to market them (Nakhumwa, 2001) .Similarly, knowledge on produce handling, storage and value addition is also essential.

Table 5: Access to Extension Services

Extension services	RDP (%)					
	Salima (n=50)		Balaka (n=71)		Salima & Balaka (n=121)	
	Frequency	(%)	Frequency	(%)	Frequency	(%)
Access	45	90	66	93	111	91.7
No access	5	10	5	7	10	8.3
Total	50	100	71	100	121	100

4.1.4 Cotton Traders Socio Economic Characteristics Gender, Age and Literacy Level

Most of the sampled traders were male (93%) and 6.7% were females. This confirms assertions that cotton being a cash crop it is mostly handled by men. This was also confirmed in a micro-entrepreneurship study done by Makawa (2000) that indicated that men in general see themselves as great risk takers as they are usually the main bread winners for the family. Nevertheless women have very little confidence of going into business and have far greater barriers to breakthrough unlike their male counterparts. The study also showed that the traders had a mean age of 44.93 years. The minimum age was 31 and maximum age was 67 years. This means that most cotton growers are in their active age of their life cycle. Most of the traders had attended school up to class 8 of elementary level (36.6%) and 63.3% had gone up to secondary level.

Table 6: Levels of Education of Cotton Traders

Education Level	Frequency (n=30)	Percentage
None	0	-
Junior Primary (std 1-3)	0	-
Senior Primary (std 4-8)	11	36.7
Secondary Education	19	63.3
Total	30	100

4.1.4.1 Type of Private Traders

The study revealed that the majority of the traders were playing dual roles in cotton marketing .i.e. they acted as producers and also as intermediate buyers (53.8%).The remainder of the traders were operating as traders (46.2%). The diagram below illustrates the type of the cotton traders.

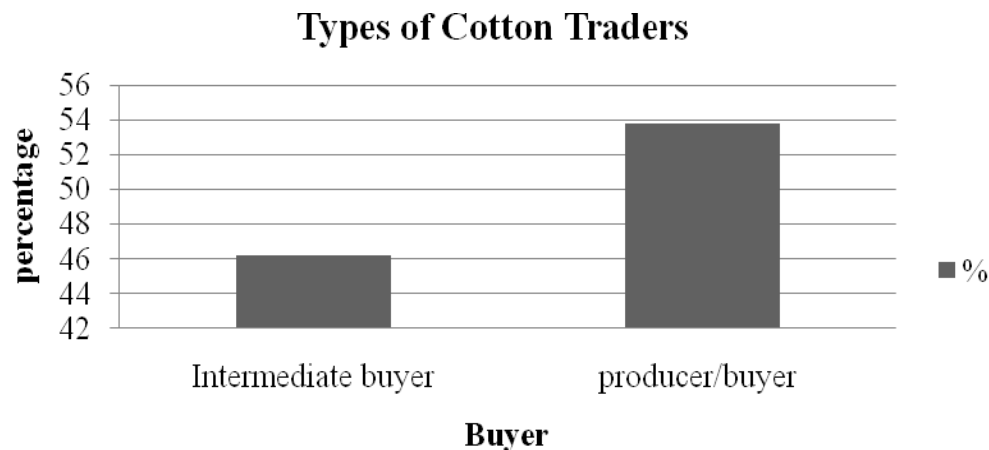


Figure 4: Types of Private Traders

On average, traders who acted as producers handled about 25-50 tons of seed cotton per year and the others handled about 1-25tons per season. This may be attributed to the fact that the producer/intermediate buyer have a good working relationship with fellow farmers hence they are able to buy more cotton easily unlike their counterparts. It was revealed that intermediate buyers travel across the whole country to buy and sell cotton in all cotton producing districts. Out of the total number of traders interviewed, the study revealed that the most of the traders had been in business for 3 to 17 years with a standard deviation of 3.8. In addition, all cotton traders operated their business illegally as they were not licensed by the government. However, 80% of the traders belonged to cotton traders association.

4.1.5 Source of Income for Cotton Producers and Capital for Traders

Table 7 indicates that 72.9% of the sample solely relied on farming for cash. About 24% said that besides farming they were also involved in petty trading e.g. Fish mongering and running small groceries. The remaining households (3.6%) had formal employment. This indicates that the majority of the cotton farmers depend on farming as their main source of income, and in this case, selling of Cotton. This would imply that low producer prices would lead to the farmers being prone to food insecurity since they would not be able to buy food and other basic necessities. As such promotion of cotton production and marketing would help to improve the living standards of the farmers and this is what the government is trying to achieve through its Agriculture Development Programme (ADP).

Most of the intermediate buyers that were interviewed indicated that (75%) got their initial capital for starting the cotton business from their own savings. The savings were sourced from sales of own crop produce or previous formal employment and remittances. However most of these traders indicated that their working capital was not enough but they did not have any access to credit to finance their agricultural produce marketing activities. Those that had made an effort to look for credit indicated that most lending institutions did not provide any loans for small scale agricultural produce marketing activities. Most of the supporting institutions in these areas provided support inform of inputs. One of the reasons that could be given for this lack of credit is lack of business licenses from the government. As such they are not recognized by the micro finance institutions.

Table 7: Major Source of Household Income for Producers and Capital for Traders

Source of Income for producers (n=120)			Source of Capital for traders (n=30)		
Source	n	%	Source	n	%
Farming	121	72.9	Credit	7	17.5
Farming + petty trading	6	3.6	Gift from relatives	3	7.5
Farming + employment	39	23.5	Savings	40	75

Results based on multiple responses

4. 1.6 Cotton Marketing Functions

Market functions entail unfolding what happen or can happen to products between the times of production to the time of purchase by the consumer. This includes the costs at which marketing functions are embarked on, and the extent at which they are priced are of paramount important in evaluating the efficiency of a market. The basic functions in the marketing system are exchange, physical and facilitating functions. The study revealed the following marketing functions in the cotton marketing process.

4.1.6.1 Exchange Functions

This involves the transfer of ownership of products (Kohls, 2002).It covers issues on price negotiations and product value, buying and selling processes. The study came up with the following exchange functions;

Pricing: Prices are set in relation to specific pricing objectives. As such many farmers rely on income realized from farming to meet their subsistence need. This implies that if high prices are offered to them it serves as a reward to their day to day lives. However the study found out that in cotton marketing there was no price negotiation between the farmers and the ginner, the ginner imposed prices on the farmers. This was reported by 53.8% and 58.1 % of farmers in Salima and Balaka districts respectively. This was also witnessed by 86.4% of the intermediate buyers. Other factors that determined prices were variety and grade of cotton as reported by farmers in the two districts. The ginner reported that they set prices basing on the export price given by prospective buyers (62%). Other factors that determined price included transaction costs i.e. transport, labour and farm input costs loaned to farmers (25%). The intermediate buyers (15.4%) and the ginner (13%) reported that sometimes prices are set basing on market forces like demand and supply.

Table 8: Factors Influencing Pricing Decisions

Factor	Producers	Producers	Traders	Ginner
	Salima (%) (n=50)	Balaka (%) (n=71)	(%) (n=30)	(%) (n=4)
Variety	1.9	-		
Grade of cotton	44.2	41.9		
Prices imposed by ginner	53.8	58.1	84.6	
Transaction costs				25
Prospective buyers on export market				62
Market forces demand and supply			15.4	13
Total	100	100	100	100

4.1.6.2 Physical Marketing functions

This involves transforming the commodity into a more usable form. This could be through handling, storage, transportation and processing. The study found out the following functions in cotton marketing;

a) Storage: The study found that all farmers stored their cotton before taking it to the ginner marketing depots or selling it to intermediate buyers. It was established that all farmers stored their cotton inside their houses. This was done by dedicating one bedroom to store the seed cotton. The seed cotton is normally spread on the floor that is covered with sand soil mixed with pesticides. This was one of the strategies of protecting the seed cotton from termites attack.

Table 9: Storage Period of Cotton by Producers before Sale

RDP	Storage Period (%)			Total
	0-2 weeks	3-4 weeks	>4 weeks	
Salima (n=50)	16	72	12	100
Balaka (n=71)	7	81.7	11.3	100
Cumulative Balaka & Salima (n=121)	10.7	77.7	11.6	100

Out of the total number of farmers interviewed, it was found that 77.7% stored their cotton for 3-4 weeks. They indicated that they kept cotton for such a period as they wait for the ginner to announce the time they would open the market. Secondly the farmers kept the cotton in anticipation for better prices as the marketing season progresses. This is attributed to the fact that normally at the beginning of each marketing season prices are low due to high supply of cotton on the market. Some farmers indicated that delayed opening of cotton markets left the farmers with one alternative of selling their cotton to middlemen at much a lower price. Other problems encountered in storage included; weight loss of cotton after prolonged storage, fire outbreaks that normally attack burn stored cotton and termites attack. In trying to solve these problems there is need persuade the ginner to open the cotton markets very fast so as to curb some of the storage risks.

It was also revealed that all intermediate buyers stored their cotton before sale. This was because they anticipated higher prices as the marketing season progressed. The majority of the intermediate buyers (57.1%) stored their cotton in rented private store; these were mainly old grocery buildings .Whilst 42.9% of the traders stored their cotton in their own houses.

b) Transport and Road Infrastructure: It is envisaged that transportation system is an important variable in any marketing system. This is because transportation influences the marketing efficiency ratio and also plays a role in market development .In this study transport was considered important by the fact that cotton is bulky in nature and this justifies the inclusion of the variable in the analysis. The variable was found not to be of much essence to producers

because they sold cotton within the vicinities of their homes. On average 94.2% and 87% said they sell their cotton to marketing depots that lied within a distance of 0-1km from their homes. They mainly covered this distance by head load, oxcart and bicycle as a means of transport. In contrast the study established that the majority of the farmers in Salima 86% transported their cotton using an oxcart unlike in Balaka where 47.9% of the farmers used bicycles as a means of transport. This could mainly be due to the topographic flat plains of Salima that allow free mobility of oxen while on the other hand Balaka is hilly and does not favor oxen. As a result most farmers preferred using bicycles and head load.

Table 10: Mode of Transport by RDP

Mode of transport	RDP		
	Salima Producers (%) (n=50)	Balaka Producers (%) (n=71)	Private Traders (%)
Head	6	9.9	-
Ox-cart	86	33.8	27.8
Bicycle	8	47.9	5.6
Hired Vehicle	0	8.5	66.7
Total	100	100	100

However transportation of cotton to the market proved to be difficult for intermediate buyers and ginneries due to poor condition of most feeder roads. These roads were mainly used by intermediate buyers to ferry cotton from the farmers' households to their assembling points. This was confirmed by 76% of the intermediate buyers who reported that the feeder roads are in bad condition. This could be attributed to the fact that intermediate buyers penetrate into rural villages to buy cotton from farmers. The study found that farmers in Balaka mobilized themselves into a farmers association in order to curb marketing and other logistical problems e.g transporting cotton to the market. The association is then responsible in transporting the cotton to the cotton ginneries. Similarly all ginneries were involved in formal contracts with the transporters. The transporters were paid in installments i.e. before and after delivery. Intermediate buyers hired the vehicles individually when ferrying the cotton to the market.

The study revealed that the traders and ginneries incurred high transportation costs due to poor road network and poor road infrastructure, frequent breakdowns due to usage of old

vehicles, overloading coupled with the poor road conditions leads to delays in delivering the cotton to the ginneries. Therefore, there is need to improve the roads so as to have efficient and cheaper transportation for the improvement of production and marketing of cotton in Malawi.

c) Grading: This involved separating the seed cotton into different groups basing on color of lint, removal of damaged lint that has been stained with trashes and dirt, eaten by rodents and contaminated with honeydew through late aphid attack. In addition, grading starts from the field when the farmer is harvesting the seed cotton .The farmer is supposed to carry a hessian sack with two compartments so as to separate the stained cotton and the unstained. The hessian sack prevents seed cotton being contaminated with Polypropylene (Cotton Handbook of Malawi, 2005). The study however, revealed that 74 % of the farmers did not grade their cotton before taking it to the market because they felt that there was no need of doing so as the prices were uniform for those who graded or not. Despite the fact that this conduct would compromise the quality of cotton marketed, ginneries were not encouraging farmers to do grading. This was because the supply of cotton on the market was very low, and the ginneries competed heavily to get more cotton from the farmers. The consequence was that if the ginneries could force farmers to do the grading before sale the farmer’s would inturn divert their cotton to other ginneries buying ungraded cotton. Apparently, this situation could hinder the efficiency of the cotton marketing system. Grades and standards contribute to operational and pricing efficiency and it provides buyers and sellers a system of communicating price and product information (Crawford, 1997).

Table 11: Percentages of Cotton Producers who graded their Cotton before Selling

Grading	Producers Salima (%) (n=50)	Producers Balaka (%) (n=71)	Total (%) (n=120)
No	71.2	76.8	74
Yes	28.8	23.2	26
Total	100	100	100

4.1.6.3 Facilitating Functions

This involved activities that are not directly involved in both the exchange and physical handling of cotton. Hence without them the modern marketing system would not take place. Furthermore, it is envisaged that these functions aids in the smooth operation of the exchange

and physical functions. This includes market information, demand creation and research .As a result, this study revealed the following;

a) Accessibility to Marketing Information: Production in most agricultural commodities by smallholder farmers in Malawi is seasonal. This has a great influence on crucial market decisions that are made by farmers such as pricing in terms of laws of demand and supply. As such access to market information assist both traders and producers in stabilizing supply and demand and also to minimize excessive price rises and surpluses (Abbot, 1970). Market information is of paramount importance in marketing of agricultural products as it encourages all market players to make informed decisions concerning marketing activities e.g. quality of goods to produce or sell and its prices. Figure 5, highlights market information sources for cotton market traders

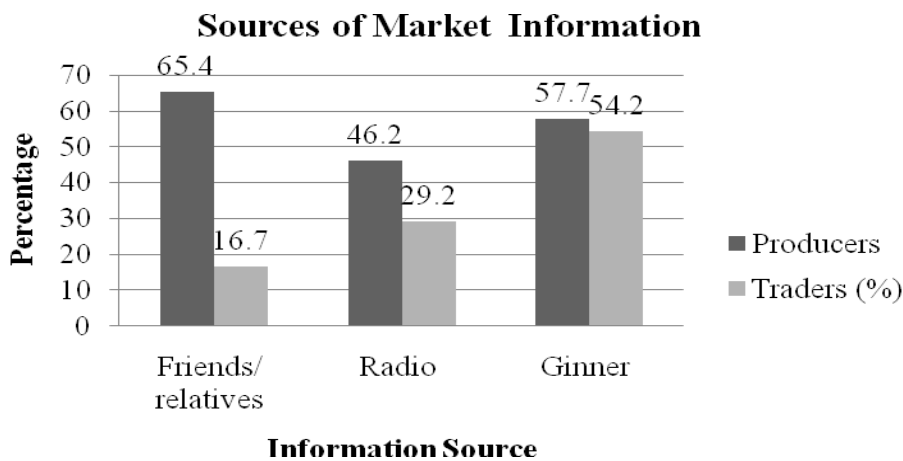


Figure 5: Sources of Market Information by Traders and Producers

It was found that 54.2% of the traders received information from the cotton ginners operating in the two RDPs, while 29.2% relied on agricultural price announcements on the national radio and 16.7% accessed information from friends and relatives doing the same business in the area. However all traders complained that the information was so scanty and incomplete. In addition, ginners do not give them any chance to negotiate for better prices. This implies that both internal and external market information in Malawi is still undeveloped as reported by Ng’eno (1991). On the other hand, the traders also reported that the ginners offer different prices that are even lower contrary to what has been announced on the state radio. This means that there is lack of transparency by the ginners when it comes to pricing .Therefore there

is need to improve the market information system so that is should be stable and accessible by the local traders. Similarly improved market system would enhance market efficiency as perfect flow of information is a prerequisite to a perfectly competitive market.

Furthermore, the study revealed that 65.3% of the farmer's sampled farmers accessed market information from their friends and relatives. Likewise 55.6% sourced information from ginners and the remainder sourced information from the radio. Therefore, it can be concluded that the most reliable source of information received by cotton producers came from friends. As for ginners, it was revealed they got information from prospective buyers, internet websites like www.plexus_cotton.com, [cotlook index](http://cotlook.com) e.t.c

b) Cotton Producers and Traders Associations: Establishment of farmers marketing associations is of great essence as it assures farmers where they would sell their agricultural produce. It is well known that enormous benefits could be achieved through associations such as ease of marketing produce, easy access to inputs as well as credit accessibility and enhanced bargaining power through the groups' collective action. The study revealed that 42 % of the farmers in Balaka belonged to farmer associations³. In Salima only 29.4% said they belonged to a farmers association. However this association was not directly involved in cotton production and marketing as it is meant for mushroom and honey production. However the farmers claimed that the association had benefited them a lot through different trainings that have helped to build their capacity. As a result they are able to apply the knowledge to other enterprises like cotton production.

The results also showed that 80% of the traders belonged to an association. The association was responsible for training the traders in business skills, searching for markets, negotiating for better prices and looking for opportunities that would enable them to access loans as a group. However, the association started operating last year as such it had not fulfilled most of its objectives during the time of the study. In addition, it was found out that this association

³ Balaka Area SmallHolder Farmers association (BASFA) and Balaka Cotton Growers Association (BACOGA)

comprised of all cotton traders in Malawi .However, out of the sampled traders, 20% reported that they do not belong to any association because of the high registration fee hence could not afford to join.

c) Credit Availability: The study revealed that only 25% of the traders accessed credit to start their businesses from Microfinance institution .However it was noted that the loan that the traders used to start the cotton trading business was not initially intended for that purpose. This implies that the loan was diverted from serving other businesses to cotton trading. In addition it was indicated that 6.3% and 68.8% of the traders started their businesses using money they got through remittances from relatives and own savings, respectively. All traders indicated that lack of access to credit was one of the major constraints in expanding their cotton business. This is because the traders are not licensed by the government hence they encounter problems to access loans from the banks and Microfinance institutions. As for farmers, 96.7% and 96.6% received farm input credit from various ginners in Salima and Balaka districts respectively. Outlined below is the breakdown of various ginners and organizations that gave out farm input loans to cotton producers.

Table 12: Source of Farm Input Loan Received by Cotton Producers

Market	Source					
	Great Lakes Co.	Cargill Co.	Iponga Co.	BASFA Association	Toleza Co.	Total
Salima	49.1	51.9	0	0	0	100
Balaka	38.2	47.1	2	11.8	2.4	100

In general the results showed that Great Lakes Cotton Company and Cargill cotton are the major players in terms of provision of farm input loans to cotton producers. The provision of farm input loans ensures consistent supply of seed cotton to the ginners. However all ginners raised a complaint that there is high default rate by the farmers when it comes to loan repayment.

4.1.7 Cotton Marketing Agents and Marketing Channels

4.1.7.1 Cotton Marketing Agents and their Role

Market actors are usually defined by the roles they play. These actors could either be specialist in one activity or they integrate a number of activities in a vertical or horizontal manner. The following agents were identified in Salima and Balaka markets;

Producers: These are the farmers growing the cotton being marketed. They were responsible in performing primary functions of the cotton value chain like grading, storage and transportation.

Intermediate buyers /Traders: These are private traders who played intermediary roles in the market. They buy cotton from individual farmers at farm gate and sell it to the ginners. The role of middlemen was to assemble and transport cotton to ginners after they had accumulated enough quantity depending on their capital base.

Producers/ Traders: These are private traders who played dual role in cotton marketing. They produced their own cotton and they buy more cotton from other farmers at farm gate and then sell the cotton to ginners.

Ginners: These are cotton companies that buy seed cotton from farmers. The ginners then process the seed cotton by separating lint and cotton seed by using the cotton ginning mills. They later export the lint to South Africa and Asia. The cotton seed is either exported, sold to oil manufacturing industries.

4.1.7.2 Marketing Channels for Cotton

Results from the study indicated that farmers mostly sold their cotton soon after harvesting starting from the month of April to September. It was found that at the beginning of each marketing season, the prices were very low since the supply was high and also because the farmers were in serious need for cash after investing a lot in the entire production process. The table below shows percent distribution of Major buyers of Cotton in Salima and Balaka RDP.

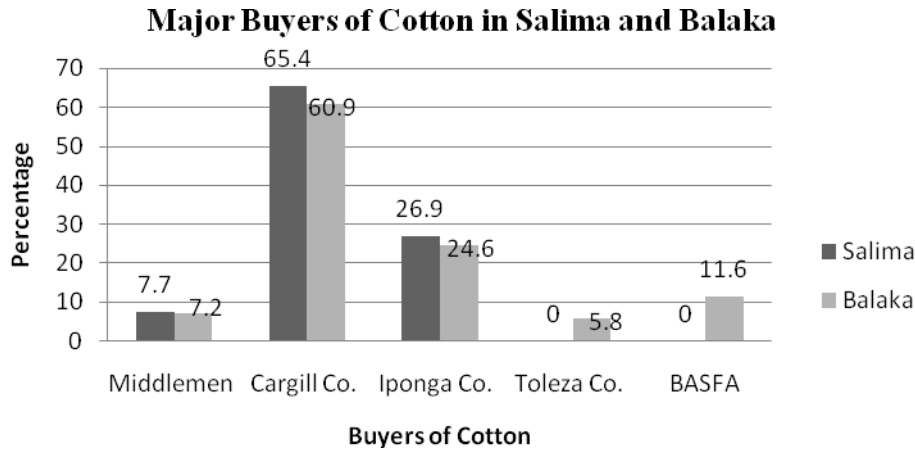


Figure 6: Percent Distribution of Major buyers of Cotton in Salima and Balaka RDP

The producers revealed that the major buyers of cotton in Salima and Balaka included ginning companies like Great Lakes, Cargill, Iponga and Toleza respectively. Balaka RDP also benefited from the Balaka Area Smallholder Farmers Association (BASFA) that linked farmers to ginners. In general the results of the study indicate that Cargill Cotton Company is the major buyer of cotton in the two RDPs .i.e. 65.4% and 60.9%.This is followed by Great Lakes Cotton Company and other companies like Iponga, Toleza and BASFA. The study also established that 53.6% of the intermediate buyers also produced their own cotton for sale. Outlined below is a summary of the flow of cotton from producers to ginners in Salima and Balaka EPAs. Four main channels were identified in the cotton marketing system as follows;

Cotton Marketing Channels for Salima and Balaka Market

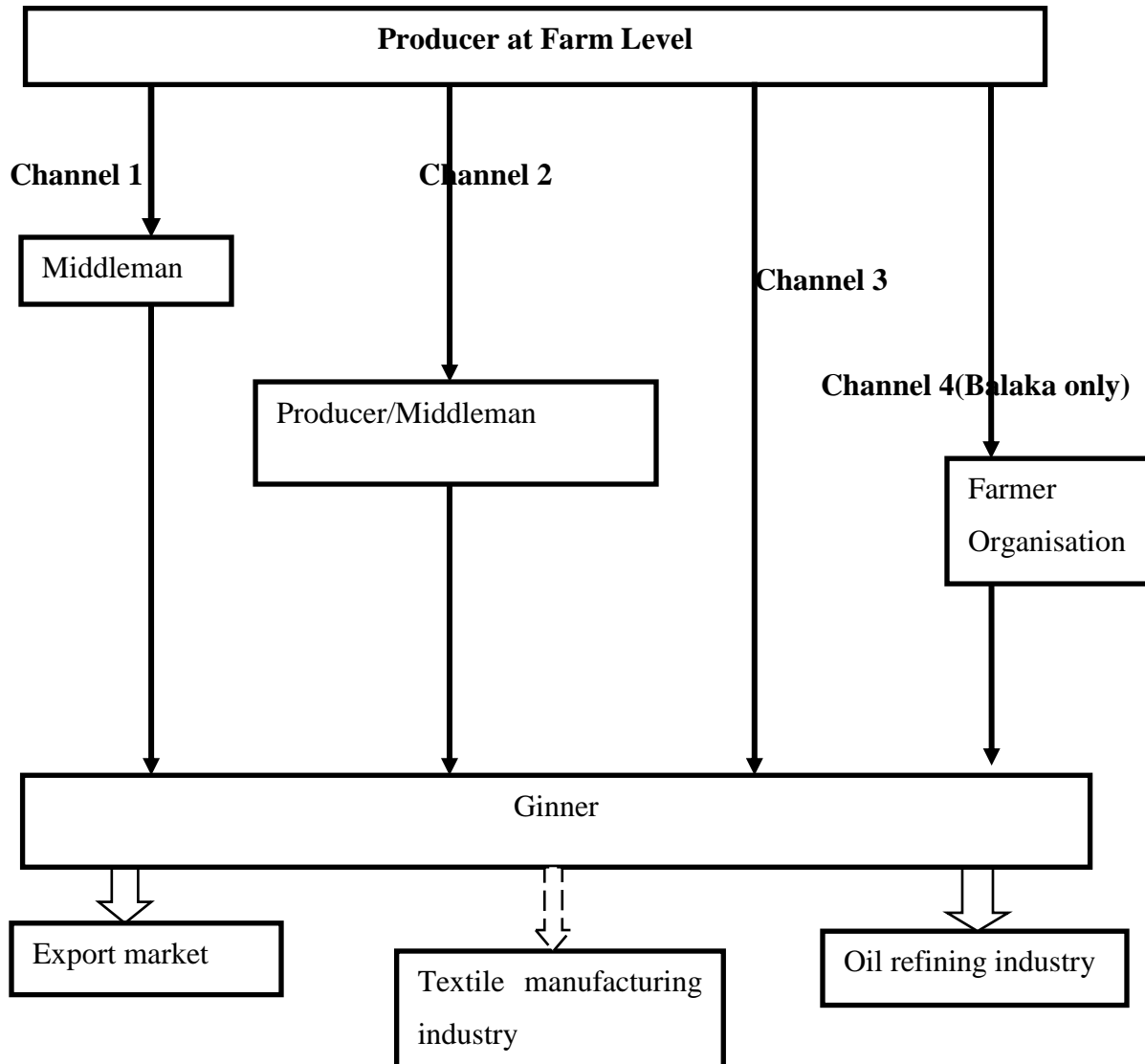


Figure 7: Cotton Marketing Channels for Salima and Balaka Market

It can be easily noted from the channels identified that there is less complexity of the flow of the cotton from the producer to the final consumer. It was also established that during 2007/08 season no cotton lint was sold to any textile manufacturing industry in Malawi. This implied that all the lint was exported.

Channel 1: Involved cotton producers who sold the cotton to ginnerers directly. This cotton is sold in the cotton selling depots that are normally opened during each marketing season by ginnerers in the two RDPs. In this case farmers incurred costs of transporting cotton to the depots.

Channel 2: This is where some intermediate buyers played two roles in the market i.e. they produced their own cotton for sale and then they also bought some more from other farmers and sell to ginnerers.

Channel 3: Producers sold their cotton direct to middlemen at farm gate who inturn sold the cotton to ginnerers.

Channel 4: The fourth channel was only applicable to Balaka market where farmers sold their cotton to an association called Balaka Area Smallholder Farmers Association (BASFA).The association inturn sold the cotton to ginnerers.

It was also found out that producers in channel 2 and 3 did not incur any costs on transporting their cotton to the market as the transaction was done at farm gate. To finish the process the intermediate buyers were responsible in transporting the produce to the ginnerers' outlet markets. The study also found out that 96.7% and 96.6% of the farmers in Salima and Balaka Districts had taken a farm input loan from ginnerers that restricted them from selling their cotton to any other buyers. This barred the farmers to choose those buyers who offered better prices on the market.

4.1.8 Policy and Trade Issues in Cotton Marketing

A policy is an action that is taken by the government or any legal entity to influence events. Therefore, in case of agricultural marketing, a policy is any course of action that the government takes to persuade marketing of agricultural products so as to achieve objectives (Mango, 1998 as cited by Mkandawire, 2003). It is envisaged that good understanding on policy issues by traders would help to influence the decisions made by traders. However the study revealed that only 53.8 % of the traders had some information on government institutions that govern cotton marketing while 46.2% had no knowledge on government policies. Market liberalisation is the policy that was mentioned by the traders who had some knowledge on market related policies in Cotton. They indicated that market liberalisation had led to a situation where private traders and ginnerers are able to operate freely unlike in the past where ADMARC was only involved in marketing of cotton.

In addition all ginnerers explained that they follow the policies that are in the cotton act of 1971. The act states that the government shall be responsible in setting minimum prices of cotton at the beginning of each marketing season. However the ginnerers complained that this is restricting the whole marketing system to operate freely. In order to overcome this problem, it was suggested that the parliament should pass the current cotton bill as soon as possible so that all market participants should have clear guidelines on their roles and responsibilities. This would help further in improving the cotton marketing system. Table 13 below indicates proposed aspects policy changes by ginnerers and traders that would lead to an improvement in cotton marketing.

Table 13: Proposed Policy Issues to Promote Cotton Marketing

Proposed Aspect	Percentage of Traders/Ginnerers (%)
Provision of loans to traders/ ginnerers	37
Research	25.9
Facilitate regional trade	14.8
Open Auction markets for cotton	11.1
Build good road networks	11.1

(Results based on multiple responses)

The table shows that 37% of the traders and ginners reported that provision of loans to all buyers will help to increase the capital base of small traders hence increasing their market share. The traders proposed about the emphasis of conducting various research in cotton production and marketing aspects (25.9%). Other aspects cited were facilitation of regional trade (14.8%), Opening of auction markets for selling cotton (11.1%) and building good roads to ease transportation problems (11.1%). These suggestions were based on the fact that traders felt that cotton production potential was not being maximized.

4.2 EMPIRICAL ANALYSIS: ANALYSIS OF STRUCTURE, CONDUCT AND PERFORMANCE OF COTTON MARKETING

4.2.1 Market Structure Analysis

In order to establish the structure of cotton marketing in the two markets i.e. the level of competition in the market using Hirfindahl Hirschman Index (HHI) and market shares, barriers to entry and exit into cotton market were used as evaluation criteria.

4.2.1.1 Organization of the Market in terms of Marketing Channels

The study established that there are 4 ginners operating the cotton business, 1 farmers' organization and intermediate buyers in the area of study. In addition, it was also observed that there are 4 main marketing channels used by producers to reach the buyers, and these are: when the producers sell their cotton to middlemen who inturn sell to the ginners, 2) other producers play dual roles of acting as producers and intermediate buyer, this means that they produce their own cotton and supplement what they have produced by buying more from other farmers. Later on they sale the cotton to the ginners, 3) producers sale the cotton they produce direct to the ginning companies without the use of any intermediate buyers and 4) Cotton producers form associations that facilitate selling of cotton to the ginners as a group.

Quantities of Cotton Sold per Marketing Channel

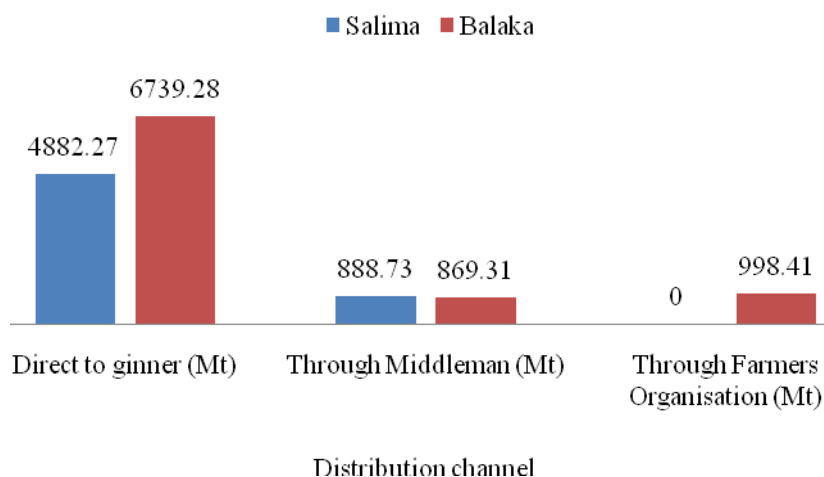


Figure 8: Quantities of Seed Cotton Sold per Marketing Channel in 2007/2008 Season.

The figure indicates that most of the cotton that was supplied to the market was sold directly to the ginner i.e. 4882.8 metric tons and 6739.28 metric tons of cotton in Salima and Balaka Districts respectively. This was followed by farmers association and intermediate buyers. This was against the total quantity that was supplied to the two markets i.e. 5771 tons and 8607 tons in Salima and Balaka Districts respectively.

4.2.1.2 Market Shares distribution in Cotton Marketing

Market shares were estimated based on quantity of cotton that was handled in Salima and Balaka Markets. Averages for traders and various ginner were used to calculate the market shares. It was found that on average Salima market handled 5771 metric tones of cotton per season against 8607 metric tones in Balaka. Table 1 below outlines market shares for each market.

Table 14: Market Shares

Market	% Market Share per Category						
	Middlemen	Middlemen/producers	Farmer organisation	GLC Co.	Cargill Co.	Iponga Co.	Toleza Co.
Salima	4.1	5.2	-	39	43.5	7	-
Balaka	2.3	3	12	30.5	41	6	4.6

In general the results showed that in both markets the cotton ginners/companies had a big market share. Cargill Cotton Company was the leading ginner with market shares of 43.5% and 41% in Salima and Balaka RDPs respectively. This was followed by Great Lakes Cotton Company, Iponga and Toleza ginning companies. It was also noted in Balaka, farmers' organizations called BASFA had a market share of 12%. Intermediate buyers from both markets had a small market share that ranged between 3% to 5.2%. This implies that the ginners dominate the cotton market in the two districts as they had a market share of more than 50%. As in principle, Devine *et al* (1984) stated that buyer concentration is comparable to seller concentration; therefore a range of absolute and relative measures of buyer concentration corresponding to those of seller concentration could be calculated. The study used the Herfindahl- Hirschman Index (HHI) to find the concentration level of the two markets for the buyers.

Table 15: Herfindahl Hirschman Indices for Buyer Concentration in Balaka and Salima.

Market	HHI
Salima	3506
Balaka	2806

The results in table 15 show that the degree of buyer concentration is low. The HHI showed that both Salima and Balaka markets were highly concentrated since the computed indices are greater than the benchmark of 1800. Increases in the Herfindahl Index generally indicate an increase of pricing power and a decrease in competition (Boulton *et.al*, 1990). The result implies that the minimal competition exists basically because; the market had some buyers like Cargill and Great Lakes that are dominating the cotton market, hence making the market less competitive in nature. The few buyers that exist tend to offer depressed market prices particularly in remote and inaccessible areas (Nakhumwa, 2001). Apparently, even though the number of buyers was few there was still an incentive to competition due to low supply of cotton. This is because all the four ginneries in the country are in good operational condition but under-utilized, with only about 20-25 per cent of total ginning capacity being used due to low quantities of cotton being produced (GOM, 2005). Competition has also led to mistrust and opportunism amongst the cotton buyers in the two RDPs. The opportunism does exist because some buyers provide pre-harvest loans to producers while others do not. The provision of loans

increases the ginners' exposure to free-riding actions by cotton-buying competitors. These competitors tend to offer very good prices that are higher than the buyers who provided postharvest loans hence attracting more producers to sell to them. As a consequence, fierce competition in seed cotton buying has made it hard for these companies to recover investment in either input supply (Poulton, 2004). Competition has also led to the influx of private traders in the cotton market. These traders move around farms to buy cotton especially in areas where ginners marketing depots are far away and the farmers do not have the means of transport to reach the proper market. It was revealed that 53% of these traders are employed by some of the ginners on the market to source cotton for them. This is one of the mechanisms used by the ginners to overcome the competition.

It was further established that Cargill and Great Lakes Companies control a bigger share of the market. It can be therefore be concluded that cotton market in Malawi is Oligopsonistic in nature. This is because the cotton market is characterized by a small number of large buyers controlling the buying side of the market. A typical oligopsony exist when two or three firms control over 50% of all sales of a particular good in a particular market and certain barriers prevent potential competitors from entering the market (Tomek and Robinson, 1981). The study also considered other factors that are relevant in determining the degree of concentration, which includes barriers to entry that arise due to demand conditions, legal and institutional factors and capital requirements. Therefore the study found that capital costs are a crucial entry barrier in cotton marketing. All ginners and traders complained that bank real interest rates are very high (over 35%). This means that there is no investment capital available locally and the cost of short term working capital is prohibitive. This also implies that the ginners are still working on a small capital base. Due to fairly high initial capital requirement, entry for cotton buyers is difficult and provides protection to those already established. The other barrier that is hindering both the sellers and buyers is unavailability of market information. The market information received by farmers is still inaccessible, unreliable and inaccurate. Information is normally received by word of mouth and through radio stations. In most cases information reaches farmers at the last minute and when it had already been distorted. As a result this encouraged cheating on the market, for instance, late price announcement by ginners also gave room to middlemen to offer cash prices

that are way below the market price, hence exploiting farmers, this discourages them to produce more in the following season.

Legal requirements also pose as an entry barrier to the buyers in the cotton market. Currently, the government is responsible in setting ceiling prices for cotton in Malawi despite the fact that the market was liberalised. In contrast, liberalized markets prices are supposed to be determined by the forces of demand and supply. However, the government is still following the cotton bill of 1971. As a consequence cotton buyers complained that they are being denied the chance of operating freely in the market. The study also found that all intermediate buyers from the two districts were not licensed by the government. This was an entry barrier to all traders since they operate illegally. As a result, these traders had problems to negotiate for better prices with the ginneries. On the other hand, it was difficult for these traders to access loans from banks because they do not have valid business licenses. Finally, it was noted that unstable world cotton prices is a major risk and an entry barrier to all players in the two cotton markets. In summary, these findings helped to measure the extent of deviations from the perfectly competitive norm. In this study, the deviation is large and that makes the competition of the cotton market to be imperfect. Hence we can conclude that the market is Oligopsony in nature

4.2.2 Cotton Market Conduct

Market conduct refers to the behavior that firms follow in adapting or adjusting to the markets in which they sell or buy (Bain 1968). The study found the following behavior characteristics; Seed cotton was sold from April to August each year. The first 3 months of the marketing season was so crucial for cotton selling. This is because cotton loses weight if kept for so long hence the farmers find all means of supplying the cotton to the market in good time. For instance, about 32 % of total sales of cotton were performed in May, 42% in June and about 20 % in July in 2007/08 marketing season. This means that, 94% of seed cotton sale was performed within the first three months. The remaining portion was sold in August.

It was established that 54% of farmers in Balaka RDP belong to a farmers Association. The association played a bigger role to bargain for better prices with the ginneries during the 2007/08 marketing season. On the other hand, cotton farmers in Salima did not have any

association and as a result, they lack the power to negotiate for better prices. Farmer organisations (FOs) can encourage market access and commercial agricultural development but face many challenges as they require sensitive but committed support, and are unlikely to succeed in directly helping the poor in more difficult environments (Chirwa 2005). The study revealed that all middlemen that were involved in cotton marketing travelled across the whole country to buy cotton in all cotton producing districts. This means that they are not area specific. This has a great effect on pricing and the traders dictate same prices in all areas, as a result the farmers end up being exploited through the low prices offered by the traders. It was also exposed by all traders that ginners denied giving them price information before the markets were opened. However, price information is very important as it acts as an indicator to the farmers in terms of what to produce, when to produce and where to sell. i.e. it helps both the traders and producers to make concrete marketing decisions (Mkandawire, 2003). Therefore there is need to improve on the marketing information dissemination systems so as to make the cotton market to be efficient.

Middlemen were ranked highly on providing markets earlier in the season than the ginners. The early entry of vendors in purchasing cotton was viewed as a positive aspect to the private marketing system because it provided opportunities for farmers to earn income when they needed it most. However this may be disadvantageous to the farmer because vendors tend to offer lower prices than the prices that are finally offered when ginners are purchasing produce from traders.

As reported by all ginners, cotton marketing prices were determined based on the grade, variety and the price being offered on the world market. However due to enormous competition amongst the ginners operating in the two markets farmers were not being encouraged to grade their cotton. The consequence was that if the ginners could force farmers to do the grading before sale the farmer's inturn would divert their cotton to other ginners who were buying ungraded cotton. Out of the farmers interviewed, 73.2% and 97.9% of the farmers in Balaka and Salima respectively reported that they did not grade their cotton when taking it to the market because they felt that there was no need of doing so as the prices were uniform for those who graded or not. This concurs with Shepherd and Farolfi (1999), who reported that few of the newly liberalized marketing systems offer farmers quality premiums and grading is rarely carried

out. Whilst high level of effective competition and higher seed cotton prices for farmers emerged after liberalization, grading at the primary marketing stage was rarely carried out because a large number of buyers purchased seed cotton regardless of quality, forcing all others to use the same strategy.

The study revealed some unethical trading practices portrayed by cotton producers and traders in the market. Out of all the ginners 62% complained about the poor quality cotton being sold at the market. It was revealed that farmers damped their cotton with water and others mix the seed cotton with sand so that it can weigh more at the market. There were also some buying agents who move around farmers' houses with faulty weighing scales. Farmers ended up being cheated because they need liquid cash to enable them transport their produce to proper buying centres. Some of these agents are dishonest and sometimes disappear with farmers' balances. In summary, the observed conduct of the market players implies that there is some competition that exists among the cotton buyers. Hence each buyer has developed coping strategies in order to withstand the competition on the market and this is portrayed through their conduct.

Price Collusion and Price Leadership Tendencies

This involved asking the traders whether they colluded on the prices offered to producers. It came out that 69.2 % of the traders do not conspire with their friends on the price offered in the market. This is because the trader's scramble for the seed cotton due to high competition in the market. As for ginners, the study established that there is rivalry conduct among them when it comes to pricing. This came about due to the low supply of cotton in the market hence every buyer wants to get more. This concurs with what Larsen (2002) reported that having few players within a market may make collusion on pricing feasible, but whether it occurs depends on the incentives facing those players. However large players within a concentrated market might still act in a highly competitive (or rivalrous) fashion. For instance, if the total ginning capacity comfortably exceeds a typical annual harvest, the desire for high capacity utilization at ginnery level thus provides an important incentive for competition, even when the number of companies purchasing seed cotton is few. This could also apply to the case of Malawi Cotton Market. In spite of the fact that main players do compete strongly in other aspects of service delivery; the practice in cotton marketing has been that when the largest firm announces its price and

competitors follow the suit but slightly above the latter. Hence it could be concluded that there is price leadership being practiced amongst the buyers. Price leadership describes the situation in which a single enterprise regularly initiates market price changes by changing its own price because all the other enterprises in the market follow and adopt those price changes (Chandler, 1990). The price leader emanates when one enterprise is extremely large in comparison to the market and to the other enterprise in the market in terms of market shares. In this study it was found that that Cargill is the price leader in cotton marketing in Malawi. This is because Cargill has an average market share of 42.25 in Salima and Balaka and all the buyers wait for Cargill to set the buying price before they set theirs.

Furthermore, in order to test whether price collusion existed, t-test was used to verify the difference between the price being offered by the price leader and the rest of the buyers, and results were significant, $t = 2.29$ (.029 < 0.05). This implies that there were observed variances from the price that was offered by the price leader and the rest of the buyers hence no price collusion. The study also found that none of the buyers had merged with the other in order to have a big market share.

4.2.3 Cotton Market Performance Analysis

4.2.3.1 Gross Market Margins for Salima and Balaka Markets

Performance of the cotton market was calculated based on marketing margins that utilized costs incurred in all marketing channels that had been previously identified. The analysis was based on the 2007/2008 marketing season. Table 16 shows the market prices in both markets.

Table 16: Average selling Prices (MK/Kg) for Salima and Balaka Markets

Selling Level	Salima (MK/Kg)	Balaka (MK/Kg)
Farm gate	43.50	44.3
Middleman	71.16	70.4
Middleman/producer	64.83	65.28
Producer Price	72.1	67.45
Farmer organization	-	72
Ginner	141.4	141.4

From the above average selling prices, gross marketing margin analysis was done using the formulas discussed in the methodology section. The margins were calculated basing on the various marketing channels identified previously. See the results in table 17 below.

Table 17: Gross Market Margins

GMM	Salima (%)			Balaka (%)			
	Chan 1	Chan 2	Chan 3	Chan 1	Chan 2	Chan 3	Chan 4
TGMM	69.23	54.15	49	68.67	53.83	52.3	49.1
GMM middlemen	19.65	-	-	18.46	-	-	-
GMMFO			49				49.1
GMM ginner	49.67	54.15	-	50.21	53.83	52.3	-
Producers share	30.76	45.85	51	31.33	46.17	47.7	50.9

In Salima, the market qualifies channel 2 and 3 as those that rewarded the farmers attractively. In channel 2, farmers played two roles in the market, as producers and intermediate buyers. Similarly in channel 3, farmers sold their cotton direct to the ginner without involving any intermediaries. While in Balaka channels 2, 3 and 4 gave farmer's good returns i.e. if they doubled as producers/intermediate buyers, sell direct to ginner and through a farmer organization respectively. In summary, the study established that cotton producers' gained much profit if they sell their product direct to the ginner. This implies that the producers assume profits that could have gone to middlemen. This was also the case for channel 4 where producers belong to a farmer organization where they sold their cotton as a group. Hence their producers share was much higher than the rest of the channels i.e. 49.1%. At times, market margins may fluctuate due to the perishable nature of the product, the number of levels of participants in the marketing channel, the marketing services provided and the risk and uncertainty borne by each of the market participants (Pomeroy and Trinidad, 1995).

In order to have a complete assessment of the various market channels, there is need to give full details of the costs that affected the price of cotton through out the market chain since this was not captured by the gross marketing margins. This was done using the price spread method. The analysis traced the cotton from producer level to ginner's level through storage, transportation and handling stages. The price spread method used the traders' surplus as a percentage of the total costs to verify how well a particular market is doing in terms of price.

Table 18: Price Spread Analysis

Participant	Description	Salima			Balaka				
		Chan 1	Chan 2	Chan 3	Chan 1	Chan 2	Chan 3	Chan 4	
Producer	Selling Price	43.50	64.83	72.1	44.30	65.28	67.45	72	
	Market costs	-	4.56(3.2)			3.2(2.3)		3.1(2.2)	
	Handling costs	1.42(1)	-	3.9(2.8)	1.19(.8)		3.5(2.5)	2.08(1.5)	
	Transport costs	-	3.34(2.3)	2.9(2.1)	-	3.6(2.5)	2.9(2.1)		
	Net margin	96.48(68.2)	68.67(48.6)	62.5(44.2)	95.91(67.8)	75.52 (53.4)	67.55 (48)	64.22 (55.4)	
	Gross margin	97.9(69.23)	76.57(54.2)	69.3(49)	97.10 (68.67)	76.12 (53.8)	73.95 (52.3)	69.4 (49.1)	
	Farmers share	30.76	45.85	51	31.33	46.17	47.7	50.9	
Intermediate Buyer	Buy price	43.50 (86.3)			44.30 (87.3)				
	Market cost	.50 (1)			.57 (1.1)				
	Accommodation	1.02 (2.01)			.97 (1.9)				
	Food	.98(1.94)			.82 (1.6)				
	Transport	2.01(3.98)			2.05 (4.04)				
	Labour	1.12 (2.22)			1.03 (2.03)				
	packaging	1.3 (2.6)			.98 (1.9)				
	Total costs	50.43			50.72				
	Sell price	71.16	64.83	72.1	70.4	65.28	67.45	72	
		Traders surplus	20.73(41.1)			19.68 (38.8)			
Ginners	Buy price	71.16 (82.7)	64.83(81.3)	72.1(83)	70.4(82)	65.28 (82)	67.45 (82)	72(83)	
	Transport cost	4.98(5.8)	4.98(6.2)	4.98(5.7)	4.80(5.6)	4.8(5.9)	4.8 (5.8)	4.80(5.5)	
	storage	1.52(1.8)	1.52(1.9)	1.52(1.7)	1.46(1.7)	1.46(1.7)	1.46 (1.8)	1.46(1.7)	
	labour	1.97(2.3)	1.97(2.5)	1.97(2.3)	2.11(2.5)	2.11(2.6)	2.11 (2.5)	2.11(2.4)	
	Packaging	.71(0.8)	.71(0.9)	.71(0.8)	.71(.8)	.71(.8)	.71(.9)	.71(.8)	
	Ginning	5.68(6.6)	5.68(7.1)	5.68(6.5)	5.68(6.6)	5.68(7.1)	5.68 (6.9)	5.68(6.5)	
	Total costs	86.02	79.69	86.96	85.90	80.04	82.21	86.76	
	Sell price	141.4	141.4	141.4	141.4	141.4	141.4	141.4	
		Traders surplus	55.38 (64)	61.71 (77.4)	54.44 (62.6)	56.03 (65)	61.15 (76)	58.98 (71.7)	54.45 (62.8)

Figures in parenthesis are percentages of the total costs at that level

The results from table 18 show that the difference between ginners' export price and farm gate price for channel 1 in both markets is 97.9/kg Malawi Kwacha (MK) and MK97.1/kg for Salima and Balaka markets respectively. This is the gross marketing margin which was 69.23% of the ginner's price for Salima and 68.67 % for Balaka. As such out of the price paid by the consumer, only 30.76% and 31.33% goes to the farmer in Salima and Balaka markets respectively.

In channel 2 the net margin that goes to various market players was 68.67% and 75.52% of the retail price out of the consumer price paid by the consumer in Salima and Balaka markets respectively. The farmers share was found to be 45.85% and 46.17% in Salima and Balaka Districts respectively. By comparing the two channels, in channel 2 where producers played double roles of producing and also as traders. The trader's role was taken out; hence the farmer absorbed the margin that could have gone to the trader. This improved the producers share by far. Consequently, in this channel exploitation of producer's in terms of prices was reduced and this inturn could improve the marketing efficiency. However to achieve this farmers are supposed to be well organized.

In channel 3 producers sold the seed cotton direct to the ginners .In this case the net margin was found to be 62.5% and 67.55% of the retail price in Salima and Balaka District respectively. The farmer claimed the entire net margin since he played the roles of a middleman and retailer. These farmers sold their cotton to the ginners' depots that were set in the villages during the marketing season. However in this channel farmers incurred costs like transport and packaging and other minor costs that were not taken seriously like energy and time. This channel could be so efficient if the farmers are well trained and organized.

Channel 4 is applicable in Balaka only; producers sold their produce through a farmers association called BASFA. The net margin was found to be 64.22% which was much lower than the other channels. In this case the farmer shared some roles with the association .This shows that this channel was more efficient provided farmers are well organized .This can be done through various trainings that would build their capacity.

The results indicated that from the two markets, transportation, ginning and labour costs contributed to a higher percentage of the total costs apart from the buying price. The costs on transport were high because of poor road infrastructure to the production areas especially in Balaka RDP. Generally, as reported by Azzam (1991) there are also a number of other relevant variables that can influence the size of marketing margins. These have been shown in a number of studies that looked at the impact of other marketing shifters, e.g. price risk, product quality and market power. This also concurs with Onu (2008), who found that marketing cost and marketing margins are major indicators for the efficiency of the functioning of most agricultural markets. It can be summarized that higher margins are needed to cover tax and transport costs. An increase in transportation and storage cost brings higher operating costs.

The average traders' surplus for middlemen was 41.1% and 38.8% for Salima and Balaka markets respectively. This suggests that marketing of this commodity by private traders is inefficient in price. As reported by Nakhumwa (2001), that if the computed market share is more than 30% of the total costs without any improvement in the services provided, then the trader is said to be making supernormal profits at the expense of the producers. Hence in this case the traders' surplus was above the acceptable range of 20-30% since there was no value addition. This also implies that consumers are paying unnecessary costs that only benefit the private traders as profit and do not necessarily add value. Similarly, the traders' surplus for ginners ranged from 64% to 77.4% depending on the marketing channel. Therefore, considering that there was significant value addition through ginning of the seed cotton into lint and cotton seed, the profit margin seems reasonable and the market could not be said to be inefficient in price. However, the ginners should still involve the producers when making price decisions.

In summary, the results indicated that if the producers sell their cotton direct to ginners, they will be getting quite a reasonable share of the ginners' price. The low prices obtained by farmers indicate that farmers have less bargaining power than the traders and Farmer organizations. Therefore it is recommended that farmers should be organized in associations or cooperatives so that they can increase their bargaining power.

4.2.4 Modified Cobb-Douglas Production Function Analysis for factors affecting quantities of cotton produced

The production function analysis was performed to analyse factors affecting the quantities of cotton produced by the farmers. The output was used as a proxy measure for the amount of cotton that was sold to the market in 2007/2008 season holding other factors constant. This is attributed to the fact that; whatever is produced by the farmers ends up in the market. Hence it was assumed that the production factors that would affect cotton at farm level would as well have a great impact on the quantities produced and the amount sold on the market. In the function, per capita invested, farm size, family labour, variety of cotton planted, quantity of pesticides used along side with other socio-economic factors including household head characteristics such as access to credit, association membership, gender of household head, age of household head, education level of household head were used as explanatory variables. Table 19 contains OLS estimates of equation 3 as specified in chapter 3 using 2007/08 cotton production data.

Table 19: Results of Production Function

Variable	Unit	Coefficient	S.E	t-value	Sig.
Constant (0)	-	-2.041	1.236	-.1659	.102
LMC	Ha	.316	.107	3.657*	.000
INC	MK	.527	.119	5.991*	.000
EXT	dummy	-.044	.236	-.652	.516
ASSOC	dummy	-.058	.121	-.845	.400
DISTR	dummy	-.027	.132	-.359	.721
EDCN	Years	-.043	.017	-.612	.542
VARTY	Years	.107	.128	1.591	.115
FML	No. persons	-.018	.034	-.242	.810
LOAN	dummy	.023	.361	.336	.738
QTYPESTC	Litres	-.170	.001	-2.340*	.021
GEN	dummy	-.182	.133	-2.515*	.014

S.E= standard error *significant at 5%

$F_{C(0.05, 11, 121)} = 12.807$, $F_{t(0.05, 12, 121)} = 2.18$, $R^2 = 58.7\%$, R^2 adjusted = 54.1% DW=1.894

VIF= 1.313

Key to table 21

Dependent variable (Q_c) = Total quantity of cotton (kg);

Independent variables

LMC: Total farm size allocated to cotton crop (ha)

EDN: Education level of respondent (Years)

INC: Total income used in cotton production (MK)

VAR: Variety of cotton planted (dummy: 0= local, 1= improved)

GEN: Gender of Household Head (dummy: 0= male, 1=female)

LOAN: Access to farm input credit (dummy: 0=access, 1= no access)

EXT: Access to extension messages (dummy: 0= access, 1= no access)

QTYPESTC: Quantity of pesticides (Litres)

ASSOC: Association membership (dummy: 0=member, 1= non member)

FML: Total family labourers used in cotton production (no. active persons)

DISTR: District of respondent (dummy: 0=Salima, 1=Balaka)

Overall Fitness of the Statistical Model

The coefficient of determination R^2 was 0.587 indicating that 58.7% in the variation of the total quantity of cotton produced was explained by the variables in the production function.

The model had also a significantly higher F-Value of 12.8 ($p < 0.05$), against tabulated F-value of

2.18. This implies that the independent variables significantly explained the variation in the dependent variable with 95% confidence interval. This also indicated fitness of the model i.e. the true slope coefficients were significantly different from zero. All the independent variables in the model were also tested for multicollinearity as indicated by VIF of less than 10. The Durbin-Watson test had a value of 1.894, which is within the tolerable range of autocorrelation (Edriss, 2001).

In the production function the α_k and β_k coefficients are the partial elasticities of the total quantity of cotton with respect to the factors of production. They measure the elasticity of output change with respect to the factors of production. They measure the elasticity of output change with respect to explanatory variables i.e. the percentage change in output φ_c for a given minute percentage change in the inputs (λ_j, ϕ_i) . The signs of the coefficients indicate the direction of change while the figures give the magnitude of change. As indicated in Table 20, capita invested/ total household income, landholding size, variety of cotton planted and accessibility of loan had positive coefficients. This signifies increasing marginal productivity to these factors. However, only landholding size and household income invested were significant at 5% level. On the other hand, the coefficients for access to extension, association membership, and quantity of pesticides, gender, district of respondent and education had negative coefficients. However, only quantity of pesticides used and gender of household head had negative coefficients and were both significant at 5% levels. These results implies that holding other factors constant, 1% increase in total household income/capita invested in cotton production would increase cotton production by 52.7% (t=5.991, p=.000). Therefore, Marginal Physical Product (MPP) of household income is greater than zero, meaning that the farmers can rightly be assumed to be using income within either stage one or two of production.

Land is the most important input in agricultural production. However, land allocation to cash crops like cotton depends on the land holding sizes whereby farmers with large holdings are expected to allocate relatively more land sizes to various subsidiary crops than those with land small holding sizes (Edriss, 2003). The model showed that land size is one of the determinant factors of cotton production since its significant at 5%. The elasticity of land was found to be less

than one ($\beta_1 = 0.330$) but greater than zero. This implies an elastic response of cotton production, thus a unit increase in land would result into a proportionate increase in cotton production. This also means that if farmers would allocate more land a large amount of cotton will be produced and sold to the market.

The results also revealed that 1% increase in use of pesticides in terms of quantities resulted in a decrease in cotton productivity ($t=-2.340$, $p=.021$). This implies that all things being equal, the marginal physical product would be negative ($MPP = -0.170$). Therefore the amount of pesticides used in cotton production had a negative effect on cotton productivity.

The model indicated that gender is one of the determinants with statistically significant coefficient estimate, $\beta_k = -0.182$ at 5% level. This implies that all things being equal, if the participation of men was reduced the quantities of cotton produced would decrease. This also implies that women have significantly lower yield as compared to men. The reason behind could be slight differences in the contribution of labour intensity provided by the two categories. As explained earlier, gender of the household head is an important factor in cotton production because it affects decision making on whether to grow cotton or not and resource allocation in a household. Sahn (1990), reported that female headed households are one of the vulnerable groups and most of the time poorer as well as fewer labour equivalents than their male counterparts.

Although not statistically significant at the level of 5%, the results showed that 1% increase in variety of cotton planted and accessibility of farm input loan by the farmer would have positive marginal physical products in cotton production hence increasing quantities made available at the market. The negative coefficient on access to extension service was not expected as recommended by Nakhumwa (2001). One explanation to the negative sign could be that most government extension officers lack technical expertise on cotton as a crop. This means that inadequate extension information is likely to reduce the level of production since the farmers lack guidance and they continue cultivating the crop using poor cultural practices. This also minimizes the probability of farmers adopting improved technologies that may reduce the overall

productivity of cotton. It should also be noted that extension plays the role of disseminating research findings and government policies to the farmers and traders.

In the model, the sum of the coefficients gives information on returns to scale i.e. the response in quantities of cotton produced to a proportionate change in inputs. If the sum is 1, then there are constant returns to scale, that is doubling the inputs will double the output. Hence, if the sum is less than 1 there is decreasing returns to scale; doubling the inputs will less than double the output. Finally if the sum is greater than 1, there are increasing returns to scale, doubling the inputs will more than double the output (Gujarati, 1988; Ngoma, 2003). In this study, during 2007/08 season cotton production was associated with decreasing returns to scale

$$(\varphi_c = -2.041 + \ln \text{land size}^{.316} + \ln \text{capita invested}^{.527} + \ln \text{qty of pesticides used}^{-0.170} + \text{gender of household head}^{-0.182}$$

$(0.316 + 0.527 - 0.170 - 0.182 = 0.491 < 1)$ indicating decreasing returns to scale.

Though the use of efficient use or optimal choice of inputs is beyond the scope of this study, the above results imply that reducing the use of these inputs in cotton production by a certain percentage, then yield will decrease by a lower proportion than the percentage increase in the input factors. Similarly, holding other factors constant, this indicates that increased usage of pesticides in cotton production alongside other factors of production would increase cotton output by less than the actual increase in the factor of production. Thus increased pesticides usage in cotton production resulted in the marginal physical factor being greater than marginal physical product. Hence, reduced quantities of cotton produced. This could be because of the fact that pesticides were distributed to the farmers very late after the disease had already caused irreversible damage to the crop. Hence this has a negative effect on the quantities produced as reported by 41% and 57.6% of the farmers in Salima and Balaka districts respectively. In addition, 6.8% of the producers reported that they were given expired drugs by the ginners. As such this could also affect production negatively.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusions

The overall objective of this study was to assess the performance of cotton marketing in Salima and Balaka Rural Development Projects. The study has generated substantial information on the socio economic characteristics of producers and traders, marketing functions, marketing channels, marketing agents and how these contribute to the performance of the marketing systems of cotton. Econometric models were used to identify the determinants of quantities produced and marketed. All this information has helped in further understanding of the cotton marketing operations. Such information would help policy makers and researchers to come up with better strategies in agriculture commodity marketing especially cotton.

This is because the structure of the cotton marketing system is concentrated in nature with less competition. The Herfindahl Hirschman Index coefficients were greater than the benchmark of 1800 i.e. 3506 and 2806 that implied that the market is more of Oligopsony. The Market had a number of barriers that hindered participants from entering e.g. legal and institutional factors that does not allow the middlemen/ traders to operate in the business. Other barriers included lack of initial capital and difficulties to access market information. The analysis further confirmed that the oligopsony nature of the market has led farmers in Balaka to mobilize themselves into a cotton marketing association. This has helped them to increase their bargaining power with the ginner. In addition, due to high competition between the ginner themselves farmers are no longer forced to grade their cotton before sale. This is because the ginner are afraid of losing potential customers to other ginner who offered the same price in buying ungraded cotton. Unethical trading practices were noted in the cotton marketing system as farmers damped the seed cotton with water or mix it with sand so that it should weigh more at the market. Ginner and traders also tampered with the scale calibration system as such it gave false measurements. Price collusion tendencies were not noticed amongst the ginner as they tend to offer different prices when opening the cotton marketing season.

The study established two major marketing channels of cotton in Salima and Balaka RDP. The first channel involved producers selling their cotton direct to ginners. The other channel is only applicable in Balaka where farmers sold their cotton through the Balaka Area Farmers Association which later sold the cotton to ginners. The analysis of market margin analysis indicated that producers who sold their cotton direct to middlemen at farm gate got the lowest producers share (30.76- 31.33%) as compared to producers who sold cotton through a farmer organization and those who sell direct to ginners. Finally, it was shown that ginners were making good profits with the traders' surplus ranging from 62.6% -77.4%. The results suggested that the channel where farmers belong to a farmer organization was quite efficient in terms of producers share as well as the net margin shared by intermediaries. Finally, the production function indicated that land allocated to cotton, total household income, quantity of pesticides and gender were highly significant at 5%. This implies that these factors are so crucial in influencing the level of productivity that later affects the quantities sold.

5.2 Recommendations

Generally, the Structure-Conduct- Performance analysis of the cotton market chain indicated poor performance of the chain. Thus, policy interventions are required to alleviate the problem. In this respect, the following recommendations are made to help improve the performance of cotton marketing in Malawi.

Government should completely subsidize cotton production inputs

The government should consider subsidizing all farm inputs that are required in cotton production. This will make Malawi's cotton to be competitive on the world market. This is based on the fact that most of the major cotton producing countries in the world has a complete subsidy on cotton .As a consequence this has stimulated production by allowing producers to supply more at a low price .This action has shifted the supply curve to the right and has made the cotton from Malawi unprofitable because of high production costs the farmers incur. Therefore, it is recommended that Malawi should follow the same system so as to be able to compete on the world market.

Improved Access to Market Information

The study has revealed that lack of market information was the major marketing problem amongst the farmers and traders. Hence in order to overcome these problems there is need to establish an efficient information dissemination system to farmers and traders. It is recommended that the government and non governmental organizations should devise a system of making information available to market participants. The information may include prices of inputs like pesticides and seed which the farmers are given on loan. Ginner prices should be announced at the beginning of each growing season so that the farmers should plan the quantities they would produce and sell.

Improve Productivity of Seed Cotton

Regression analysis indicated land allocated to cotton, total household income, amount of pesticides used and gender of household head as major determinants of quantities of cotton produced and marketed. Ways of ensuring an improvement in productivity of cotton include; ensuring availability of pesticides in good time before the pests has caused irreversible damage to the crop in its early stages of development, Increase in land allocated to cotton which can be achieved parallel to better prices .Therefore there is need for policies that promote better producer prices since smallholder farmers are influenced by prices in resource allocation and also volumes they can sell out of their produce.

Promotion of Entrepreneurship and Associations

There is need for deliberate promotion of entrepreneurship and formation of associations/cooperatives amongst smallholder producers and traders. There is need for capacity building on group dynamics in order for the associations to be effective. The benefits of associations include facilitation of product sourcing, assembly, transportation and bargaining for better prices. This would also encourage farmers to look for better outlets for their produce unlike waiting for buyers to find them in their homesteads.

Easy Accessibility to Credit Facilities

The study revealed that traders' financial constraint is the major inhibiting factor to the traders to expand their businesses. Most credit institutions do not recognize the private traders

since they do not have business licenses. As such the government should give private traders licenses so that they could be able to access loans that would finally help to make the entire cotton market competitive.

Research

There is need for further research in both production and marketing aspects of cotton at local and international level. This would help to bring up solutions as to why cotton production is not stable hence stabilizing the production levels that is supplied to the market. It would also help to address issues concerning the low standards of cotton lint that is being currently produced.

REFERENCES

- Abler, D .G., and Shortle, J .S. (1995). *Technology as an Agricultural Pollution Control Policy*. American Journal of Agricultural Economics.77: 22-32.
- Abbot, J.C. (1967). *The Development of Marketing Institution in Agriculture*. In H.M Southworth and B.F Johnson (Ed), *Development and Marketing*. Cornell University Press.
- Acharya, S.S., and Agarwal, N.L. (1986). *Agricultural Marketing in India*. Oxford and IBH Publishing Company. New Delhi
- ADMARC. (2001). *Annual Progress Report for 2001/02 Marketing season*, unpublished report.
- APEC. (2008). *Market liberalization and its relationship with Market of the food processing Industry in ASEAN Economies* .Malaysian Agriculture Development Institute #205-1AT-01.2.
- Azzam, A.M., and Pagoulatos ,E. (1990) *Testing oligopolistic and oligopsonistic behavior: An Application to the US Meat-Packing Industry*, *Journal of Agricultural Economics* 41: 362– 370.
- Bain, J. (1968). *Industrial organisation*. 2nd Edition, John Wiley and Sons, New York.
- Baffes, J., (2004). *Cotton Market Setting, Trade Policies, and Issue*. World Bank Policy Research Working Paper 3218. February 2004, Washington DC. [Online] Available from: <http://www.wds.worldbank.org/ser/elt/WDScontentsserver/pdf>. 30th January, 09.
- Boulton, W., and Frederick, R. (1990). "*Implications of U.S. Experience with Horizontal Mergers and Takeovers for Canadian Competition Policy*". The Fraser Institute. ISBN 0889751218.
- Bressler, R.G., and King, R.A. (1970) *Markets, prices and Interregional trade*. John Wiley and Sons, USA.
- Byrns, R.T., and Stone, G. (1995). *Microeconomics*. 6th Edition. Harper Collins College Publishers.
- Cooksey, B. (2003) *.Marketing Reform? The Rise and Fall of Agricultural Liberalisation in Tanzania*, *Food Policy*, 21 (1), 67-91.

- Cobb, C.W., and Douglas, P.H. (1928). *A theory of Production*: American Economic Review.18:139-65
- Common Fund for Commodities. (2005). *Overview of the Situation of Commodities in Countries*. (CFC_XL). Havana, Cuba, 21-23 March 2005.
- Chandler, A. D.(1990). *Scale and Scope: The Dynamics of Industrial Capitalism*. Cambridge: Belknap Press.
- Chirwa, E.W., Mvula, P.M., and Kadzandira, J. (2005). *Agricultural Marketing Liberalisation and the Plight of the Poor in Malawi*: Working Paper No. 2005/08. Chancellor College, University of Malawi
- Crawford, I.M. (1997). *Agricultural and Marketing Management. Marketing and Agribusiness*. Text 2. FAO. Rome
- Desai, K.K. (2003). *The Impact of AGOA benefits in Malawi through textile and garment .A view of the Textile manufacture Association of Malawi (GTMA)*. Unpublished report.
- Devine, P.J., Lee N., Jones, R.M. and Tyson, W.J. (1984). *An Introduction to Industrial Organisation*. 5th Edition. London, UK: George Allen and Unwin.
- Dorward, A., Poulton, C., and Kydd, J. (1998). 'New Institutional Economics, Policy Debates and the Research Agenda'. In *Smallholder Cash Crop Production under Market Liberalisation, a New Institutional Economics Perspective*, eds A. Dorward, J. Kydd and C. Poulton, 240–66. Oxford: CAB International.
- Economic Research Service. (2009). *Cotton and Wool Outlook*. CWS-09b. United States Department of Agriculture.
- Edriss, A.K. (2001). *A passport to Research Methods*. Research Skills Building Approach Las Vegas: International Publishers Press.
- Edriss, A.K. (2003). *The Dynamics of Groundnut Production, Efficiency, Profitability and Adoption of Technology in Sub-Saharan Africa. The Malawi Case*. International Publishers and Press.
- Falfofi, S. and Shepherd, A.W., (1999). *Export Crop Liberalization in Africa: A Review*. Rome: FAO Agricultural Services Bulletin no. 135.

- Feder, G., Just, R.E, and Zilberman, D,. (1985). *Adoption of Agricultural Innovations in Developing Countries: A survey. Economic Development and Cultural Change*. 33, 1985: 255-298.
- Fafchamps, M. and Gabre-Madhin, E. (2001). *Agricultural Markets in Benin and Malawi: Operation and Performance of Traders*. World Bank Working Paper Series No. 2734 (Washington, D.C).
- Goletti, F. and Suresh Babu., (1994). *Market Liberalisation and Integration of Maize Markets in Malawi*. *Journal of Agricultural Economics*, (11), 311-324.
- Government of Malawi. (2008). *Agricultural Statistical Bulletin 2007/2008*. Ministry of Agriculture and Food Security. Lilongwe, Malawi.
- Government of Malawi. (2008). *Agriculture Development Programme Framework*. Ministry of Agriculture and Food Security. Lilongwe, Malawi.
- Government of Malawi. (2006). *Agriculture Sector Priority Constraints, Policies and Strategies Framework for Malawi*. .Ministry of Agriculture and Food Security. Lilongwe, Malawi.
- Government of Malawi. (2005). *Malawi Growth and Development Strategy Paper*.Ministry of Economic Planning and Development, Lilongwe Malawi.
- Government of Malawi. (2004). *Malawi Economic growth Strategy Volume 2*. Ministry of Agriculture and Food Security. Lilongwe, Malawi.
- Government of Malawi. (2003) *National Cotton Sector Strategy and Action Plan .Defining Priority issues for investment in the Cotton Industry*. Ministry of Agriculture and Food Security, Lilongwe Malawi.
- Government of Malawi.(2002). *Third Round Agricultural Production Estimates for 2001/2002 Season*. Ministry of Agriculture and Food Security. Lilongwe, Malawi.
- Government of Malawi. (1971). *Cotton Production Handbook*. Ministry of Agriculture and Food Security. Lilongwe, Malawi.
- Gujarati, D.N. (1988) *Econometrics*.2nd Edition. New York: McGraw Hill International Editions.
- Great Lakes Cotton Company. (2009). *Biannual Progress Report Jan-July 2009*.Unpublished Report.

- Kamanga, D. (1999). *Impact of Existing and Introduced Agro forestry Soil Management Technologies on Smallholder Maize Production*. Unpublished Msc. Thesis. University of Malawi.
- Koch, J.V. (1980). *Industrial Organisation and prices*. 2nd Edition: Prentice/Hall international, London, UK.
- Kohls, R.L, and Uhl, N.U. (1980). *Marketing of Agricultural Products*. 5th Edition, Macmillan, New York.
- Kothari, C.R. (2004). *Research Methodology, Methods and Techniques*. New Age International (P) Limited, Publishers .New Delhi.
- Larsen, M. (2002). *Is oligopoly a Condition of Successful Privatization? The case of cotton in Zimbabwe*. *Journal of Agrarian Change*, 2(2), 185–205.
- Madala, G.S. (1998). *Introduction to Econometrics* .New York: MacMillan Publishers.
- Makawa, J. and Orr, S. (2000). *Micro- Entrepreneurship in Malawi*. Report Presented to NEC and Rural Economic Policy Centre. Kadale Consultants, Blantyre.
- Malawi Confederation of Chambers of Commerce and Industry. (2005). *Survey of Textile and Clothing .Prepared for International Trade centre UNCTAD/WTO* .Unpublished report.
- Malawi Confederation of Chambers of Commerce and Industry. (2008). *Investments in Cotton Production*. http://www.mccci.org/agricultural_Sector.asp#cotton. 23rd, December, 08.
- Magreta, R.(2006). *Efficiency of Cotton Production and Marketing in Chingale EPA*. University of Malawi .Unpublished BSc. Dissertation.
- Mhoni, J.D.C. (2002) *Capacity Building for LDC garment exporters to meet 2005 Challenges of Accelerated Competition after the Phasing out of WTO Agreement on Textile and Clothing .Preliminary report prepared for UNCTAD /WTO and GTMA*. Unpublished report.
- Mkandawire, F. (2003). *Structure, Conduct and Performance of the Banana Market in Malawi. A Case study of Thyolo and Nkhatabay Rural Development Projects*. University of Malawi. Unpublished MSc. Thesis.
- Nakhumwa,C. (2001). *Assessment of Marketing Opportunities and Constraints of Groundnut and Soybean in Malawi. The case of Thiwi/Lifidzi and Mchinji RDPs*. Unpublished Thesis. University of Malawi.

- National Statistical Office. (2002). *1998 Malawi Population and Housing Census. Analytical Report*. National Statistical Office, Zomba, Malawi.
- Negassa, A. (1998). *Vertical and spatial integration of grain markets in Ethiopia: Implications for grain market and food security policies. Grain Market Research Project*. Ministry of Economic Development and Cooperation: Addis Ababa, Ethiopia.
- Ngongola, D.H., Kachule, R.N., Kabambe, P.H. (1997). *The Maize Market in Malawi* IPRIF/APRU, Lilongwe, Malawi.
- Ng'oma, .P. (2003) *The Effects of Gray Leaf spot (Cercospora zae-maydis) Disease on Household Maize Productivity and Food Security in Malawi*. University of Malawi. Unpublished Thesis.
- Njiwa, D. (2007). *An Assessment of Socio –Economic Factors Affecting Investments in Soil Fertility Improvement in Small Holder Flood Plain Areas of Malawi. The Case of Kasitu Schemes in Nkhotakota* .University Of Malawi. Unpublished Thesis.
- Onu, J.I., and Iliyasu, H.A. (2008). *An Economic Analysis of the Food Grain Market in Adamawa State, Nigeria*. World Journal of Agricultural Sciences 4 (5): 617-622, 2008 ISSN 1817-3047 © IDOSI Publications, 2008.
- Pociask, S.B. (2001). *Structure, Conduct and Performance of the Long-distance market and Consumer benefits of Long-distance competition in Michigan Telenomic Research, LLC: Economic Research and Consulting Firm*.
- Pomeroy, R.S and Trinidad, A.C. (1995). *Industrial Organisation and Market Analysis; Fish Marketing. In G.J. Scott (Ed), Prices, Products and People: Analysing Agricultural Markets in Developing Countries*. London: Lynne Rienner Publishers.
- Poulton , C.et.al. *Competition and Coordination in Liberalized African Cotton Market Systems*. World Development .Vol. 32, no. 3, pp. 519–536, 2004. Elsevier. Great Britain.
- RATES. (2003). *Cotton-Textile –Apparel Value Chain Report Malawi*. Unpublished report.
- Sahn, D.E. (1990). *Policy Reform and Poverty in Malawi: A Survey of a Decade of Experience* Food and Nutrition Policy Program. Cornell University.
- Scarborough, V. and Kydd, J. (1992) *Economic analysis of Agricultural markets: A Manual* .Chatham, United Kingdom: Natural Resources Institute. NRI Marketing Series 5.

Tommeke, W.G., and Robinson, K.L. (1991). *Agricultural Product Prices* .3rd Edition .Cornell University Press. London.

Tegegne Bosen. (2008). *Analysis of Cotton Marketing Chains: The Case of Metema Woreda, North Gondar Zone, Amhara National Regional State* .Haramaya University, Unpublished Thesis.

Tembo, D.F. (2007). *Assessment of the Performance of Maize, Cassava and Fish Marketing Systems in Lungwena Project Area in Mangochi District, Southern Malawi*. University of Malawi, Unpublished Thesis .

Tschirley, D.L. (1995). *Using microcomputer spreadsheets for spatial and price analysis: An Application to rice and maize in Ecuador*. Department of Agricultural Economics, Michigan State University. East Lansing: USA.

United States Department of Agriculture. (2009). *Cotton World Markets and Trade*. Circular Series Feb 2009. USDA [Online] Available from:
<http://www.fas.usda.gov/cotton/circular/2008/Dec/cottonfull1208.pdf>

Wolday, A. (1994). *Food Grain Marketing Development in Ethiopia after the MarketReform1990: A Case Study of Alaba Siraro District*. PhD. Dissertation. Verlag Köster; Berlin. 293p.

World Agricultural Outlook Board.(April, 2009). *World Agricultural Supply and Demand Estimates*.ISSN:1554-9089.United States Department of Agriculture.

World Bank. (2002). *Report on Task Force on Food Security for Malawi*. Washington D.C, U.S.A.

APPENDICES

Appendix 1: Questionnaire for Producers

EGERTON UNIVERSITY

The purpose of the study is purely academic and above all, to generate knowledge that would be useful to all players in the Cotton marketing .As respondents you are kindly requested to participate in answering this questionnaire and you are assured that any information shared will be strictly confidential

Questionnaire no. _____

Date of interview (day/month/yea) ___/___/2009

Enumerator name _____ Name of Respondent _____

ADD _____ EPA _____ SECTION _____

Village _____

Section A: Social Economic and Demographic characteristics

Instruction: Circle the code(s) and fill the blank spaces appropriately

Marital status(1)	Gender (2)	Education(3)	Age of hh head (4)	Occupation(5)	Family size(6)	Land Holding size (ha/acres)
1=single	1= male	1=none		1=Agriculture		
2=maries	2=female	2=std 1-5		2= formal employment		
3=divorced		3=std 6-8		3= school going		
4=widowed		4= secondary		4= unemployed		
5=widower		5=tertially		5=petty trading		
6= separated		6= adult literacy		6=Casual labour		
				7=other		

Section B: Cotton Production Aspects

1) What type of enterprises do you have on your farm?

Enterprise	Land allocated(ha/acres)	Duration in enterprise(Years)

2) What cropping pattern do you practice?

Mono cropping (1) Inter cropping (2) Relay cropping (3) Other (specify) (4)

3) Why do you practice that pattern?

Lack of adequate land (1) High yielding (2) Labour saving (3) Easy management (4) Soil fertility improvement (5) Others (specify) (6)

4) Why do you grow cotton among other cash crops?

5) How much cotton did you harvest for the past 5 years (Probe & estimate)

Growing season	Quantity produced
2003/04	
2004/05	
2005/06	
2006/07	
2007/08	

a. Why is the trend been like that?

If increasing: Increased the land allocated to cotton (1) Improved soil fertility (2) Use of improved cotton varieties (3) High market demand (4) Others (specify) (5)

If Decreasing: Declining soil fertility (1) Reduced land allocated to cotton (2) no market for cotton (3) Pests and diseases (4) Low prices (5) Others (specify) (6)

If Constant: Maintained same land size (1) Good crop management (2) Other (specify) (3)

6) What varieties of cotton do you plant

Improved (1) Local (2)

7) Where do you source the planting materials?

Own (1) Free (handouts) (2) Buy (3) Relatives (4) Other (specify)

8) How readily available is the cotton seed? available (1) scarce (2)

9) If bought, indicate where you buy from?

ADD (1) NGO (2) Other farmers (3) Other (Specify) (4)

10) How much input did you use in production of cotton?

Input	Quantity	Cost /unit
Fertilizer		
Pesticides		
Herbicides		
Casual / permanent labour		

11) What is your estimated production cost? _____

12) Have you ever received a loan to help you in cotton production

(1) Yes (2) no

13) If yes, who gave you the loan

Microfinance institution (1) cooperative/ association (2) Bank (3) Other (specify) (4)

14) How many members of your household are actively involved in cotton farming? ____

15) What constraints do you face in cotton production (rank in order of importance)

code	Constraint	Rank	Code	Constraint	Rank
1	Labour demanding		6	Lack of markets	
2	Lack of planting material		7	High pest and disease occurrence	
3	Low producer prices		8	Lack of transport	
4	Poor road infrastructure		9	Lack of proper varieties	
5	Lack of land		10	Other (specify)	

16) In your opinion what do you think should be done to improve cotton production?

Increase producer prices (1) Improve road infrastructure (2) Introduce new cotton varieties (3) Availability of markets (4) Improve on storage facilities (5) Others (specify) (6)

Section C: Marketing and Pricing

1) Who are your major buyers of your cotton?

Middlemen (1) Ginners (2) Other (specify) (3)

2) Indicate producer prices and volume sold for the past 5 growing seasons?

Season	volume produced	Volume sold		Farm gate price	Producer price	Market costs
		m/men	Ginner			
2003/04						
2004/05						
2005/06						
2006/07						
2007/08						

3) How are prices determined?

Colour of lint (1) variety (2) Grades (3) Other (specify) (4)

4) Do you have any strategies that enable you to obtain better prices for cotton?

Grade the cotton (1) storing the cotton at a dry place (2) maintain the white colour of lint (3) Transport to areas with low cotton supply (4) others (specify) (5)

5) How do you sell your cotton?

Garden (1) farm gate (2) Sell at the ginners' cotton depots (Specify) (4) other (specify) (5)

6) Which varieties of cotton do fetch high prices

Makoka 78 (1) Makoka 72 (2) A637 MB3 (3) other (specify) (4)

7) Can you give reasons for preferring the varieties above?

It has clean lint (1) produces strong threads (2) Highly demanded (3) Other (specify) (4)

8) Is there any prior arrangement that is done between you and the traders on how you would sell your cotton

Contract farming (1) spot selling to any trader (2) others (specify) (3)

Section C: Transportation

1) How far is it to the market?

Name	Distance
Market 1	
Market 2	
Market 3	

2) What means of transport do you use to deliver your cotton to the market

Own vehicle (1) Hired Vehicle (2) Bicycle (3) Public transport (4) Ox-cart (5)

Other (specify) (6)

3) How much does it cost you to transport your cotton to the market? (specify)

Market	Cost

4) What mode of payment do you use in paying the transporter

Pay cash as an individual before transporting (1) Pay cash as a group before transporting (2)

Pay after sells at the market (4) pay in installments (4)

Others specify (5)

5) What relationship do you have with the transporter?

6) Relative (specify) (1) Have a long term contract (2) Regular hiring, hence given discount (3)

Other (specify) (4)

7) Is there any credit advanced by transporter and what are the conditions for repayment?

Section D: Storage, Processing and Handling Issues

1) Do you store some of your cotton before sale?

a. No (1) Yes (2)

2) If yes, how and where do you store it?

3) Can you please estimate the storage costs?(indicate materials used)

Crop	Quantity stored	Maximum storage	Total cost

Cotton			

- 4) What problems do you encounter in storage of cotton?
 Easily get damaged (1) Rental store expensive (2) Lack of proper storage facilities (3)
 Other (specify) (4)
- 5) Do you experience any losses?
 No (1) Yes (2)
- b) If yes, what are the causes?
 Loss due to diseases (1) Loss in value due to overstaying in the storage area (2)
 Loss in value due to overstaying at the market (3) Loss due to theft (4)
 Damage in transit to market (5) other (specify) (6)
- c) What can be done to improve storage of cotton?
 Provision of loans to buy the facilities (1) Identify markets for the cotton (2) Others (specify)
- 6) Do you add value to your cotton before taking it to the market?
 No (1) Yes (2)
- b) If yes, how do you do it?

- c) If no, why not?
 Lack proper technology (1) Costly to add value (2) Lack knowledge on processing (4) other (specify) (5)
- d) Are there any costs attached to grading?
 No (1) Yes (2)
- e) If yes, what are they and estimate?
 Labour costs (1) Other (Specify) (2)
- f) If no grading or sorting is done, why not?
 Labour demanding (1) Get same price (2) Has no knowledge on grading (3) Other specify (4)
- g) Do you get a premium price for grading? (Specify if yes)

Grade	Price

What was the total household income in 2007/2008 season MK_____

Section E: Associations

- 1) Are you a member of any credit club?
 No (1) Yes (2)

- 2) Is there any cotton association in this area?
No (1) Yes (2)
- 3) Can you specify in terms of Producers, marketing and transporters association
-
-
- 4) If yes, are you a member?(Indicate name)
No (1) Yes (2)
- 5) What are the objectives of the association?
For easy marketing of cotton (1) Acquiring of inputs (2) Easy acquiring of storage facilities
(3) To negotiate for better prices (4) Other (specify) (5)
- 6) If not a member, why not?
Don't have money to register (1) don't see any benefits for joining (2)
Other (specify) (3)
- 7) Do you have access to extension services regarding cotton production and
Marketing?
No (1) Yes (2)
- 8) If yes, indicate type of service
-
-
- 9) Indicate the extension agents working in your area
Government extension (1)
NGO (specify) (2)
Others (specify) (3)

Appendix 2: Questionnaire for Traders/Ginners

Instructions: Circle the relevant code(s) and fill the blank spaces appropriately

Date of interview _____

District _____

ADD _____ RDP _____ EPA _____

Section _____ Village _____

Name of respondent/ Ginner _____

Name of enumerator _____

Section A: Trader Characteristics

Gender	Age (years)	Education (years)	Category of trader	Whether licensed or not	Source of initial capital
1= male 2=female			1=middleman 2=ginner 3= other(specify)	1= licensed 2= not licensed	1=credit 2=relatives 3=savings 4=Others (specify)

1) How long have you been a cotton trader? (Specify years) _____

2) How many other traders/ ginners do you know? (roughly)

Section B: Marketing

1) How do you get market information (on what to buy & sell and where)?

From media (radio, newspapers etc) (1) From friends/relatives (2)
 From customers (3) from farmers (4) Observations (5) others (specify) (6)

2) What type of information do you get?
 Producer prices (1) Retail prices (2) Profitability (3) Variety preferred (4)
 Other (specify) (5)

3) Do you collaborate with traders/ ginners from the other cotton producing regions?

Yes (1) No (2)

4) If yes what information do you share?

Average farm gate price (a) average ginner price (2) others specify (3)

5) If no, why? please explain

Which varieties do you trade in?

Makoka 72 (1) Makoka 78 (2) A637 MB3 (3) Other (specify) (4)

6) Why that variety (ies)?

More profit realized (1) highly demanded (2) Other (specify) (3)

7) Where do you buy your cotton from?

8) What criteria do you use in selecting the sellers?

(1) Producers (2) Middlemen (3) Other (specify) (4)

9) Where do you sell your cotton?

Ginners (1) exporters (2) Others (specify) (3)

10) Can you estimate the total quantity handled in a season?(Kg) (specify)

11) How much have you been buying and selling your cotton for the past 5 years?(MK/kg)

Season	Quantity	Buying price /kg	Selling price /kg
2003/04			
2004/05			
2005/06			
2007/08			

12) On average how much profit do you realize per season?

13) How do you determine selling price?

Take transport costs into consideration (1) grade of cotton (2) Demand (3) Other (specify) (4)

14) Can you estimate the total volume of cotton handled at this market level per Season (specify)?

Market	Quantity /season

15) What costs do you incur and how much?

Market rent (1) Accommodation (2) Food (3) Transportation (4) Storage (5) Others (specify)

What problems do you face in cotton marketing?

Limited supply (1) Poor quality cotton (2) Cotton not graded (3) Unreliable suppliers (4) Low prices (5) Transport problems (6) Lack of proper storage facilities (7) Poor road infrastructure (9) Lack of information (10) Others (specify) (11)

16) What do you think should be done to overcome the problems?

17) Is demand satisfied?

No (1) Yes (2)

18) If no, why?

Low production (1) Demand increasing (2) Few traders involved (3) Poor roads to producing areas (4) High prices charged (5) Others (specify) (6)

Section C: Storage and Handling Issues

1) Do you store your cotton before sale?

No (1) Yes (2)

2) If yes, where do you store?

Own store (1) Rental private store (2) Own house (3) Others (specify) (4)

3) Can you estimate the cost of storage and any other cost you encounter in cotton marketing

Quantity	Storage period	Cost

4) On average how long do you keep the cotton before trading it after buying from the supplier

- 5) If you do not store, Why not?
 Immediate need for cash (1) Demand so high (2) Lack of proper storage facilities (3)
 Highly perishable (4) other (specify) (5)
- 6) Do you experience any losses with the stored cotton?
 No (1) Yes (2)
- 7) If yes, what are the causes?
 Theft (1) Poor storage structures (2) Other (specify) (3)
- 8) Can you estimate percentage loss?
 Theft _____ (1) Poor storage structures _____ (2)
 Other (specify) _____ (3)
- 9) Do you encounter any handling costs?
 No (1) Yes (2)
- 10) If yes, estimate costs?
 Labour charge _____ (1) Packaging _____ (2)
 Others (specify) _____ (3)

Section D: Transportation

- 11) What means of transport do you use in transporting cotton to market?
 Own vehicle (1) Hired vehicle (2) Bicycle (3) Ox-cart (4) Public transport (5)
 Others (specify) (6)
- 12) If hired, what relationship do you have with the transporter?
 Relative (1) Regular customer (2) On contract (3) Other (specify) (4)
- 13) Estimate the distance covered (of transportation) and costs incurred?

Market to another market	Distance	Cost

- 14) Are there enough feeder roads connecting to the main road?
 No (1) Yes (2)
- 15) What is the condition of roads in the area?
 Very good (1) Good (2) Fair (3) Bad (4)

Section E: Associations and Policy Issues

- 1) Are you a member of any credit club?
 No (1) Yes (2)
- 2) Is there an association or group for cotton traders in this area?
 No (1) Yes (2)

b) If yes, what is the essence of the grouping? _____

c) Are you a member?

No (1) Yes (2)

d) If yes, what are the benefits of joining?

Easy access to markets (1) Easy to have storage facilities (2) Negotiate for better prices (3)

Other (specify) (4)

e) How does the association operate?

f) If no, why don't you want to join?

High registration fee (1) No knowledge on dynamics of an association/group (2)

Others (specify) (3)

3) What do you think are the prospects of cotton expansion in cotton with neighboring countries?

More opportunities (1) not encouraging (2) Others (specify) (3)

4) Are you aware of any government policy related to cotton marketing?

No (1) Yes (2)

b) If yes, state the policy and its weakness? _____

c) What areas would you want the government to do something about with regards to cotton marketing?

Markets (1) Research (2) Extension (3) Storage (4) Capital/credit (5) Facilitate regional trade (6) Transport and road networks (7)

5) Do you see any potential for cotton in Malawi being maximized (explain) _____

6) In your opinion, what are the opportunities that exist in cotton sub-sector?

7) What restrictions are in the cotton market?
