AN EVALUATION OF THE ROLE PLAYED BY COFFEE MARKETING INSTITUTIONS TO COFFEE SMALLHOLDERS IN KILIMANJARO REGION, 1970-1984

BY

Mr. GEOFFREY PETRO SHUMA

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ABSTRACT

Changing socio-political and economic circumstances and technological innovations necessitate institutional and conceptual adjustments to new conditions. Such changes which have occurred in Tanzania since Independence in 1961 have changed the country's crop marketing system. The purpose of this study has been to find out and narrate the causes, effects and salient features of the institutional changes of the Tanzania's crop marketing system in the period between 1970 and 1984. Coffee marketing institutions in Kilimanjaro Region are used as a case study.

In this study two hypotheses were set and tested. First it was hypothesized that coffee marketing system under the Tanganyika Coffee Board (TCB)/ Kilimanjaro Native Cooperative Union (KNCU) was more efficient than under the Coffee Authority of Tanzania (CAT). To test this hypothesis secondary time series data on producer's price as percentage of f.o.b price, unit marketing margin, unit marketing costs, potential final payment, unit administrative expenses, unit administrative expenses as percentage of unit marketing costs, current ratio and quantity of coffee sold were collected. Regression Analysis of these secondary data has shown that unit administrative and marketing costs were significantly lower during KNCU time than during CAT period. These factors enabled KNCU to pay farmers significantly higher producer's price as percentage of f.o.b price than could CAT. From these observations the

hypothesis that coffee marketing system under TCB/KNCU was more efficient than under CAT cannot be rejected and it is concluded that TCB/KNCU was significantly more efficient than CAT when marketing farmers coffee.

Secondly, it was hypothesized that TCB/KNCU and affiliated cooperative societies were more concerned with the development of coffee farmers than the CAT. To test this hypothesis primary data on attitudes of farmers towards the crop marketing organization were collected by means of a questionnaire administered to fifty (50) randomly selected farmers. t and Chi-square tests were used to test the hypothesis. The corresponding parametric and non-parametric statistical inference proved that KNCU was significantly more efficient in providing managerial services when purchasing farmers coffee. The services included inspection, grading, weighing of crops and paying farmers. CAT was, however, significantly more efficient in the provision of inputs and extension services to farmers.

Consequently it is recommended that in Tanzania agricultural crops should be marketed by agricultural marketing cooperatives and marketing boards. The cooperative should be owned and controlled by the members on a democratic basis. The effectiveness of marketing boards can be improved by increasing the participation of farmers, processors, merchants and consumers in their decision making process.

DECLARATION

I, Geoffrey Petro Shuma do declare to the Senate of Sokoine University of Agriculture that this dissertation has neither been submitted nor being concurrently submitted for a similar degree in any other institution and that it is my own original work.

Signature.....GPShuma.....

Mr. Geoffrey Petro Shuma

Date.....11/8/89.....

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TABLE OF CONTENTS

CHAPTER III LITERATURE REVIEW Page

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS

ACDI - Agricultural Cooperative Development International, USA

CAT - Coffee Authority of Tanzania

CIDP - Coffee Industry Development Programme

CDTF - Community Development Trust Fund

CCM - Chama cha Mapinduzi (The Revolutionary Party)

CUT - Cooperative Union of Tanzania

EEC - European Economic Community

ERS - Economic Research Service - U.S.A.

F.O.B.- (or f.o.b.) - Free on Board

FRG - Federal Republic of Germany

GAPEX - General Agricultural Products Exports Company

GDP - Gross Domestic Product

GO - Governmental Organization

IBRD - International Bank of Reconstruction and Development

ICO - International Coffee Organization

ILO - International Labour Organization

JASPA - Jobs and Skills Programme for Africa, ILO, Addis Ababa

JICA - Japanese International Cooperation Agency

JUWATA- Jumuiya ya Wafanyakazi wa Tanzania (Tanzanian Workers Organization)

KNCU - Kilimanjaro Native Cooperative Union

MALD - Ministry of Agriculture and Livestock Development

MDB - Marketing Development Bureau

NAPB - National Agricultural Products Board

NACCUN-		National Association of Cooperative Credit Unions in Nigeria
NCPI	-	National Consumer Price Index
NGO	-	Non-governmental Organization
NMC	-	National Milling Corporation
OLS	-	Ordinary Least Squares
RIDEP	-	Regional Integrated Development Programme
SHO	-	Selfhelp Organization
SUA	-	Sokoine University of Agriculture
TCB	-	Tanganyika Coffee Board
TCMB	-	Tanzania Coffee Marketing Board
TCGA	-	Tanganyika Coffee Growers Association
UDSM	-	University of Dar-es-Salaam
VFCU	-	Victoria Federation of Cooperative Unions
X2	-	Chi - square

CHAPTER 1

INTRODUCTION

1.0 Outline of the Dissertation.

The dissertation is organised in five chapters. Chapter one gives the introduction and discusses the historical economic background of crop marketing institutions in Tanzania with special reference to coffee marketing in Kilimanjaro Region. Chapter two presents an exposition of the alternative marketing institutions for smallholder farmers in Tanzania. Chapter three represents the literature review, while chapter four has the Methodology, Results and Discussion treated together for easiness of presentation. Chapter five concludes the dissertation by presenting the summary and conclusions.

1.1 General Introduction

1.1.1 Economic situation of Tanzania and how it is related to cooperatives,Crop Authority and Marketing Boards.

Tanzania is one of the British excolonies which got its political

independence in 1961, through what may be called a peaceful peasant revolution (except in the island of Zanzibar) against the British colonialists. Politically she is a one party socialist state with Chama cha Mapinduzi (CCM) (Revolutionary Party) as the sole political party.

The Tanzanian economy is predominantly agrarian, based on small scale peasant production. The word peasant was used by the British colonialists as a derogatory term for the African subsistence farmer. Nowadays they are better referred to as smallholder farmers.

The importance of the agricultural sector in Tanzania is shown by the fact that:-

i) About 80% of the population is directly or indirectly engaged in agricultural activities and depend on agriculture for their subsistence. The distribution of farm size in 1971/1972 showed that 2.45 million farmers held 2.95 million ha of farm land, with an average of 1.22 ha per household. The distribution is shown in Table 1-1.

Table 1-1 Tanzania: Distribution of farmers by farm size, 1971-1972

Farm size group, ha	Percentage of farmers
- 1/2	31.5
1/2 - 1	26.7
1 - 2	24.7
2 - 3	8.9
3 - 4	0.4
4 - 5	0.2
5 -	7.6
Total	100.0

Source: ILO, 1982, p. 180.

ii) Agricultural output constitutes the main source of export earnings, contributing two fifths of GDP. The stagnation in the output of export crops is increasingly being identified as a longer term structural weakness (Green et al., 1980).

iii) It is the main source of food for the nation. Short falls in food production were the largest single cause of the 1974-1975 balance of payments crisis (Green et al., 1980).

iv) It is a labour reservoir for future industrialization of the country.

Among the factors which have depressed the performance of the agricultural sector are bad weather and faulty macro-economic and sectoral policies. The policies on the importation of manufactured goods, distribution of consumer and capital goods to rural areas had all changed

the incentive structure faced by farmers (Keeler et al.,1982).

In an attempt to effect an efficient Agricultural production system, both the colonial and the national governments encouraged full participation of farmers through cooperatives in the agricultural activities. Thus, cooperatives in Tanzania have been mainly rural organizations whose members are engaged mainly in cash cropping and subsistence farming. Many of the coops are multipurpose (Mfangavo, 1984) - they market members produce and occasionally retail basic commodities and distribute agricultural inputs.For some crops such as coffee and cotton, marketing is combined with processing.

In Tanzania many of the cooperative have often failed to make profits and become self-sustaining because of dishonesty and mismanagement. Unthinkable losses were experienced by several cooperatives (Msambichaka, 1974; Manday, 1977; Moshi, 1980; Keeler et al., 1982). Given below are some cases of losses:-

i) The then Victoria Federation of Cooperative Union (VFCU) had a loss of over 3 million T.shs. in 1966.

ii) The Mtwara Cooperative Union lost almost 1 million T.shs. between 1965-1967.

iii) The Iringa Region Cooperative Union suffered a loss of 48,000 T.shs. between 1966-1967.

iv) The Central Region Cooperative Union was reported to have lost 2.5 million T.shs. mysteriously.

v) The Tanga Region Cooperative Union reported a

mis-appropriation of T.shs. 96.6 million in 1974.

vi) The Mbeya Cooperative Union which was operating on a T.shs 21 million bank overdraft, had from its inception never presented its accounts up to 1974.

vii) Nyanza Cooperative Union reported a loss of T.shs. 3,918,877 in the year 1972/1973.

Thus seven cooperative unions out of the 17 Cooperative unions which existed in 1976 had been involved in losses or gross mismanagement.

However, where cooperatives have been well-established and fully supported by the government as is in Kenya where they handle more than 90% of agricultural domestic products (Maini, 1972), they have been successful.

Marketing boards are another type of institutions that deal with agricultural production. In Tanzania marketing boards were first formed by British colonialists for purchasing, processing and marketing of agricultural commodities and raw materials from her colonies. After Independence the government used the marketing boards (which had then a legal monopoly/monopsony over the purchase and export of commodities in the agricultural sector) as powerful instruments for market intervention. They could purchase export crops at low prices fixed by the government and sell the same at world market prices. In this way they could accumulate the revenue generated by the difference between domestic and

world market prices of these commodities. Initially the revenue accumulated by marketing boards was kept in the form of price assistance fund and used for the benefit of the farmers. At times of low international prices, the fund was employed to support domestic prices and to shelter the farmers from vagaries of the fluctuating world market prices. But the revenue was later on diverted and used by the government to help it out of its financial difficulties (Johnson and Schuh, 1983).

Starting in 1969 Crop Authorities were formed in place of marketing boards which seemed to be unable to perform all functions concerned with crop production, marketing and processing. Crop Authorities were established to specialise in the production, marketing and processing of the important export crops like sisal, tea, pyrethrum, cashew nuts, etc. (Kriesel et al., 1970).

These parastatals were, however, not successful and by 1982 there was almost a total breakdown of marketing, inputs distribution and credit offering functions in agriculture. The major crop parastatals including NMC had a total loss of T.shs. 679,200,000! (ACDI, 1982). So the government decided to turn to cooperative unions to do the marketing functions as they did prior to 1976.

1.1.2 Historical background of cooperatives and crop parastatals in Tanzania.

1.1.2.1 Review of evolution of cooperatives in Tanzania

Cooperatives began in Tanzania as early as 1925 with the organization of the Kilimanjaro Native Planters Association to help African coffee farmers to come into the cash economy. The legal beginning of cooperatives in Tanzania was in 1932 when the first cooperative societies ordinance was passed by parliament (Tanzania,1932). Since that time, the cooperatives have experienced some changes away from the original concept of cooperative as being a form of business enterprise organised on a voluntary basis by members and controlled by them on a democratic basis. The most notable change in this concept began in 1967 when the nation decided to follow the policy of socialism and self-reliance. After the Arusha Declaration of 1967, the number of registered

cooperative increased rapidly from 1953 in 1966 (Mutaha et al., 1976) to over 2000 in 1976 (ACDI, 1982). This rapid increase resulted from the fact that the Party made cooperatives the instrument of implementing its policy of socialism and self-reliance.

The primary cooperative societies were registered under the cooperative societies Act of 1968. The main objective of such societies was to promote the economic interests of its members in accordance with cooperative principles by providing efficient marketing services to members and hence reducing the marketing costs and offering good producer prices.

The primary cooperative societies were organized into cooperative unions and in 1961, the Cooperative Union of Tanganyika (CUT) was registered to coordinate and strengthen cooperative societies (Moshi, 1980).

The KNCU was established in 1933 shortly after the enactment of the first cooperative societies ordinance in 1932 and is the oldest cooperative union in Tanzania and was once one of the best and the largest. It was established as an apex organization of 11 primary cooperative societies which were registered at the same time. These 11 societies were members of the Kilimanjaro Native Planters Association established in 1925.

The traditional and primary function of the KNCU was to render marketing and other services to the affiliated societies, most importantly in connection with marketing of coffee (Westergaard, 1972).

But over the years, the Union became involved in a number of other activities. The union owned a number of houses in Moshi which were rented out, it ran a hostel and restaurant and went into wholesale distribution of consumers'goods. The union also financed the building of Lyamungo Secondary School in Hai District. Moreover by 1976 KNCU had built two other schools, 13 coffee pulpery machine and 5 godowns/stores. KNCU also attempted to diversify the Kilimanjaro Region economy by introducing dairy cattle of a better breed. By 1974 some 937 dairy cattle valued at T.shs. 1,953, 951 had been distributed to the peasants (Moshi, 1980). The introduction of dairy cattle had some negative effect on coffee production. Because when the prices of coffee fell, the peasants uprooted some of their coffee trees to plant cattle fodder (Moshi, 1980).

When all cooperative unions in Tanzania were dissolved in 1976, KNCU together with its 43 affiliated societies were also dissolved. In Kilimanjaro Region peasants were not happy with the governments' action, because they were sure that KNCU was not corrupt and that it was managed through their own representatives elected by themselves with the power to vote them out of office. They believed that KNCU was also listed because of the incompetence of the other cooperative unions and they felt that abolishing KNCU was being unfair to the Kilimanjaro peasants. Moshi (1980), however, had this observation:

"--- in reality the KNCU had become corrupt and misunderstandings had become so much rife that in 1969

the government had to impose a new general manager on the union. Also there is evidence that committee men enriched themselves from society funds and some KNCU official accumulated substantial wealth with money obtained illegally from KNCU. In all primary societies cases of theft had been reported at one time or another during KNCU days But there was one advantage which the peasants had, that is, they could easily dismiss dishonest officials by making use of established channels."

In fact even if the unions had corruption and were suffering from mismanagement, the solution would not have been to dissolve them at a goal, but to try to rectify the situation through normal ways of inquiry, auditing, counselling and supervision and eventually disciplining and firing the guilty officials.

1.1.2.2. Brief history of crop parastatals in Tanzania

The earliest crop parastatal in Tanzania was the Tanganyika Tea Board established in 1938 to facilitate the licensing of tea planting and to raise funds for research through imposition of a levy (Kriesel et al.,1970). In general the functions of marketing boards by then were primarily advisory both in production and in marketing. After the Agricultural Products Act of 1962 (Tanzania) their roles expanded to include handling and arranging final sales of crops. The main reason for this drastic change was basically to eliminate exploitation of the

peasant by the middlemen (Temu, 1977).

In 1969 crop authorities were established to specialise in the production, marketing and processing of the important export crops as marketing boards were being unable to perform all functions concerned with crop marketing production and processing. Under similar premises corporations were formed for cereals (National Milling Corporation) and oil-seeds (GAPEX). The agricultural parastatals operating in Tanzania up to 1984 are listed in Appendix F.

In Tanzania coffee marketing operations are carried out by two organizations. The cooperative movement takes care of the crop at the farm and regional levels whereas coffee Marketing Board operates at national level.

According to the institutional changes in Tanzania's Marketing system, the marketing of coffee at National level up to now has been carried out by three different and distinct parastatals:-

1. The Tanganyika Coffee Board, established in 1961.
2. The Coffee Authority of Tanzania started on 1st January, 1978 after the abolition of the Coffee Board.
3. The Tanzania Coffee Marketing Board which was re-established in 1984.

According to the Coffee Industry Act No. 20 of 1961 & 1962 (Tanzania), the specific objectives and functions of

the Tanganyika Coffee Board were:-

i) to advise the minister upon measures for the promotion and protection of the coffee industry.

ii) to promote the sale of coffee and encourage the production of good quality coffee.

iii) to arrange for the marketing of coffee in Tanganyika.

iv) to conduct research in connection with the industry.

v) to restrict and control activities of licensed dealers of coffee.

vi) to appoint designated agencies, the cooperatives and unions, through which producers could sell their coffee.

vii) to impose levy on the sale of coffee.

According to the Coffee Industry Act of 1977 (Tanzania) the specific objectives and functions of the Coffee Authority of Tanzania were:-

i) to promote the development, improvement and protection of the coffee industry.

ii) to prepare, implement, control and supervise programmes relating to the development of the coffee industry.

iii) to carry out, either alone or in association with any other person, the business of coffee farming, the business of processing coffee, manufacturing coffee berries and husks.

iv) to undertake the marketing and exportation of coffee.

v) to advice the minister upon measures for the promotion and protection of the coffee industry.

vi) to undertake or finance research in the production, marketing and uses of coffee and its byproducts.

According to the Coffee Marketing Board Act, 1984 (Tanzania), the specific objectives and functions of the Tanzania Coffee Marketing Board were:-

i) to undertake marketing and exportation of coffee and to advise the government on all matters affecting coffee production and its marketing.

ii) to promote the marketing of coffee within the framework of any international organization or agreement.

iii) to give financial or other support to research on coffee production, marketing or processing.

iv) to issue licences to persons for purposes of coffee processing including production and marketing of byproducts.

1.1.2.3 Other Organizations involved in the marketing of coffee in Kilimanjaro Region

i) Tanganyika Coffee Growers Association (TCGA)

Coffee produced on estates is processed and marketed differently from that produced by small-holders. Estate coffee is harvested and

processed to parchment stage on the state. It is then delivered to the coffee curing works in Moshi for dehusking into green coffee. Their assembly is supervised by the Tanganyika Coffee Growers Association (TCGA). Sampling and grading of green beans is done in the same way as smallholder coffee (Mbilinyi, 1976).

ii) Tanganyika coffee Curing Company Ltd

Arabica parchment coffee from the cooperative unions or TCGA is delivered to the curing plant at Moshi for processing. This curing plant was owned by the Tanganyika Coffee Board. At the curing plant all the parchment is removed and the "green coffee beans" (the final product) are graded by size, appearance, etc, and bagged. Samples of each delivery are taken, a portion of which is sent to the liquoring section of the coffee Board.In this section the tasters assign a numerical classification after tests have been made. Then the remaining sample is put in small packages and sent to potential buyers who use it as the basis for deciding which grades to buy at the auction (Mbilinyi, 1976, Appendices B-1 and B-2).

iii) Others

Other organizations/individuals who have been involved in the marketing of coffee were the coffee Department of GAPEX, Private Coffee Dealers, Domestic Coffee Processors and Auctioneers. It is interesting to note that more and more Africans are entering the trade of coffee marketing as private dealers or

processors. (Appendices B-1 and B-2).

1.2 Economic Importance of coffee in the world in general and in Tanzania in particular

1.2.1 Economic importance of coffee in the world

Coffee, a tree crop whose fruits are mainly used as a non-alcoholic beverage, grows mainly in tropical and semi-tropical developing countries. Coffee has become the highest valued agricultural commodity in international trade, surpassing both cotton and wheat, although not in volume of production (Mbilinyi, 1976; Hyuha, 1982).

Coffee is an important source of foreign exchange for many developing countries. For example, during the period from 1970-1972, five developing countries derived 55 percent of their foreign exchange from coffee proceeds. Specifically,the contribution of coffee exports to total foreign exchange earnings for selected countries were as follows:-

Portuguese Timor,90.5 percent; Burundi, 73.0 percent; Uganda, 58.8 percent; Columbia, 58.8 percent and Rwanda 57.3 percent (Hyuha, 1982). It could be added that Tanzania's coffee

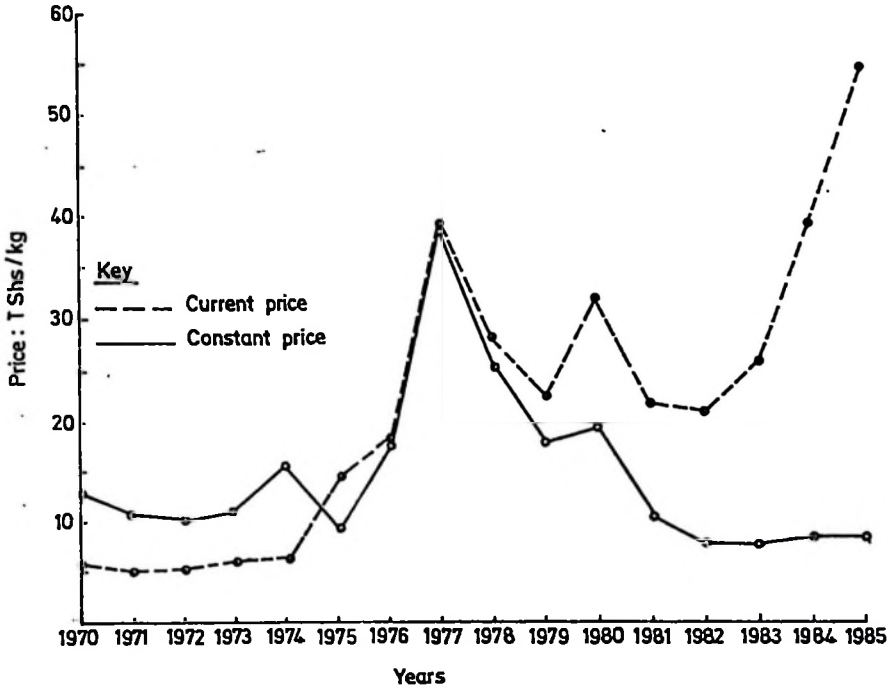
contributed an average of 27.5 percent of total export earnings of the nation over the period 1970-1985 (Table 1-3).

Coffee prices have traditionally been subjected to fluctuations. Two periods of market price increase were in the early 1950's and after the 1975 frost in Brazil. The high coffee prices in the early 1950's encouraged new coffee plantings. These plantings reached maturity in the late 1950's and early 1960's. Consequently, between 1957-1962, there was a marked increase in production of coffee. This increased output led to declines in world coffee prices during that period (Hyuha, 1982).

Following the price decline, stabilization activities were intensified leading to the signing of the International Coffee Agreement in 1962. Under this agreement, further declines as well as increases in coffee prices were prevented, stabilizing them appreciably. Hence in the 1960's less severe fluctuations in coffee prices occurred. However, in the 1970's and especially from 1975 onwards there have been sharp increases in world prices for coffee (Figure 1-1 and Table 1-2).

Of the major Coffee producing and exporting countries, Brazil has dominated going as far back as before World War II. Before World War II, Brazil alone produced up to 90 percent of the World's coffee supplies. However, since that time, Brazil share in World production and exports has been declining (Appendix A-1 and A-2). As can be seen from Appendix A-1, world coffee

Figure 1-1. Sales price (F.O.B. price) in current and constant prices(NCPI : 1977 = 100) of mild arabica coffee sold in Kilimanjaro region, 1970-1985



Source: Compiled from balance sheets and budgets of KNCU, TCB and CAT and from MDB reports.

Table 1-2 Sales Prices (F.O.B. Price) in current and constant prices (NCPI: 1977 = 100) of mild-arabica coffee sold in Kilimanjaro Region, 1970 - 1985.

Year	F.O.B. Price (Current Prices)	F.O.B Price (Constant Prices)
	Tshs/Kg	Tshs/Kg
1970	5.66	12.66
1971	5.11	10.92
1972	5.14	10.24
1973	6.17	11.10
1974	6.22	15.84
1975	14.86	9.38
1976	18.12	17.71
1977	39.1	39.1
1978	28.3	25.22
1979	22.69	17.91
1980	32.3	19.58
1981	21.86	10.54
1982	21.01	7.86
1983	26.08	7.80
1984	39.16	8.79
1985	54.90	8.63

Source: Balance Sheets, Budgets and Annual Reports of KNCU and CAT, 1970-1985.

production has fluctuated considerably over time. But exports have tended to increase as Appendix A-3 shows. For East Africa as a whole, however, coffee exports have been on a decline. Exports from Tanzania have fluctuated a lot from 1961 to 1976 but have remained almost constant from 1977 to 1984 (Appendix A-4 and A-8).

Price, income and population levels are the important determinants of amount of coffee consumed. The major coffee importing countries are developed countries. In 1977, Western Europe together with North America accounted for over 80 percent by volume of world coffee imports. The continent of Asia as a whole is a minor importer of coffee accounting for only 5.0 percent of the world imports in 1978. But Japan's imports have been on the increase. For the period 1967 to 1970 she imported 56,700 thousand tons and by 1977 her imports had doubled to reach 153,919 thousand tons (Hyuha, 1982).

The fluctuations in prices which are evident for coffee are a major problem for exporting countries. Major causes of these are : variations in supply, inelastic supply and inelastic demand. In addition, on the demand side, speculative activities from time to time appear to enhance price fluctuations. For instance, expected damage of coffee from frost in any supplying country such as Brazil may influence marketing activities to the point that there are marked movements in price (Hyuha, 1982). Tanzania's coffee sales price (FOB price) has fluctuated drastically in the period of 1970 - 1985. For Kilimanjaro Region the FOB price (at current prices) for

mild arabica coffee reached its highest level in 1985 (Table 1-2). The apparent increases in producer prices in nominal terms is misleading. In real terms (in constant prices) the producers price has in fact been declining. This means that the real income and consequently the purchasing power of the coffee producers has been decreasing.

1.2.2 Economic Importance of Coffee in Tanzania

Although Tanzania's share of the world total coffee production is relatively small, accounting for about 1.4 per cent in 1972 (Mbilinyi, 1976), coffee has made a substantial contribution to the country's national economy. As stated earlier, over the period 1970-1985 coffee contributed an average of 27.5 percent of total export earnings of the nation as indicated in Table 1-3. The total value of coffee exports by Tanzania is shown in Appendix A-9.

In Tanzania both arabica and robusta coffee are grown. The main coffee producing areas are the Northern Highlands, Southern Highlands and Kagera Regions. These are indicated in Figure 1 - 2.

Kilimanjaro Region in the Northern Highlands grows mainly arabica coffee. In 1969/70 season KNCU coffee sales were 23.5 per cent of total coffee sales in Tanzania (Mbilinyi, 1976).

As for other crops in Tanzania the marketing of coffee in Kilimanjaro Region begins with peasant coffee growers delivering their harvest (either as cherries or parchment) to their local cooperative society where they are members. The cooperative societies assemble all these deliveries, check on the grades, process cherries and bag the crop.

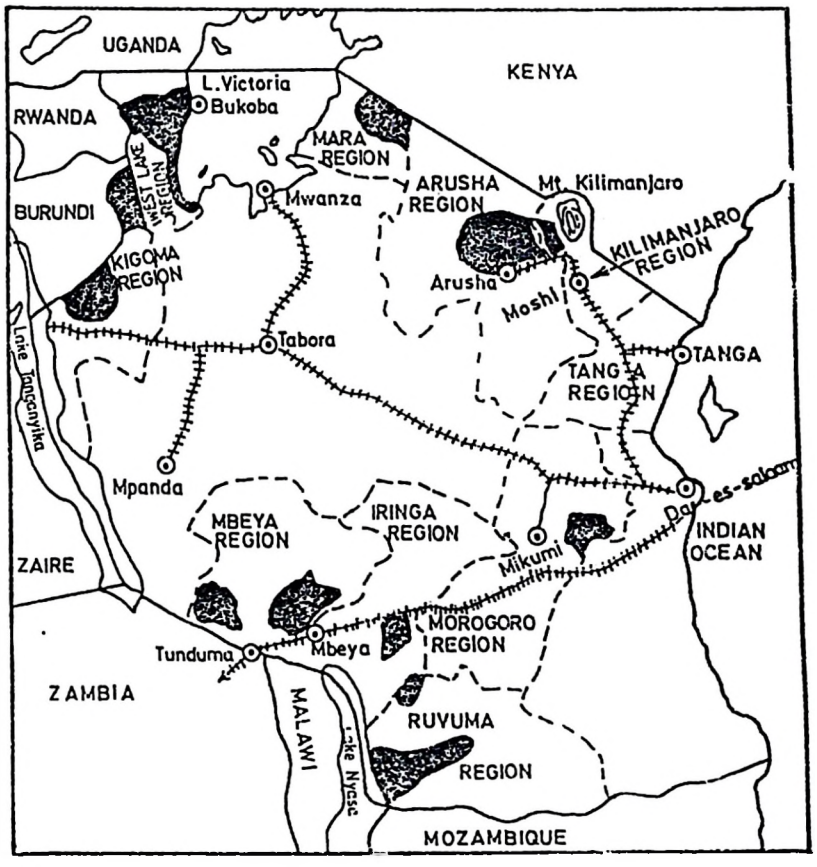
Table 1-3 The contribution of coffee to total export earning[1] of Tanzania, 1970-1985.

Year	Total Exports T.shs. mill.	Coffee Exports T.shs. mill.	Contribution of coffee %
1970	1649.5	312.2	18.9
1971	1711.5	227.4	13.3
1972	2179.7	383.0	17.6
1973	2410.8	495.3	20.5
1974	2643.2	375.1	14.2
1975	2589.3	483.0	18.7
1976	3852.9	1282.7	33.3
1977	4518.6	1857.2	41.1
1978	3634.8	1303.3	35.9
1979	4484.1	1215.5	27.1
1980	4165.7	1119.3	26.9
1981	5087.1	1368.4	26.9
1982	4230.1	1239.4	29.3
1983	4047.6	1424.8	35.2
1984	5607.0	2350.0	41.9
1985[2]	5965.0	2356.0	39.5

Sources: Bank of Tanzania, Economic and Operations Report, June, 1981, Tanzania Litho Ltd., Arusha, p. 101
Bank of Tanzania, Economic and Operations Report, June, 1984, June, 1985, The Government Printer, Dar es Salaam, p. 81.

1 Exports to countries outside East African community.
2 Figures for 1985 are estimates

Figure 1–2 Map of Tanzania showing location of principal coffee growing areas.



Source : ICO

Key

Existing coffee growing areas
Boundaries of coffee growing regions
International boundaries
Railway

Scale : Not to scale.

1.3 The Problem

Institutions that are involved in crop production and marketing in Tanzania have undergone several changes over the last two decades. The major changes occurred in the years 1967, 1968, 1975, 1976 and 1982. In the area of production there has been the villagization programme which followed the Arusha Declaration of 1967 and which has involved the complete restructuring of rural life into modern settlements. In the area of marketing these changes ranged from minor re-organization, redefinition of functions to complete replacement with new institutions. In the period between 1967-1975 agricultural marketing cooperative societies registered under the Cooperative Societies Act of 1968 (Tanzania, 1968) had to market crops belonging to Ujamaa groups. After the 1975 Ujamaa Villages Act (Tanzania, 1975) the functions of crop marketing were taken over by village governments instead of marketing cooperative societies and cooperative unions which had been dissolved by the government in 1976. The unusual thing was the hasty manner in which the government abolished the cooperative unions, because Tanzania was once the leading country in Africa as far as cooperative development is concerned (Mutaha et al., 1976, Manday, 1977; Moshi, 1980; ACDI, 1982).

Also in the early years of Independence (early sixties) the cooperative movement was very popular with the government leaders because the cooperative leaders had played an important part in the struggle for political Independence. Throughout the sixties, the cooperative movement was charged with the responsibilities of marketing all cash crops meant for export including coffee, cotton, tobacco, cashewnuts etc. Besides cooperatives had started providing agricultural inputs like fertilizers, insecticides and credit to members. To most people the cooperatives were apparently performing their functions of crop marketing well.

The government had in the early sixties argued that the marketing cooperatives had become exploitative and inefficient and in 1966 it commissioned a committee of inquiry to look into the matter. The committee cited among other things the cooperative's inability to contain rising marketing costs as one of their major flows. In Tanzania the problem of rising unit marketing costs has persistently plagued the institutions charged with marketing agricultural products. The constant changing of institutions that are involved in crop marketing has, however, not solved the problem. These changes in Tanzania's marketing system have been superficially justified on the grounds of dishonesty, inefficiencies or reflect policy changes. All these changes have been instituted without conducting a systematic research into these issues in order to understand the problems facing the marketing system.

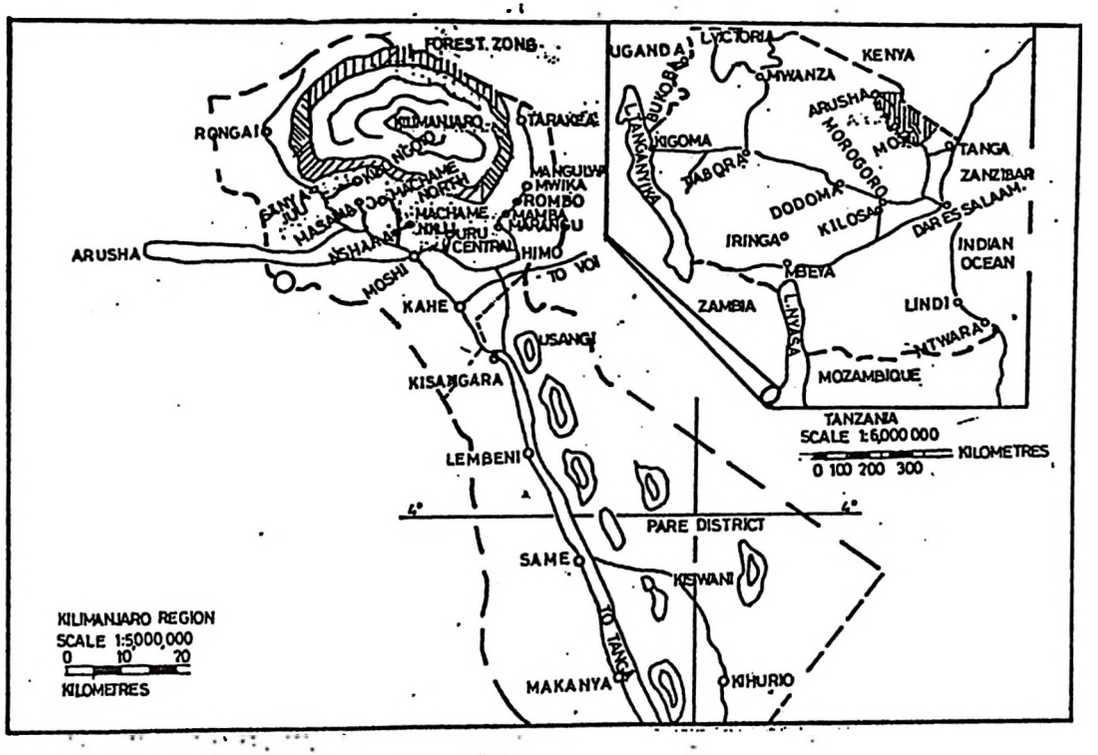
The government and the party are interested to know the causes and effects of the failure of the marketing systems in Tanzania and to get reliable data and information for policy formulation. Consequently this study will attempt to contribute the desired data and information by examining the role played by coffee marketing institutions to coffee smallholders in Kilimanjaro Region.

1.4 Description of the area of study

1.4.1 Location and description of the region

Kilimanjaro Region is one of the twenty regions that make up the United Republic of Tanzania. The Region is in the north of Tanzania and has common border approximately 240 km long with Kenya (Figure1-3). It is situated between 2°:50' and 4°:30'latitude south of the Equator and 37° and 38°:20' East longitude. The dominant physical feature is a main chain of mountains running from North-North west to south-south East with land sloping away to a minimum height of 305 meters above sea level on either side. Mount Kilimanjaro at the north-western end of the chain rises to form the famous Kibo Peak with a height of 5895 meters, the highest mountain in Africa. The snow capped mountain provides a continuous supply of water to the lower slopes along numerous gullies and crevices (Mlambiti, et

Figure 1-3. Map showing Kilimanjaro Region: Location



Sources: Mlambiti et al., 1982, P.2

al., 1982).

Because of its high altitude, the Region has a mild, pleasant climate on the slopes of the mountain, but at the lower plains it is sometimes hot. The temperature ranges from approximately 17° to 34° C but rainfall pattern varies greatly by district and between the highland and the lowland. The heaviest rainfall occurs in Moshi Rural District and the highest temperature in Same District, which also contains the driest area in the region. The variability in the rainfall pattern, distribution and reliability is one of the major factors which affects the agricultural development and hence economic development of the District and the Region as a whole. The soils of the central highlands are of medium fertility and are suitable for pasture, oil seeds, vegetables, coffee, bananas and maize. This is a problem are since high population density coupled with land fragmentation has lowered the productivity of labour and land. The vegetation of the region ranges from semi-desert types in the almost arid south to rain forests on the lower slopes of Mt. Kilimanjaro where rainfall is relatively heavy. Where the lower slopes of the mountain form a common border with Kenya, one finds vast areas of bushland, shrub and thickets (Mlambiti, et al., 1982).

The region also has good long distance transportation links, with trunk roads connecting Moshi Town with Arusha (85 km), Tanga (354 km), and Dar es Salaam (562 km); rail

roads leading to Arusha, Tanga and Mombasa and air routes from Kilimanjaro International Airport on the regional border with Arusha, which opened in 1971, connecting Moshi to major towns throughout the country and cities throughout the world (JICA, 1977).

The two major tribes of the region are the Wachaga, who occupy about two-thirds of the Region, and the Pare who occupy the balance known as Same and Mwanga Districts. Socially, there is little separation between the two and intermarriage is common (Mlambiti, et al., 1982).

Kilimanjaro Region is divided into six districts: Hai, Moshi Rural, Rombo, Mwanga, Same and Moshi Urban Districts.

In 1975 the population stood at 865,000 or 5.7% of the national total. Most of this population is concentrated on the slopes of Mt. Kilimanjaro and the Pare Mountains at altitudes between 800 and 2000 meters, which makes this region to be one of the highest populated areas in the country: 65 persons per sq.km gross and 91 persons/sq.km net. Moshi town the regional capital had a population of roughly 50,000 in 1975; which makes it the sixth largest town in Tanzania (JICA, 1977).

1.4.2 Economic Development of the Region

The most important crop in the Region is Arabica Coffee which was introduced in the 1920's. In 1939, for instance, coffee exports brought some 85,842 to the Region (Mlambiti et al., 1982). Arabica coffee contributed, and still contributes, to the growth of the economy. Other

major industries which helped sustain development were: production of foodstuffs, export-oriented agriculture and associated agro-allied industries, and livestock farming. As a result, Kilimanjaro's economy is the most highly developed among all the regions in Tanzania, based on a high income standard and high education level.

The more important food crops are bananas and maize. Bananas are grown mainly in the highlands where they are intercropped with coffee, whereas maize is grown in lower areas. Other crops include wheat and various pulses, grown for regional consumption as well as for export to other regions, since the Region's production has often been more than sufficient to feed its population. The main export crops are coffee, sisal, cotton and sugarcane. Stock raising is a traditional practice of the people and meat forms a component of the family diet in most parts of the Region. In 1972, there were 622,000 head of cattle and 136,000 sheep and goats, the number of cattle being close to the human population (Mlambiti et al., 1982). There are beef cattle in the low lands particularly in the Pare area, and dairy cattle in the highlands.

The rapid economic expansion which the Region has enjoyed for the past fifty years appears to have slowed or stopped recently.

This could be due to many factors such as poor credit and marketing systems, low prices for agricultural products, and lack of improved husbandry practices (Mlambiti et

al., 1982).

According to a Japanese Planning Team (RIDEP, Kilimanjaro,1975), the main causes of these economic problems are the rapid population increase which has increased population density particulary on the highly productive slopes of the mountain, and the attained optimality of the traditional agriculture. Possible solutions to the problem of optimality of traditional agriculture include the introduction and adoption of new skills and techniques by the peasant (JICA, 1975).

1.4.3 The reasons for selecting Kilimanjaro Region

The situation described above calls for an urgent need of analyzing the marketing systems under the different marketing institutions in the country to see how the marketing institution's efficiency and behaviour can be changed to contribute to increasing the real incomes of the nation as a whole. What changes in these systems can contribute to the cumulative process of development? What would be the most appropriate marketing system for Tanzania? In view of the large number of institutions involved in the whole country, the research can be done only in piecemeal because of the limitation of funds and time. The investigator has chosen the Kilimanjaro Region for the following reasons:-

i) It is the home region of the researcher and it was therefore more convenient and cheaper

to do research there.

ii) The KNCU sphere of operation is in Kilimanjaro Region, where coffee is the main cash crop.

iii) Both TCMB and CAT Headquarters have always been in Moshi.

iv) The concerned marketing institutions have had a high standard of management and they used to keep books well, although it was found that several archives have unfortunately been willfully destroyed (Ellis and Hanak, 1980).

v) Kilimanjaro Region was least disturbed by the villagisation process.

1.5 The objectives of the study

The study has the following objectives:-

1. To compare TCB/KNCU and CAT when marketing coffee in Kilimanjaro Region in terms of marketing efficiency criteria to determine whether the changes in the marketing system effected by the government had significant effects on the efficiency of the marketing institutions.

   Hypothesis to be tested:

   Coffee marketing system under the TCB/KNCU was more efficient than under the CAT.

2. To find out the roles that KNCU and affiliated primary societies, Tanzania Coffee Board and

Coffee Authority of Tanzania have played in marketing smallholder coffee in Kilimanjaro Region.

Hypothesis to be tested:

TCB/KNCU and affiliated cooperative societies were more concerned with the development of Coffee farmers than the Coffee Authority of Tanzania.

This study required time series data on unit marketing costs and administrative expenses, prices, sales, levies, profit and losses, etc.Data on the attitudes of farmers on these changes were also required. Such data are, however, not easily obtainable.So there was a need of collecting both primary and secondary data from the research area. Secondary data were compiled from balance sheets, budgets and reports of the institutions concerned and the primary data were obtained from a field survey.In view of the many institutions which were/are involved in crop marketing in Tanzania, the study was limited only to Kilimanjaro Region.

CHAPTER II

ALTERNATIVE MARKETING INSTITUTIONS FOR SMALLHOLDER FARMERS IN TANZANIA.

2.1 Introduction

In the previous chapter reference was made as to how crop marketing in Tanzania has been operated on self-help basis through cooperatives and how the government has intervened by channelling the major agricultural crops through marketing boards or crops authorities. Also different bi-lateral and multi-lateral organizations have assisted the development of modern marketing system in Tanzania. In this chapter the relationship between these different marketing institutions with one another and with GO's and NGO's will be explained.

In a developing country where the agricultural sector is by far the largest part of the economy, economic development will have to be financed from this sector.It is no wonder, therefore, that such countries are very much interested in controlling and regulating the marketing of agricultural products.

This chapter starts with a discourse on marketing parastatals, which are in most developing countries the obligatory channel of crop marketing. Where official marketing channels were not easily available farmers have also voluntarily organised the marketing of their crops on self-help basis. The next section considers such self-help

organizations (SHOs). The last section discusses how these SHOs have been assisted by government and non-governmental organizations.

2.2. Marketing Parastatals

Historically, marketing boards might be visualized as an offshoot of the cooperative or even the unionist movement. Agricultural marketing cooperatives promoters were concerned with the problem of bargaining inequality.

The marketing board was in a sense, an advanced form of cooperation. In other words, the roots of "forced" or compulsory cooperation under marketing boards could be traced to earlier attempts at voluntary cooperation (Sadan, 1976; Hoos, 1979).

Influence over the marketing of farm products is often divided between direct participants, independent producers, processors and distributors and a central marketing authority. Apart from serving the cause of efficient and "orderly marketing" the central authority often tends to enhance the economic position of producers. Marketing boards for farm products have been quite common within the sphere of influence of British jurisprudence e.g.:

1. The British Potato Marketing Scheme.
2. The Canadian Wheat Board
3. The New Zealand Meat Producers' Board
4. The California Milk Marketing Order-The U.S.A. was once a British colony and British citizens

immigrated there. They settled first on the east coast and later emmigrated to the West of the country, where California in one of the states now.

5. The Gold Coast Cocoa Marketing Board
6. The Nigerian Oil Palm Products Marketing Board
7. The National Agricultural Products Board of Tanzania
8. Coffee Marketing Board of Kenya
9. The Citrus Marketing Board of Israel

(Izraeli et al., 1976; Hoos, 1979).

-After the Second World War,Israeli became a U.N. protectorate under British mandate. Some of the Jews who settled there had also lived in Britain or in the British colonies.

A marketing board is commonly defined as"a producer influenced compulsory organization sanctioned by governments authority to intervene and engage in various places of the marketing of an agricultural commodity" (Sadan, 1976).

Marketing boards vary considerably in status, scope and the degree of authority vested in them. A functional classification of marketing boards indicates at least five distinct types:-

a) advisory and promotional
b) quality control and co-ordinating
c) price stability
d) export monoploid

e) domestic monoploid (Sadan, 1976).

Another distinction is between:

a) non-trading boards, which do not participate in the marketing process as buyers and sellers, and

b) trading boards.

Advisory and quality control boards are non-trading.A price stabilizing board may or may not engage in trade. If it does, it may do so along with other buying and selling organizations. "Monoploid" boards, possessing varying degrees of power, resort to various monopolistic practices. In as much as they operate as trading boards, they are bound to constitute the sole buyer, domestic seller and exporter of the commodity. Monoploid boards may also act as non-trading boards which regulate and coordinate sales via quality controls and fiscal measures rather than direct participation. (Abbot and Creupelandt, 1969; Sadan, 1976)

2.3 Self-help Organizations (SHOs)

2.3.1 Definition

SHOs can be defined as institutions which pursue common development goals over an extended period of time on the basis of cooperation of their members. These development goals can be of an economic, social or political nature (Muenkner, 1984).

Characteristics of SHOs:

a) self-help within a group (natural assistance).

b) The organized cooperation has to be carried out over a certain period of time.

c) The common objective of the members may not consist of the aim to improve the economic and social situation by cash payment. In the SHO the improvement of the position of the members has to be brought about by rendering services to the members.

In this broad senses, SHO is the general term which covers all forms of organizations of cooperative character.

2.3.2 Cooperative organization v.s. cooperative societies

In the industrialized countries numerous forms of cooperative organization have developed side by side with cooperative societies of the classical type (both in the economic and in the legal sense).

The latter organizations did not, however, use the legal form of registered cooperative society, but resembled cooperative societies with regard to their goals (e.g. in the agricultural field: societies for joint use of farm machinery or private companies with non-transferrable shares). Seen from a narrow legalistic point of view these organization are not considered to be cooperative societies, whereas from a broader economic point of view they are referred to as cooperative societies (Muenkner, 1984). In order to cover

such organizations and cooperative societies with one technical term and to avoid the narrow dogmatic/ideological notion of cooperative society, the more general term "cooperative organization" was created. Within the broad category of SHO, cooperative societies are formalized SHO with predominantly economic objectives of having a joint enterprise. Within the category of cooperative organizations, registered cooperative societies are cooperative organisations having a joint enterprise with an executive organ (Baldus, 1976; Muenkner, 1984).

SHO are classified into several categories or groups according to the relationship which exists between the members and the organization (See Appendix B-3).

2.3.3 The Role of Government in Promoting SHOs

Since the beginning of the 20th century, governments of many states have taken measures with the aim to promote the formation and development of cooperative societies.In countries where the individuals are too weak or not prepared to take the initiative and where the socio-economic minimum requirement for the development of cooperative societies are lacking, the state has undertaken to offer not only an adequate legal frame-work, but to render further

assistance to cooperatives.

One major reason why governments take interest in promoting cooperatives development is as a rule-the reputation cooperatives have gained in being an efficient instrument in the solution of social and economic problems and in being an agent of socio-economic progress. This reputation is mainly based on the role which cooperative societies have played in Europe to activate the economically and socially weak and to modernize traditional forms of production and trade. If governmental sponsorship of cooperative development is meant to bring about a similar effect, then the object of the government promotion and accordingly the object of cooperative legislation can only be the cooperative society as an organization to implement the idea of mutual self-help i.e working together in a group with the desire to improve ones own situation by means of solidarity, selfhelp or mutual assistance (Muenkner, 1974).

2.3.4 The Role of Non-governmental Organizations (NGO's) in Promoting SHO's

In the past several years a new trend in development strategy concerning cooperatives in various developing countries has been observed. It is characterized among other things by an increasing involvement of Non-governmental

organizations (NGOs) in promoting Self-help organizations.

The main purpose of NGOs is to establish self-help organizations together with the members by placing the main emphasis on the members own interests and needs. There are NGOs of different origin, for example various churches and religious institutions, socio-political foundations etc. In Nigeria, for example, the Association of Cooperative Credit Unions of Nigerian (NACCUN) and the Konrad Adenauer Foundation of West Germany are operating as NGOs.In Tanzania,the Nordic Project for Tanzania and Cooperative Union of Tanzania are operating as NGOs in promoting cooperatives. Other NGOs operating in Tanzania in promoting cooperatives are the Workers Organization (JUWATA),Ox-Farm, Konrad Adenauer and Friedrich-Ebert Foundations, CDTF and various foreign Cooperative Unions and Federations.

Through their activities, government engagement in the field of cooperative development will not become unnecessary. Governments tasks will be concentrated on creating the necessary framework for SHOs so that they can develop according to their own goals and conditions, but within a general framework which is taking account of the needs of the society as a whole.

It is generally expected that development of SHOs, through NGOs, is not so much connected with

the public administration and its directives, but rather oriented towards the members' needs. Therefore, the members will be more interested in their SHOs. It is furthermore expected that such SHOs sponsored by NGOs are in a better position to mobilize human and other resources for the benefit also of the overall development process (Kuhn, 1985). It is interesting to note that the Nordic Cooperative Development Project for Tanzania is no longer working with the Cooperative Development Department of the Tanzania government but is now (1987) working with CUT and its affiliated Cooperative Unions.

The marketing parastatals (Marketing boards, crop authorities and crop corporations/companies) are instruments of government intervention in the crop marketing system. They are therefore GO's and they tend to fulfill first of all the goals of the government. The participation of the farmers in the decision-making process of these institutions is very minimal.

In order to improve their economic, social and political relations, farmers have, therefore, found it useful to start their own self-help organizations. The SHOs cover all forms of organizations of cooperative character. In fact, cooperative societies are formalized SHO with predominantly economic objectives of having a joint enterprise. The coops tend to fulfill first

the interests of their members.

In particular, cooperatives have gained the reputation of being an efficient instrument in the solution of social and economic problems and in being an agent of socio-economic progress. For these reasons SHOs (especially cooperatives) are heavily supported by government and Non-governmental Organizations.

CHAPTER III

LITERATURE REVIEW

3.1 Introduction

The marketing sector is a very important sector in a developing country for the pace of economic development of a country depends on its market structure. The institutions involved in marketing are, therefore, very important. The government can bring about a fast economic development of a country by inducing desired changes in enterprise organization through adjusting its regulatory, facilitating or interventionist activities on them. All these changes will affect the marketing efficiency of these institutions. There have been several research studies on the problems of agricultural marketing covering several aspects such as the study of market supply, market structure, price spread and cost of marketing and regulation of markets.

This chapter reviews relevant studies dealing with the role played by crop marketing institutions, especially those marketing coffee in the Kilimanjaro Region of Tanzania. It starts with the pros and cons of using certain measures of efficiency. Then it discusses the problems that have faced marketing organizations. It concludes by discussing previous work on the evaluation of organization, administration and management of marketing institutions.

3.2 Theoretical basis for using certain measures of efficiency-their pros and cons

Kohls and Uhl (1972) noted that higher efficiency means better performance whereas declining efficiency denotes poor performance. Efficiency is measured as a ratio of output to input or benefits to costs. Resources (labour, packaging, machinery, etc.) are the costs and utilities (time, form, place and possessions) are the benefits of the marketing efficiency ratio.

Efficient marketing is the maximisation of this input - output ratio. According to Kohls and Uhl (1972) the marketing efficiency ratio can be increased in two ways.

Any marketing change that reduces the costs of performing the functions without altering the marketing utilities would clearly be an improvement in marketing efficiency, or, enhancing the utility output of the marketing process without increasing marketing costs would also increase efficiency.

Bressler and King (1970) noted that an immediate answer to the question of how does one measure the relative efficiency of different firms in an industry, is first of all to limit our discussion to single plant, single product firm and then to construct simple input output ratios, such as labour used per unit of output.

The difficulty with simple ratios of this kind is that, although a firm may rank high in efficiency when measured in terms of output per unit of labour, it may do this only at the cost of large amount of capital per unit of output (Bressler and King, 1970). That is to say, the firm with a low labour output ratio may have a high capital/output ratio and vice versa. Clearly a method is needed by which all the important inputs can be considered simultaneously.

In comparing the productivity of different industries total productivity measures, rather than partial ones such as labour productivity are preferable since they allow for differences in labour and capital intensity. Measures of total productivity remain questionable in accuracy, as do measures that attempt to partition productivity gains to various inputs. Productivity measures focus largely on the technical efficiency aspects of performance. Because no norms exist with which the productivity of different industries can be compared, interpretation is easier when different time periods of the same industry are examined (U.S. Department of Agriculture, 1973). For example the trend of the producer's price as percentage of f.o.b. price or the trend of unit marketing costs are a good indication of how efficiently different marketing institutions have performed the marketing function through time.

Moshi (1974) had pointed out that an efficiency comparison between two or more societies could be made if one takes unit costs as the basis and considers the

conditions under which these societies are operating. A society which has low unit costs in comparison to another would be considered to be economically more efficient. The efficiency with which operations in a cooperative are done would depend on the way the employed staff, the committee men and the other workers like auditors discharge their duties, on one hand, and on the members' effective participation in the affairs of their society on the other hand. There is a scope for improving the efficiency of operation through the reduction of the marketing costs for the benefit of members.

Mlay (1975) also supported the idea that unit costs would be used as a measure of efficiency. The existence of differences in unit cost between apparently similar societies may be attributed to the efficiency factor. Part of the variation in marketing costs between societies is explained by differences in management efficiency and honesty (Moshi, 1974).

Duelfer (1980) observed that the oldest approach to the evaluation of institutions appears in the well-known question about the productivity of an enterprise. This expresses the return on capital employed as a ratio or index (the Profit ratio (Y)):

$$Y = \frac{P \cdot 100}{I}$$

where Y = Yield, P = Profit, I = Investment.

Duelfer,(1980) claims, however, that the traditional statement of results through assertainment of profits defined according to commercial law is not especially

suitable for rendering the complex performance and productivity of cooperatives.

All such methods (as capitalization of the annual profit in order to determine the total value of the enterprise) of evaluation referring simply to yields can hardly be relevant to cooperatives. The complex benefits of a marketing cooperative, for instance, both to its members and to the process of development in general, cannot be expressed through the annual surplus alone. As Duelfer (1980) shows later in his book, this surplus is important to the cooperative with an executive operational unit (see Appendix B-3). But in spite of that fact, the assessment of the organization as a whole cannot be linked solely and exclusively with the surplus, whether one is looking at the matter from the point of view of business efficiency (micro-policy) or overall social and economic development (macro-policy) (Diulfer, 1980). An approach is needed which embraces the manifold effects resulting from the setting of multiple objectives, and this approach is provided by modern management techniques. According to Duelfer (1980), on the basis of the different objectives a cooperative institution can have, three types of efficiences can be distinguished:-

i) business operational efficiency (micro-political)

ii) development efficiency (macro-political)

iii) member-oriented efficiency (related to specific members objectives).

Hanel and Mueller (1978) used this method when

evaluating the development of rural cooperatives in Iran. Their analysis revealed the existence of a rather complex system of interrelated goals and sub-goals concerning (1) the development-related effects intended to be induced through the rural cooperatives and (2) the organizational development of the rural cooperatives themselves. In this way they were able to come out with better results than earlier studies on Iran cooperatives (Hanel and Mueller, 1976; Lambton, 1969).

Baldus (1976) used Duelfer's methodology to study the operational efficiency of Tanzania's Ujamaa cooperatives. Baldus (1976) pointed out that if one wanted to assess the operational efficiency of the ujamaa cooperatives one had to assess the degree of accomplishment of the aims which had been set for the cooperatives by the members themselves and the government. Thus one could differentiate between a member oriented and a development-policy-oriented efficiency. In this way he was able to draw more convincing conclusions than other studies on Tanzania's Ujamaa villages had done (Msambichaka, 1974;Ellman, 1975; Omari, 1976).

An evaluation of the roles played by marketing institutions is a difficult process and covers the assessment of their performance, efficiency, effectiveness and their impact on the environment. It usually requires comparisons through time and space and all forms of evaluation rely on time series data. The time series data can therefore be used to indicate how marketing efficiency has been changing over time by

watching the trends of, for instance, producer's price and marketing costs over time. The advantages of using time series data for measuring marketing efficiency is that it is possible to compare marketing efficiencies of different institutions through time, for time series data have the ability to capture the effect of time element and they facilitate the use of dynamic models.

The time factor results in changes in several factors affecting marketing efficiency such as prices, incomes of consumers, tastes and preferences, taxation, changes in management, political changes or structural changes in the economy.

The disadvantages of using time series data are:-

i) The data provide only samples from limited range

ii) There is usually the problem of discontinuity in the data.

iii) Sometimes it is difficult to obtain accurate data and errors may occur when processing the data

iv) In the long-run some archives are lost or destroyed so that some important data may be unavailable.

v) The problems of multi-collinearity, heteroskedasticity and auto-correlation usually prohibit the inclusion of many variables in the time trend model (Welsch, 1965; Agrarwal and Drinkwater, 1972; Orden and Buccola, 1980; Mrema,1984).

According to Lange (1978), the method of least squares gives us a way of fitting the trend line to the empirical statistical series.Since this method

is convenient and most frequently employed in mathematical statistics it has also been accepted for the smoothing of time series.The advantage of the method of least squares is computational simplicity and small standard errors of the coefficients(Ishuza, 1984).

3.3 Problems faced by marketing organizations

3.3.1 Introduction

Changing social and economy circumstances necessitate institutional and conceptional adjustments of economic organization to new conditions. The need for such adjustments is particularly important in developing countries, where changes are rapid, and for cooperative organizations which have a high propensity to conservation.

In his study on the adaptation of cooperatives to economic change in Israel, Don (1967) noted that the swift demographic and economic changes in Israel compelled most cooperative undertakings to re-organize their institutional structure, and the changing social environment made them reconsider their functions with regard to the needs of the individual and the community. He cautioned that the viability over the long run of cooperative establishments, and indeed of all institutions of collective action by groups, depends on the ability of the social units

> involved to adjust themselves to changing circumstances. Adjustment is particularly difficult for cooperatives, because of their tendency toward conservation, a phenomenon common to many social and economic institutions which claim to represent normatively superior qualities.

Shaffer (1969) in his study on institutional obsolescence and innovation, noted that greater liberation from the constraints of the environment offers new opportunities for human achievements but, at the same time requires much more complex and adaptable institutional arrangements that add significant new dimensions to the age-old problems of social organization. Changes in technology, extent of the market, operating procedures, etc. create new patterns of external effects requiring constant institutional adjustment to direct individual efforts to socially desirable ends. As a result of experience with new work roles (and locations), new products, advertising etc., new ways of living evolve, influencing preferences and values. All this creates new incentives, a new round of investment in technology and further specialization. And, in this process a new organization of the political economy emerges. People have continuously modified the economy by institutions intended to protect selected individual interests and achieve some of the broader goals of the society.

What was original in Schaffer's work (1969) was that

even in free-market economies, institutions become obsolete, evolve, metamorphose and transform into new forms according to the dictates of the socio-political environment and technological innovations.

3.3.2 Problems on organization, administration and management of marketing organizations

According to Bauer and Yamey (1968), statutory measures designed to control or to modify the process of agricultural marketing or to reshape the structure of trade in agricultural produce are in force in many parts of the world. There are three broad types. First, there are measures designed primarily to raise the returns of certain classes of producers: monopolistic restrictions of supply, differential prices and subsidies fall in this group. Second, there are various measures designed, at least ostensibly, to stabilize prices or income. Third, a number of measures designed to improve agricultural marketing have been introduced in recent decades in many countries, these include reduction in the intermediaries, control of the channels of marketing, delimitation of the places where transaction may take place, elimination of inferior grades of products, and so forth.

Tousley et al., (1962) had noted that the decentralization of agricultural marketing had resulted in greater marketing efficiency and lower costs.

The Tanzanian special Presidential committee of Enquiry of 1966 into the operation of cooperatives and marketing boards found out that the agricultural cooperatives were not properly organised. The committee found widespread dissatisfaction among farmers.

Many of them complained that the cooperative societies, which were to protect them from middlemen exploitation, "--- instead place us under another worse type of middlemen under the cloak of cooperative societies and marketing boards". They complained "of the continuous economic plunder which we endure from the corrupted employees and committee men of the cooperative societies and unions; of inefficiency and the existence of too many marketing boards; of unnecessary delay (which) run for days and cause us to incur unnecessary expenses for food and sometimes storage charges". The farmers further complained of "improper and unfair grading of produce, of the methods used to fix prices, and of continual political threats which are imposed on us when we want to air our views" (Moyer and Hollander, 1969).

Sadan (1976) visualized marketing boards as an offshoot of the cooperative or even the unionist movement. Agricultural marketing cooperators were concerned with the problem of bargaining inequality. The marketing board was, in a sense an advanced form of cooperation. In other words the roots of "forced" or compulsory cooperation under marketing boards could be traced to earlier attempts at voluntary cooperation.

Sogga (1979) asserted that cooperative movement can in fact ascribe to class differentiation, hence to economic and social inequalities and manipulation. Consequently cooperative socialism in Tanzania, would if left unscrutinized advance class differentiation and economic and social inequality.

Msambichaka et al., (1983) noted that the implication of the centralization of marketing activities in crop authorities in Tanzania was the requirement of massive co-ordination and infrastructural abilities to handle the produce from all areas in the country. This necessitated the use of a large number of employees and a large transportation fleet. Delays in information flows hampered prompt attention to problems and financial discipline became more difficult to enforce. Moreover, the multiple roles of crop authorities in processing, marketing and production promotion strained their abilities both financially and in terms of skilled manpower and facilities. As a result, their overheads per unit volume of crop shot up excessively rapid, a situation made worse by the dwindling volume of crops handled. Frequent cries of non-payment to producers, inability to buy and the piling up of crops in buying posts led to another necessary review of the agricultural marketing system.

Keeler et al., (1982) found out that the performance of the parastatals themselves had contributed significantly to part of the decline in smallholder production of export crops in Tanzania as a result of:-

i) high operation costs

ii) late payment and procurement of crops

iii) poor accounting practices

iv) inadequate administration and supervision

v) stock losses, misuse of resources and corruption.

Naali (1985) and Hanel (1986) emphasized the dangers of too much government interventionist administrative bureaucratic pragmatism as regards the sponsorship of the institutional development of the cooperatives as well as their use as instruments for implementing various development policies and programmes.

3.4 Previous work on performance of marketing organization

3.4.1 Evaluation of the organization of marketing institution

The earliest evaluation on the performance of marketing system in Africa was in 1937 when the announcement of a market sharing agreement by the export merchants promoted a strike by the cocoa farmers in the Gold Coast. As a result of this strike, generally known as the cocoa-hold up, a commission of enquiry, the Nowell Commission, was appointed to enquire into the immediate dispute and more generally into the cocoa-marketing system of West Africa. The Report of the Nowell Commission of 1946 contained the most important and influential criticism of the pre-war system of marketing. It proposed the

establishment of collective marketing agencies, and these had the appearance of simplicity, efficiency and neatness (Bauer and Yamey, 1968).

After the First World War, the colonialists controlled exports from the colonies through: licensing of exports to direct them to specific destinations; statutory monopoly in the handling of the principle export; and a system of quotas in the purchase of export produce (Bauer and Yamey, 1968).

In Tanzania the earliest evaluation of the performance of the marketing system was by the Special Presidential Committee of Enquiry of 1966 (Moyer and Hollander, 1968).

Kriesel et al., (1970) found out that poor organization of the marketing system in Tanzania resulted in duplication of functions among institution (particularly boards and unions) and in indirect costs to government such as in supervising and regulating the operations and attempting to police and single channel the marketing system.

The decline in the trend of producers' price as percentage of f.o.b (V1) during the years 1970 - 1981 (See section 4.2.2.2) was also caused by the poor organisation of the marketing system such as:-

i) the decline in institutional participation and devolution (Moshi, 1980)

ii) constant changeover of crop marketing functions from one institution to another resulting in increases in operational costs (Moshi,

1980; Ellis and Hanak, 1980).

iii) too heavy work-load on one institution, for instance CAT had to provide extension services to coffee farmers and do research on coffee and at the same time perform the functions of crop processing and marketing. This resulted in inefficiency (Manday, 1977; Moshi 1980; Keeler et al., 1982).

iv) the over-taxation of the farmers by the government through the marketing institutions (Ellis and Hanak, 1980; World Bank, 1981; Keeler et al., 1982; Mrema, 1984).

The taxation of the Tanzania's coffee from Kilimanjaro Region is shown in Appendix A-7.

The problem of rising marketing costs has persistently plagued the institutions charged with marketing agricultural products. In Tanzania the crop marketing institutions have not been able to realize economies of scale because fixed costs have soared with the expansion of functions which they are expected to perform. Secondly export crop production declined over the decade (1972 - 1982). So there were no major sales increases which could bring about economies of scale which would cause lower unit marketing costs (Keeler et al., 1982).

3.4.2 Evaluation of the administration of marketing institutions

The Tanzania Special Presidential Committee of Inquiry of 1966 into the operation of cooperative and marketing boards (Moyer and Hollander,

1968) found out that the employees and committee men of these institutions were corrupt and inefficient when performing their administrative duties causing delays in the payment of farmers, faulty grading of produce and losses of gunny bags, crops and money. Bad administration had resulted in increases in marketing costs through the following factors (Kriesel et al., 1970):

i) employment of excess resources in marketing particularly labour by the cooperative movement.

ii) payment of excess rates for services, e.g. labour and transport.

iii) losses of produce in handling, storage or in transit.

iv) cash losses through theft.

High administrative expenses in the form of crop marketing institution's charges and levies resulted in low producer's price and consequently acted as a disincentive to farmers to produce more crops (Msuya, 1979; Ellis and Hanak, 1980; Moshi, 1980; Keeler et al., 1982).

3.4.3 Evaluation of the Management of Marketing institutions

The term management is wide and covers also some aspects of organization and administration of institutions. So the evaluation of the organization and administration of marketing organizations could also be considered as an evaluation of their management. In this section we

will, however, concentrate on the operational or functional aspects of running a marketing organization.

Westergaard (1972) did extensive economic baseline studies of the cooperative societies in Tanzania and had the following findings/recommendations:

i) there were differences in unit costs of different cooperative societies which could not be explained by the scale of operation.

ii) The reasons for the difference in marketing costs could be that one society provides more and/or better services to the members than the other society (e.g. in the form of more buying posts or more opening hours), but it could also be due to differences in efficiency.

iii) when one is comparing marketing efficiencies of societies one should not use the figure of the final payment to farmers but the "potential" final payment.

iv) A liquidity ratio of about 1.5 was normal for efficient cooperatives in Tanzania for the period 1967-1969.

Duelfer (1980) emphasized that one of the "higher level goals" of an executive unit is the "protection of the potential of the enterprise (qualified maintenance of real assets) and guarantee of liquidity". Duelfer (1980) means that for many business organizations the maintenance of liquidity is an indispensable goal.

Msuya (1979) found out that CAT charges and coffee levy were being deducted from coffee sales proceeds before payment to growers had been made to finance the parastatals operating expenses, including administrative, production advisory service, research, processing and some of the marketing expenses.

The actual quantification of these deductions was done by Ellis and Hanak (1980) who did an economic analysis of the coffee industry in Tanzania. They found out that:-

a) the share of the grower in the export price fell from 80.5% (period under KNCU) to 48.1% (Period under CAT) over the period of ten years (i.e 1969/1970 - 1978/1979).

b) the increase in the functions of a crop parastatal requires the maintenance of substantial work force which is one of the reasons why the then contemporary parastatals had much higher overhead costs than the former marketing system. The employment establishment of CAT in 1980 was 1,355 persons of which 852 were in the extension service, 394 were in zonal procurement offices, and 61 were in Head office in Moshi. The figures were recorded by the authority to be below the number of persons required to carry out all its function satisfactorily and the establishment was 1,939 persons.

c) a major source of the increase in the total deductions is found in CAT's costs and charges. These grew from T.shs. 4,037 per kilogramme, rising

from 6% to nearly 18% of the export price. Ellis and Hanak's (1980) analysis is summarised in Appendix A-5.

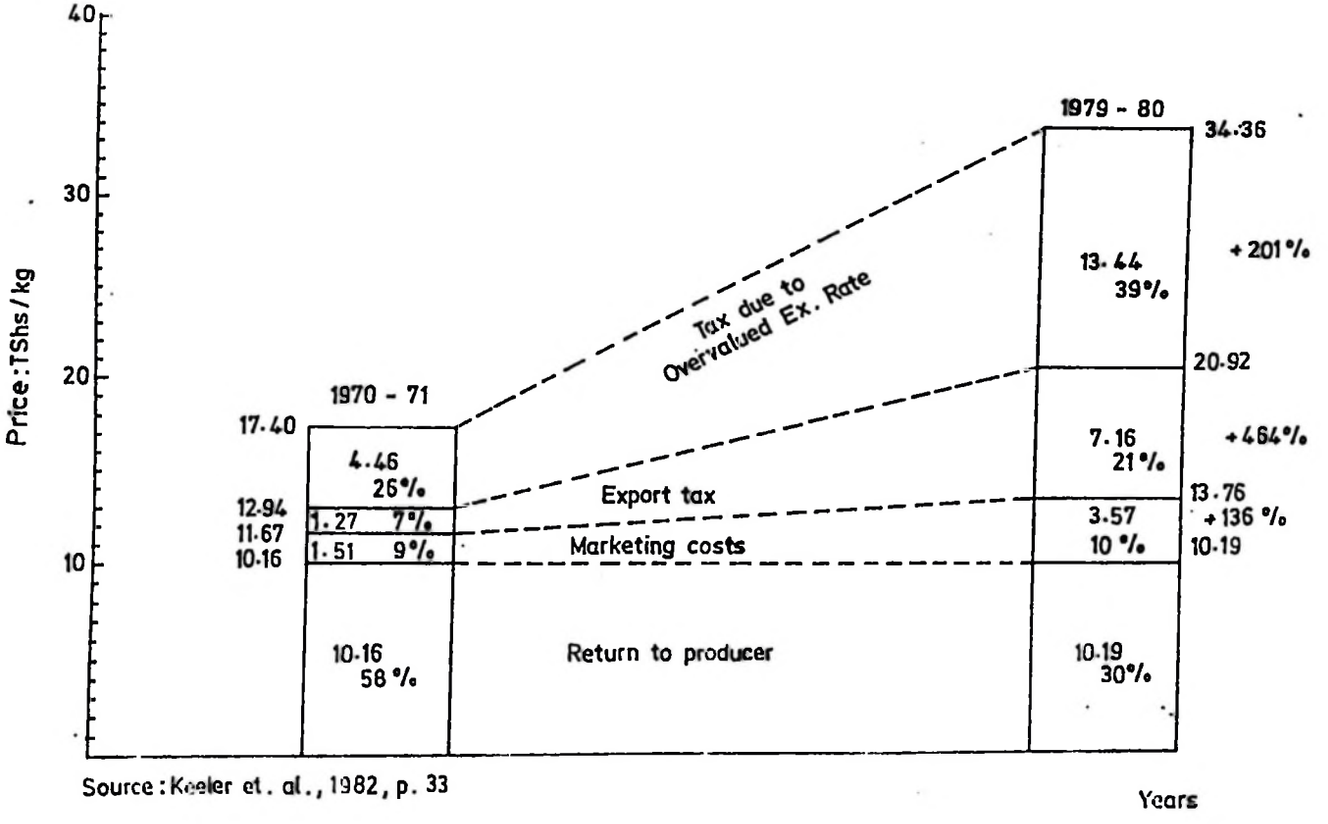
Keeler et al (1982) made a similar analysis for coffee prices and cost structures as did Ellis and Hanak (1980) but the former used constant prices instead of nominal prices.

Keeler et al (1982) findings are shown below (Figure 3-1) and Keeler et al (1982) conclusions were given above in section 3.3.2.

Rao (1985) in his study on marketing efficiency in Agricultural products in Guntur District in India stated that it is commonly believed that agricultural marketing in underdeveloped economies is relatively inefficient and wasteful. He further contended that the marketing cost in a particular area is dependent upon the infrastructure and the manner in which the marketing functions are performed. The cost of marketing assumes a focal point of interest in the marketing of most commodities since marketing costs directly affect the net returns to producers as well as consumer satisfaction. Cost of marketing, therefore, is frequently regarded by many as an index to measure marketing efficiency and total marketing costs are often estimated indirectly via prices spread or marketing margin (Rao,1985).

In this chapter it has been observed that the measuring of efficiency of industries and marketing institutions is very complicated. Many scholars have contributed to how to measure this efficiency. The efficiency of

Figure 3 . 1 . How the components of coffee marketing cost structure changed in the 1970's(in constant 1975 prices).



Source : Keeler et. al., 1982, p. 33

agricultural marketing cooperatives is particularly difficult to measure because cooperatives benefit not only their members but non-members also and tend to improve the infra-structure of the region in which they operate. So in the case of cooperatives one has to distinguish between business operational efficiency (micro-political), development efficiency (macro-political) and member-oriented efficiency (related to specific member objectives).

In general the efficiency of crop - marketing institutions can be approximated by evaluating the roles that these institutions play to farmers and the nation as a whole. In Tanzania crop marketing institutions have been unable to fulfil their roles because of inefficiency caused by faulty organization, administration and management. This has in turn caused variation in their administrative and marketing costs in space and time. This phenomenon is exemplified by structural changes that have occurred in coffee marketing institutions in Kilimanjaro Region in the period of 1970 - 1984.

CHAPTER IV

METHODOLOGY, RESULTS AND DISCUSSION

4.1 Methodology

4.1.1 Introduction

The analytical model used is a predictive model aimed at studying the time trends of the responses as indicated below. This section begins with a brief conceptual framework to support the analysis and interpretation of results. It is followed by a brief presentation of the model and specification of the variables and then by data needs, sources and analysis and the limitations of the model

4.1.2 Conceptual framework

In this study an attempt has been made to assess business operational efficiency of KNCU/TCB and CAT by using time series data. Development efficiency, and member oriented efficiency has been assessed by the Test-criteria presented in section 4.2.4 which were calculated by parametric and non-parametric methods from the primary data collected from a field survey. To this were added socio-economic development data collected from officials of KNCU and TCMB (formerly CAT). The test criterion of peasants' participation under KNCU/TCB and under CAT was left out because it had been covered fully by Moshi (1980) who

investigated the provision of participatory channels through which peasants can influence decisions affecting the coffee industry.

One might be interested to know whether a defacto comparison between KNCU, TCB and CAT would be reasonable/possible considering the different times, conditions, assumption, objectives and functions of these organizations. Of course, analytical comparison of different groups/organizations can be done provided that the variable factors under consideration are similar i.e. there is common base. In this case the main issues considered are the objectives and the level of operation for the specified organizations under study. The objectives of the three marketing organizations are presented in Section 1.1.2. With respect to level of operation, up to 14/5/76 KNCU was operating at regional level as an agent of TCB. From 14/5/76 to 1/1/78 TCB was operating alone doing the coffee marketing functions of KNCU as well as its own duties. From 1/1/78 CAT took over all the functions of KNCU and TCB. In addition CAT had other functions of coffee production improvement.

So it would be more appropriate to compare TCB (now TCMB) with CAT which were operating at national level. However, because of the limitations of resources and time, it was not possible to cover the operations of TCB and CAT in the entire country. This part of research was, therefore, limited to the area of operation of these organizations in Kilimanjaro Region and specifically in Hai, Rombo and Moshi Rural Districts where KNCU had been

and is operating. Luckily enough the accounts of TCB and CAT are regionalized so that it was possible to get figures for these districts from the records of the Northern zone of CAT and for KNCU in the case of TCB. That is figures for Hai, Rombo and Moshi Rural Districts of Nothern Zone of CAT were compared to those of KNCU. Moshi (1980) did a similar analysis when he compared peasants economic participation under KNCU/TCB and CAT in his thesis.

A good indication of how the marketing efficiency of these organizations had been changing over time is the time trends of such responses as producer's price as percentage of f.o.b. price, unit marketing costs, unit administrative costs, etc. The time series data capture the effects of endogenous and exogenous factors influencing marketing efficiency overtime. The exogenous factors associated with inflation, for instance, price of imports can be assumed to be constant if the nominal figures are deflated by means of NCPI. The evolution of the trends of the constant figures of the time series data can then be observed and their intercepts and slopes can be estimated by Oridinary Least Squares (OLS) method. Structural stability tests can be applied to each response to test whether there had occurred significant changes in the trends of these responses during the period under study.

If such changes would be observed it would be concluded that the changes in the marketing system were the cause. Of course, other factors-endogenous and exogenous-can be

attributed to the observed structural shifts. The latter factors have been looked into briefly in section 4.2.3.

A field survey was conducted to find out the farmers attitudes towards the type of marketing system in operation. In this way it was possible to tell which marketing system was more efficient in terms of member-oriented and developmental efficiency. This in turn enabled us to asses whether the structural change was beneficial or deleterious to the farmers and to the national economy.

In order to test whether or not the test criteria used in the field survey are independent of the type of organization in operation Chi-square tests were conducted. By comparing the proportion of those farmers in favour of one organization to those in favour of the other, is possible to find out whether there is a significant difference in the preference of one marketing system to the other.

4.1.3 Theoretical Model

The linear trends in time have been analyzed by means of Multiple Regression and dummy variables, as shown in the following equation:-

$$V_t = \beta_0 + \beta_1 D_1 + \beta 2 X_t + U_t \quad 4.1$$

where V_t = Responses or dependent variables

D_1 = Dummy variable

X_t = Independent variables

U_t = Stochastic disturbance

D_1 = (0 if Xt refers to years 1977-1984)

(1 if Xt refers to years 1970-1976)

The trends of the following responses or dependent variables have been analyzed:-

V1 = Producer's Price as percentage of f.o.b. price

V2 = Unit marketing margin[1] in constant prices

V3 = Unit marketing costs[2] in constant prices

V4 = Unit marketing costs as percentage of f.o.b price

V5 = The "Potential"[3] final payment in constant prices

V6 = Unit administrative expenses as percentage of unit marketing costs

V7 = Unit administrative expenses in constant prices

V8 = Current (Liquidity) ratio

V9 = Quantity of coffee sold in million kilogrammes.

This being a time series trend model the independent variables have been taken to be simply each of the years 1970 - 1984. For each year one value of each response has been sampled.

In order to be able to find out whether or not the true relation between V_t and X_t is the same for both of the sub-periods 1970 - 1976 and 1977 - 1984, the intercepts and slopes have been allowed to vary, by incorporating into the equation 4.1 the dummy and cross - products terms:-

$$V_t = \beta_0 + \beta_1 D_1 + \beta_2 X_t + \beta_3 D_1 X_t + U_t \quad 4.2$$

Mean for KNCU = E ($V_t/D_1 = 1$)

$$= \beta_0 + \beta_1 + (\beta_2 + \beta_3) X_t \quad 4.3$$

Mean for CAT = $E(V_t/D_1 = 0)$

$$= \beta_0 + \beta_2 X_t$$

To test whether or not the true relation between Vt and Xtis the same for both of the sub - periods (1970 - 1976 and 1977 - 1984) a second model (restricted model) of the form

$$V_t = \beta_0 + \beta_2 X_t + U_{2t} \quad (4.4) \text{ is required.}$$

The two models 4.2 and 4.4 are estimated by Least Square Method and the test is based on the ratio

$$\frac{(SSE_R - SSE)/df}{SSE/df} \quad 4.5$$

where SSE_R = sum of squared errors in the restricted model.

SSE = sum of squared errors in the unrestricted model

If the relationship is the same for both of the sub-periods, then ratio 4.5 should approach zero (Beals 1972).

In particular, the structural stability test is conducted by comparing the calculated F values to the tabulated F critical values at $\alpha = 0.05$ and the corresponding degrees of freedom (df). We should reject the mull hypothesis when Fcal > F tab and conclude that on the basis of the evidence available the relation between V_t and X_t is not the same in both sub-periods.

The difference in the intercepts of the trend lines with the V_t - axis is given by the coefficient β_1 and the difference in the slopes of the trend lines of the two sub - periods is given by the coefficient β_3 in the

regression equation 4.2. Whether or not this difference is significant can be tested by t - tests on the individual coefficients.

4.1.4 Limitations of the theoretical model

It is important to note that, like any other research, the results obtained are subject to a number of limitations. The effectiveness of a predictive model depends to a greater extent on the number of variables included. The more the variables the greater the chances of capturing the true behaviour of the problem. The model specification for the regression analysis used in this study was limited by the number of variables included. Only time was considered as independent variable.

However, there are many other variables which affect future prices and cost structures which were left out because of the difficulty of quantifying them given the time limitation. These variables include prices of Supplementary and competative goods; income, preferences of consumers, population, weather, factor input, crop disease, etc. The omission of such variable may result in low R^{-2}.

4.1.5 Data needs and sources

The data needed for analysis were collected from both the primary and secondary sources. Primary data were obtained from single visit interviews to members of rural cooperative societies affiliated to KNCU in 1987 using

structured questionnaire shown in Appendix G.

The secondary data were obtained from KNCU, TCB and CAT balance sheets and budgets; annual reports, minutes of general meetings and committee members meetings; MDB reports for 1982 - 1986, Economic and Operations Reports of Bank of Tanzania for June 1981 - June, 1985.

4.1.5.1 Questionnaire Design

The questionnaire was designed with the purpose of obtaining data that should help to find out whether there is a significant difference in the preference of marketing system under KNCU/TCB to that under CAT.

The questionnaire contained three parts. The first part was designed to obtain identification particulars of the research area and the respondents. The second part was designed to obtain data for developing different test criteria for crop marketing efficiency which is discussed in section 4.2.4.

The third part was designed to find out the socio-economic development brought about by the marketing organization in operation. Only a few officials at the regional and national headquarters were expected to fill out this part to provide information needed for evaluating the development efficiency

which the organization in question had brought about in the research area.

4.1.5.2 Sampling Design and Selection of Respondents

The study involved KNCU, TCB and CAT and ten rural cooperative societies affiliated to KNCU. The survey was conducted in Hai and Moshi Rural Districts in Kilimanjaro Region, Tanzania. A random sample of 5 primary cooperative societies was selected from each district. The rural cooperative societies studied were Masama-Mula, Mshare, Kibong'oto, Machame-Nkuu and Machame North from Hai District; and Uru Central Mawella, Mamba, Mwika West, Marangu East and Marangu West from Moshi Rural District. These societies are listed in Appendix E and their locations are indicated in Figure 1-3. A sample of five members was chosen at random from each selected rural cooperative society. Except for the initial bias, this is a multi-stage sampling and it gave a total of 50 respondents.

4.1.5.3 Data Collection

First of all a pilot study was conducted by administering the questionnaire to six farmers from which adjustments were made to the

questionnaire. Most of the questionnaires were administered by the researcher, but to avoid personal bias, one fifth of the questionnaires were administered by students of the cooperative college, Moshi.

4.1.5.4 Problems encountered during data collection

Since Kilimanjaro Region is relatively developed compared to other regions in Tanzania, the research encountered only a few problems during data collection exercise. Lack of reliable means of transport had forced the researcher to rely on public transport for visits to the stations. Thus if there was no fuel the researcher automatically got stranded.

4.1.5.5 Data analysis

The tools of analysis which have been employed in this study include tabulation, regression, Chi-squares test for independence and t-tests. Tabulation was used for calculating unit costs, ratios and percentages for comparison purposes. The regression analysis was used to estimate the slopes and intercepts of the trend lines for each sub-sample. The t-tests were used to test the significance of the coefficients

of the regression equation. Chi-square and t-tests were used for testing whether there was a significant preference for the marketing system under TCB to the one under CAT.

4.1.5.6 Limitations of the data used

The primary data obtained from the field survey were limited by the problem of measuring people's attitudes.

The ordinal and nominal scale used cannot be absolutely accurate or cover the attitudes completely.

The most serious limitation of the secondary data collected was getting accurate data. Most institutions keep their data as confidential and the published figures are not necessarily the true ones. Also human errors are bound to occur when processing total figures into unit figures. Sometimes it was difficult or impossible to get a breakdown of cost-stuctures of crop marketing because the coffee marketing institutions were not making a detailed analysis of costs and expenditures by indicating the different cost/expense categories per unit of crop marketed.

4.2 Results and Discussion

4.2.1 Introduction

This section is sub-divided into four sub-sections. The first subsection is the introduction. The second subsection discusses the trends of time series data of the responses used to indicate marketing efficiencies. The results of the regression

analysis are summarised in the third sub-section. The fourth sub-section discusses the results of the field survey.

4.2.2 Trends of the time series data used to indicate marketing efficiencies.

4.2.2.1 Introduction

The time series data obtained as explained above in section 4.1.5 were used to estimate the trends of the dependent variable V_t with respect to the independent variable X_t. The regression of V_t on X_t for the sub-periods 1970 - 1976 and 1977-1984 and for the restricted and unrestricted models are shown in Appendices A - 11 to A - 14.

Test results based on regression analysis referred to above are presented in Table 4 - 1.

4.2.2.2 Producer's price as percentage of f.o.b. price

The results of regression analysis were:

i) $V_i = 27.963 + 58.966\ D_i + 2.288X_t - 4.837\ D_iX_t$

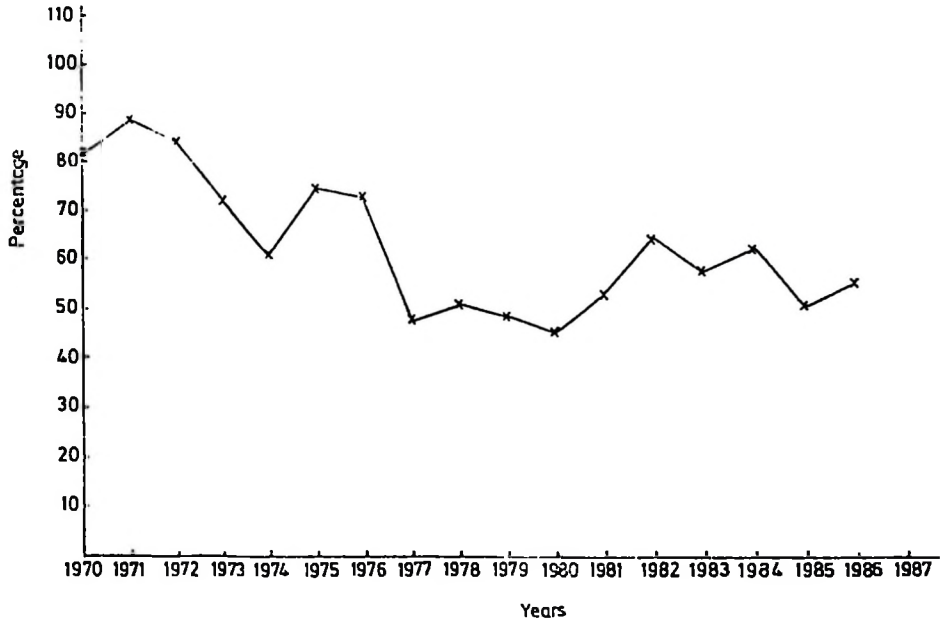
ii) $R^2 = 0.804$

iii) $P\ (F > 20.10) < 0.05$

The result of structural stability test was that $F_{cal} > F_{tab}$ at $\alpha = 0.05$; df_{11} $(15.30 > 3.98)$.

From these results the null hypothesis is rejected and it is concluded that the true relation between V_i and X_t was significantly different in both the sub-periods, 1970-1976 and 1977-1984. The difference in the intercepts of the trend lines for

Figure 4—1 V_1 - Evolution of producers price as percentage of FOB price , 1970, 1986



Source : Compiled from balance sheets and budgets of KNCU, TCB and CAT and from MDB reports .

the two sub-periods with V_1 - axis is given by the co-efficient β_1. This difference was found to be statistically significant at $\alpha = 0.05$. The t-tests results are shown in Appendix A - 14.

From these results it is inferred that the mean producer's price as percentage of f.o.b. price was significantly higher during KNCU period than during CAT time (86.929 > 27.963). These mean values are shown in Appendices A - 11 and A - 12. This ratio had been falling slightly since 1970, but it started to rise significantly again from 1981 on wards. This was due to higher f.o.b prices.

Table 4-1: Kilimanjaro Region. Trends of Coffee prices and cost structures, 1970-1984 - structural stability tests summary.

	ESS_R	df_R	ESS_1	df_1	ESS_2	df_2	ESS_1+ESS_2	df	Test statistic Fcal	Critical value $F_{\alpha=0.05,df}$	CONCL.
V1	1398.2	13	287.1	5	129.82	6	416.92	11	15.30	3.98	SIGN
V2	361.0	13	11.620	5	43.05	6	54.67	11	36.42	3.98	SIGN
V3	9.400	13	1.036	5	2.903	6	3.939	11	9.01	3.98	SIGN
V4	566.62	13	5.166	5	169.16	6	174.326	11	14.63	3.98	SIGN
V5	285.53	13	53.44	5	65.010	6	118.450	11	9.11	3.98	SIGN
V6	255.08	12	80.450	4	118.75	6	199.180	10	1.68	4.10	INSIGN
V7	0.347	12	0.0145	4	0.081	6	0.0955	10	15.85	4.10	SIGN
V8	0.536	12	0.169	4	0.014	6	0.183	10	11.57	4.10	SIGN
V9	213.1	13	111.310	5	94.67	6	205.98	11	0.225	3.98	INSIGN

Source: Calculated from the survey data
Subscript 1 refers to line 1 Appendix A - 11
2 refers to line 2 Appendix A - 12
R refers to Restricted Model Appendix A - 13.

This result is in line with the findings of Ellis and Hanak (1980); Moshi (1980) and Keeler et al (1982). The trend of V_1 is depicted graphically in Figure 4 -1. The way the producer's price was calculated is shown in Appendix A - 10.

4.2.2.3 Unit marketing margin at constant prices

The results of regression analysis were:

i) $V_2 = 34.121 - 32.97D_1 - 2.251X_t + 2.711D_1X_t$

ii) $R^2 = 0.815$

iii) $P(F > 21.56) < 0.05$

The result of structural stability test was that $F_{cal} > F_{tab}$ at $\alpha = 0.05$, df_{11} (36.42 > 3.98).

From these results the null hypothesis is rejected and it is concluded that the true relation between V_2 and X_t was significantly different in both the sub - periods 1970-1976 and 1977-1984.

The difference of the intercepts of the trend lines for the two sub-periods with V_2 -axis is given by the coefficient β_1. This difference was found to be statistically significant at $\alpha = 0.05$. The t-test results are shown in Appendix A-14. From this result it is inferred that the mean unit marketing margin in Tshs/kg was significantly higher during CAT time than during KNCU time (34.121 > 1.149).These mean values are shown in Appendices A-11 and A-12.This margin was rising insignificantly during KNCU time. When the CAT took over it shot up to a peak of 20.19 in 1977/78 and it then started to fall significantly. This result is in line with the findings of Ellis and Hanak (1980);Keeler et al (1982). The trend of V2 is depicted graphically in Figure 4.2.

Figure 4 - 2. V_2 - Evolution of unit marketing margin through time at constant prices (NCPI :1977 = 100), 1970_ 1984

Source : Compiled from balance sheets and budgets of KNCU, TCB and CAT and from MDB reports.

4.2.2.4 Unit marketing costs in constant prices

The results of regression analysis were:

i) $V_3 = 4.728 - 3.143D_1 - 0.11X_t + 0.11D_1 X_t$

ii) $R^2 = 0.714$

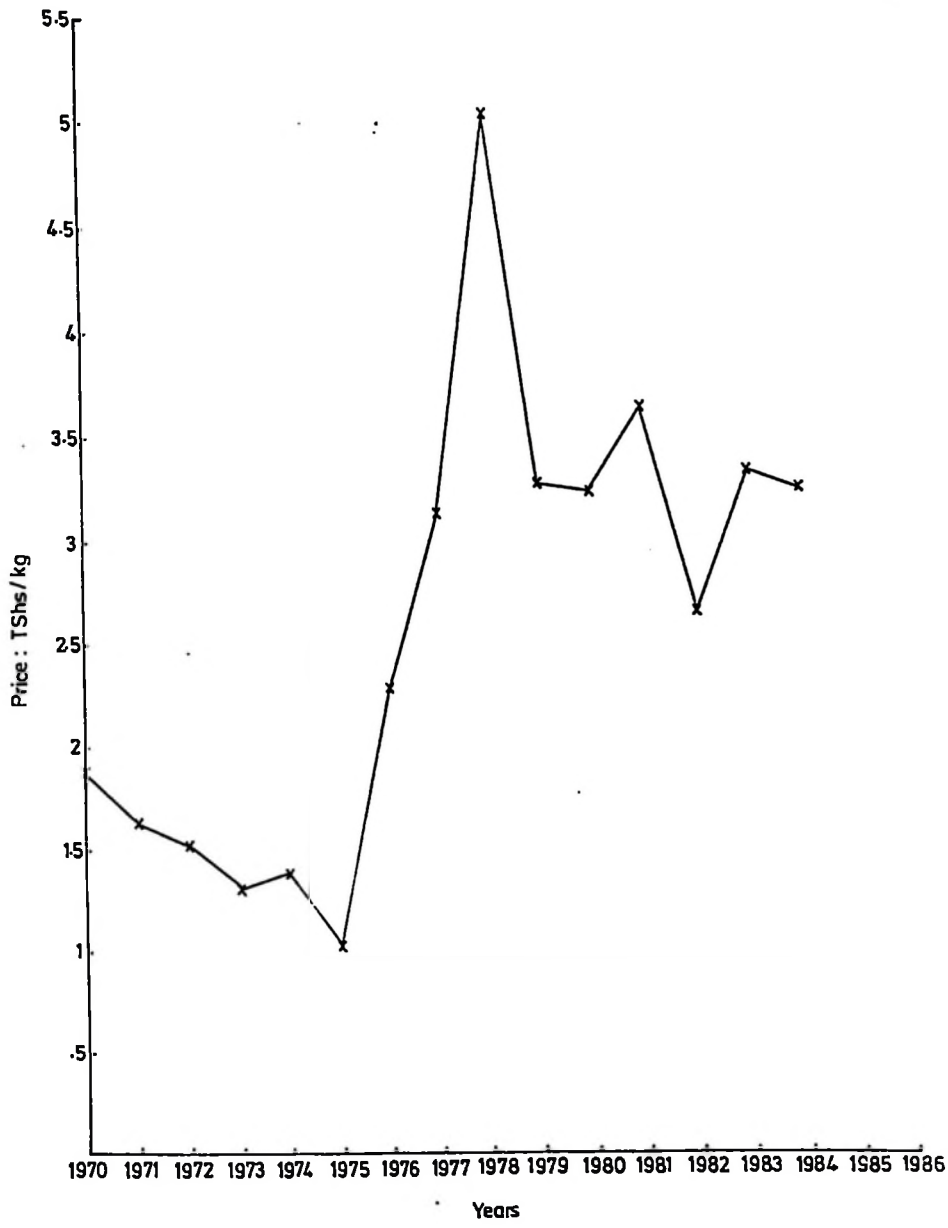
iii) $P\ (F > 12.648) < 0.05$

The result of structural stability test was that $F_{cal} > F_{tab}$ at $\alpha = 0.05$, df_{11} (9.01 > 3.98)

From these results the null hypothesis is rejected and it is concluded that the true relation between V3 and Xt was significantly different in both the sub - periods, 1970 - 1976 and 1977 - 1984.

The difference of the intercepts of the trend lines for the two sub-periods with V_3 - axis is given by the coefficient β_1. This difference was found to be statistically significant at $\alpha = 0.05$. The t-test results are shown in Appendix A-14. From this result it is inferred that the mean unit marketing costs in Tshs/kg were significantly higher during CAT period than during that of KNCU (4.728 > 1.586). These mean values are shown in Appendices A-11 and A-12. These costs have been falling significantly through the period under study. The slope of the trend line did not change significantly from the time the cooperatives were dissolved in 1976 to 1984. This paradox is explained by the fact that there was an almost parallel shift of the trend line in the second sub-period when compared to the first sub-period. But the unit marketing costs of the second period were significantly higher than those of the first sub-period. This interesting phenomenon can be seen in the trend of V3 as depicted graphically in Figure 4-3.

Figure 4 - 3. V_3 - Trend of unit marketing costs at constant prices (NCPI : 1977 = 100), 1970 - 1984 .



Source : Compiled from balance sheets and budgets of KNCU, TCB and CAT and from MDB reports .

The rise in unit marketing costs during CAT period could be explained by (i) in-efficiency (ii) rise in transportation costs especially petroleum and spare parts due to inflation (Inflation was, however, considered by using NCPI: 1977 = 100 as deflator) and (iii) the fact that at the beginning CAT had no agents at the village level.Before it had established village level buying posts, CAT used to haul coffee directly from the farmers. Employment of too many vehicles and staff and inadequate supervision caused unit marketing costs to shoot up during CAT time. These findings are in line with the findings of Westergaard (1972); Moshi (1974); Mlay (1975) Moshi (1980); Ellis and Hanak (1980); Keeler et al (1982) and Rao (1985).

4.2.2.5 Unit marketing costs as percentage of F.O.B price

The results of regression analysis were:

i) $V_4 = -25.58 + 37.195D_1 + 4.518X_t - 4.738D_1X_t$

ii) $R^2 = 0.886$

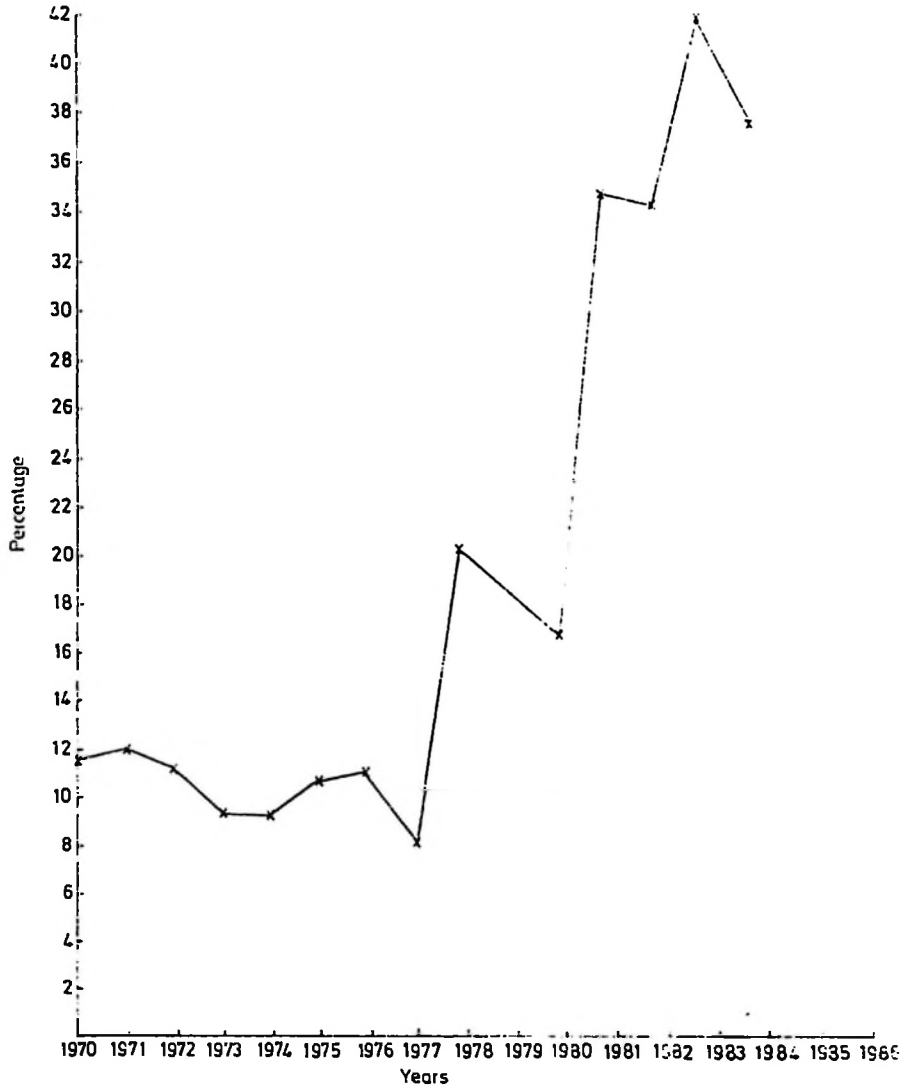
iii) $P(F > 1.368) < 0.05$

The result of structural stability test was that $F_{cal} > F_{tab}$ at $\alpha = 0.05$, df_{11} (14.63 > 3.98).

From these results the null hypothesis is rejected and it is concluded that the true relation between V_4 and X_t was significantly different in both the sub-periods, 1970 - 1976 and 1977 - 1984.

The difference in intercepts of the trend lines for the two sub - periods with V_4 - axis is given by the coefficient β_1. This difference was found to be statistically significant at $\alpha = 0.05$. The t - test

Figure 4-4. V_4 -The trend of unit marketing costs as percentage of F.O.B. price, 1970_1984



Source: Compiled from balance sheets and budgets of KNCU, TCB and CAT and from MDB reports.

results are shown in Appendix A - 14.

From this result it is inferred that the mean unit marketing costs as percent of F.O.B. price were significantly higher during CAT time than during KNCU time. In fact between 1977-1984 the rise in unit marketing costs as percentage of F.O.B. price was so sharp that the intercept of the trend line with V_4 - axis changed from a positive value of 11.619 to a negative value of -25.576. This can be seen from the trend of V_4 which is depicted graphically in Figure 4-4. The sharp increase was observed as from 1980 when it rose from 16.6% to 37.43% in 1984 an increase of 226%. The different values for V_4 for the years 1970-1984 can be found in Appendix B-4. This result is in line with findings of Ellis and Hanak (1980).

4.2.2.6 The "Potential" final payment in constant prices

The results of regression analysis were:

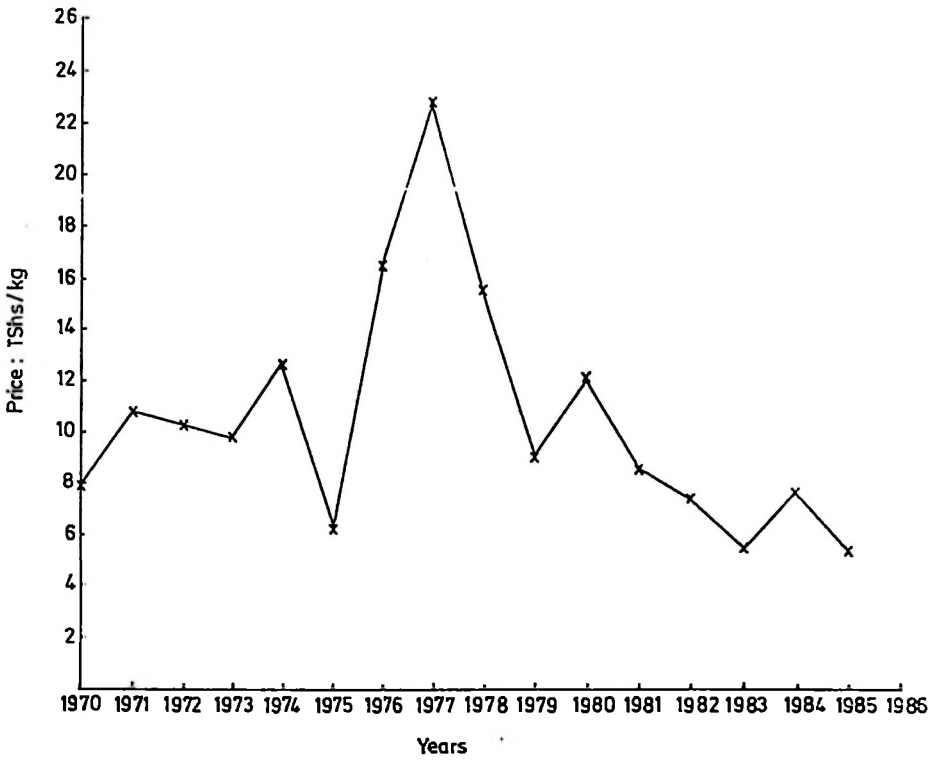
i) $V_5 = 33.77 - 25.80D_1 - 1.969X_t + 2.647D_1 X_t$

ii) $R^2 = 0.459$

iii) $P(F > 5.46) < 0.05)$

The low R^2 and F values indicate that not all variables were included in the regression equation or much of the variation in V5 is determined by factors for which adequate measures were not achieved (Orden and Buccola, 1980). Only time was considered in equation 4.2, whereas, the "potential" final payment is mainly influenced by the sum of actual final payment and surpluses on marketing accounts plus contributions to

Figure 4-5. V_5 -Trend of the potential final payment in constant prices (NCPI : 1977 = 100), 1970_1985



Source: Compiled from balance sheets and budgets of KNCU, TCB and CAT and from MDB reports.

non-marketing funds such as the pest control fund, the education funds, diversification fund, CIDP cess, CBD Levy and local roasting subsidy (Westergaard, 1972).

The result of structural stability test was that $F_{cal} > F_{tab}$ at $\alpha = 0.05$, df_{11} (9.11 > 3.98).

From these results the null hypothesis is rejected and it is concluded that the true relation between V_b and X_t was significantly different in both the sub-periods, 1970-1976 and 1977-1984.

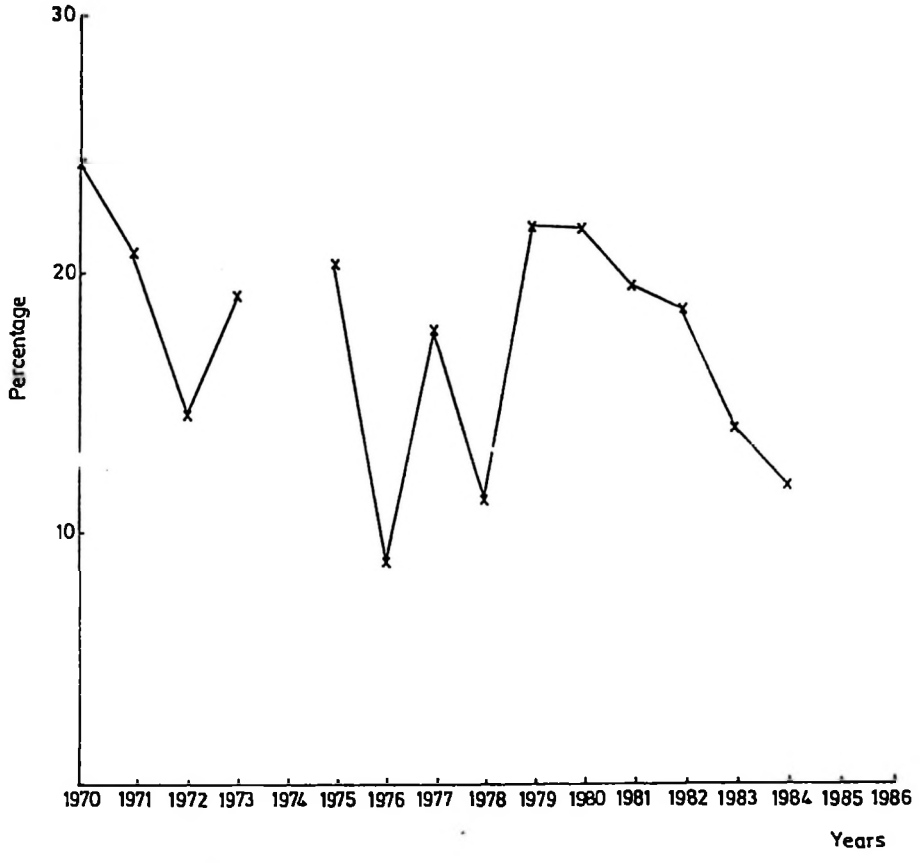
The difference of the intercepts of the trend lines of the two sub-periods with V_b - axis is given by the co-efficient β_1. This difference was found to be statistically significant at $\alpha = 0.05$. The t-test results are shown in Appendix A-14. From this result it is inferred that the mean 'potential' final payment in Tshs/kg during CAT period was significantly higher than during KNCU time (33.772 > 7.970). These mean values are shown in Appendix A-11 and A-12. This result shows that CAT could have paid the farmers higher producer's price were it not for its high deductions from the sales price in the form of levies, cesses, and other institutional charges to cover administrative expenses. This result is in line with the findings of Moshi (1980) and with verbal confirmation from Nd. Mkiramweni, Senior Management Accountant of TCMB (1987). The trend of V_b is depicted graphically in Figure 4-5.

4.2.2.7 Unit admisistrative expenses as percentage of unit marketing costs

The results of regression analysis were:-

i) $V_b = 22.402 + 1.726D_1 - 0.460X_t - 1.164D_1 \boxtimes X_t$

Figure 4-6. V_6 -The trend of unit administrative expenses as percentage of unit marketing costs, 1970_1984 [1]



1) Datum for 1974 was not available.
Source: Compiled from balance sheets and budgets of KNCU, TCB and CAT and from MDB reports.

ii) $R^2 = 0.078$

iii) $P\ (F > 1.368) < 0.05$

The low R^2 and F values indicate that not all variables were included in the regression equation (Orden and Buccola, 1980).

The result of structural stability test was that $F_{cal} < F_{tab}$ at $\alpha = 0.05$, $df_{1,0}$ $(1.68 < 4.10)$.

Looking at these results the null hypothesis cannot be rejected and it is concluded that the true relation between V_6 and X_t was more or less the same for both the sub - periods, 1970 - 1976 and 1977 - 1984. In other words there did not occur significant changes in the slopes and intercepts of the trend lines of the two sub-periods with the V_6 - axis. The difference was found to be statistically not significant at $\alpha = 0.05$. The t-test results are shown in Appendix A-14.

From this result it is deduced that there were no significant changes in unit administrative expenses as percentage of unit marketing costs in the two sub-periods. During CAT time the marketing costs were so high that even though the CAT's unit administrative expenses were higher than those of KNCU (see V_7) the ratio of CAT's unit administrative expenses as percentage of unit marketing costs came out to be not significantly lower than that of KNCU $(22.4 < 24.13)$. These mean values are shown in Appendices A-11 and A-12. This result is in line with the findings of Keeler et al (1982). The trend of V_6 is depicted graphically in Figure 4-6. The datum for 1974 is missing because the KNCU 1974 balance sheet is one of the missing/lost

archives of the marketing institutions that were in operation before 1976.

4.2.2.8 Unit administrative expenses in constant prices

The results of regression analysis were:-

i) $V_7 = 0.898 - 0.484D_1 - 0.279X_t - 0.761D_1 \boxtimes X_t$

ii) $R^2 = 0.735$

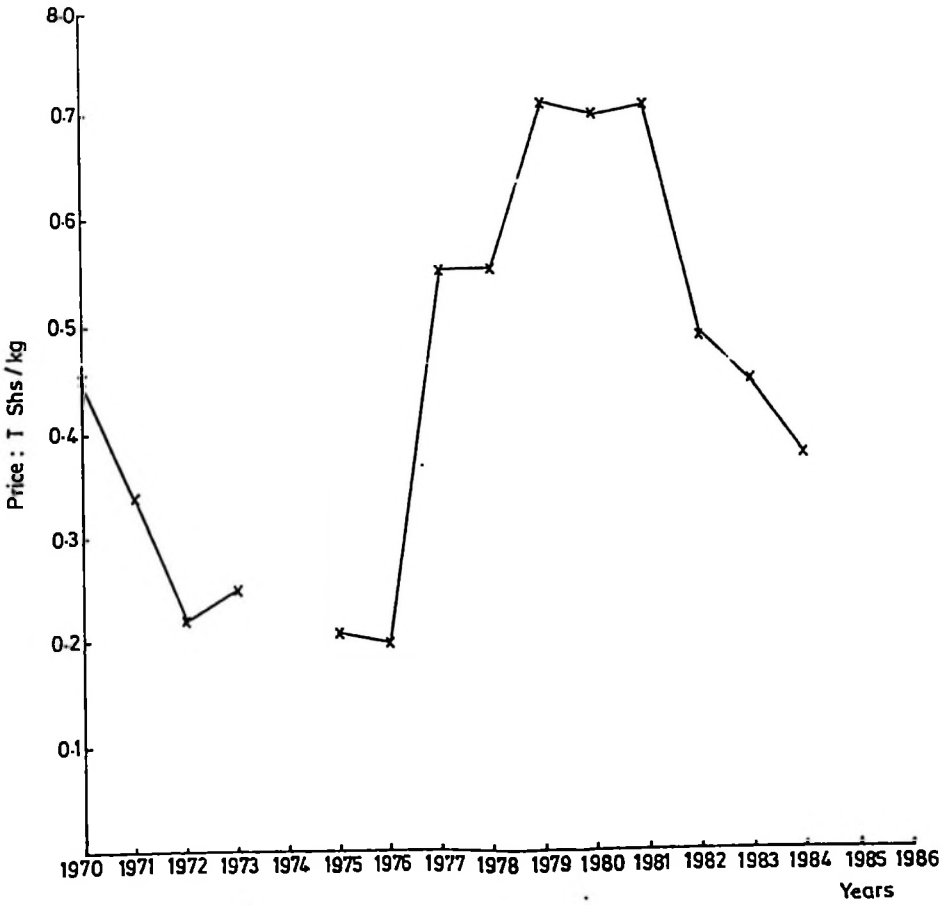
iii) $P (F > 13.0) < 0.05$

The result of structural stability test was that $F_{cal} > F_{tab}$ at $\alpha = 0.05$, df_{1c} (15.83 > 4.10).

From these results the null hypothesis is rejected and it is concluded that the true relation between V_7 and X_t was significantly different in both the sub-periods, 1970 - 1976 and 1977 - 1984.

The difference of the intercepts of the trend lines of the two sub-periods with V_7-axis is given by the coefficient β_1. This difference was found to be statistically significant at $\alpha = 0.05$ as shown in Appendix A-14. From this result it is inferred that there was significant change in unit administrative expenses after KNCU had been dissolved in 1976. In fact, in both sub-periods, unit administrative expenses (UAE) in Tshs/kg were falling over time, but on the average CAT's UAE were significantly higher than KNCU's (0.899 > 0.414). These mean values are shown in Appendices A-11 and A-12. This result is in line with the findings of Msuya (1979) and Keeler et al. (1982). The trend of V_7 is depicted graphically in Figure 4-7. The datum for 1974 is missing since the KNCU 1974 balance sheet is one

Figure 4 -7. V_7 -Trend of unit administrative expenses at constant prices (NCPI : 1977 = 100), 1970_1984 [1]



1) Datum for 1974 was not available .

Source: Compiled from balance sheets and budgets of KNCU, TCB and CAT and from MDB reports .

of the missing/lost archives of the marketing institutions that were in operation before 1976.

4.2.2.9 Current (Liquidity) ratio

The results of regression analysis were:-

i) $V_B = 1.05 + 0.865D_1 + 0.524X_t - 0.144D_1 \boxtimes X_t$

ii) $R^2 = 0.751$

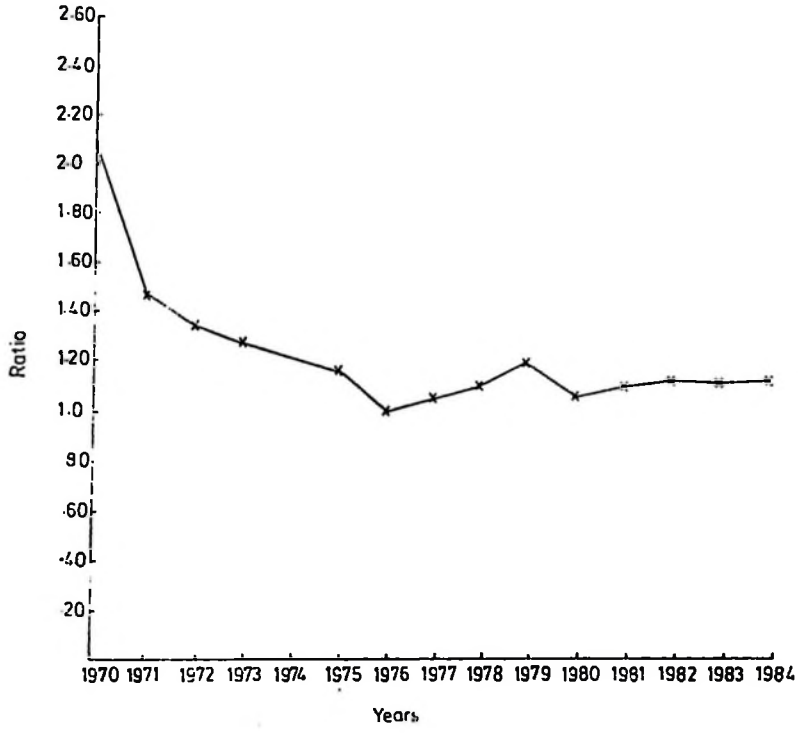
iii) $P(F > 14.09) < 0.05)$

The result of structural stability test was that $F_{cal} > F_{tab}$ at $\alpha = 0.05$, df_{10} (11.57 > 4.10). From these results the null hypothesis is rejected and it is concluded that the true relation between V_B and X_t was significantly different in both the sub-periods, 1970-1976 and 1977 - 1984.

The difference in intercepts of the trend lines for the two sub-periods with V_B-axis is given by the co-efficient β_1. This difference was found to be statistically significant at $\alpha = 0.05$ as shown in Appendix A-14. From this result it is inferred that there was significant change in the liquidity of the marketing institutions after the dissolution of cooperatives in 1976. The liquidity changed significantly from a mean of 1.914 during KNCU time to a mean of 1.05 during CAT time. These values are shown in Appendicies A-11 and A-12. During KNCU period the liquidity was significantly falling over time. During CAT time the liquidity was on the average slightly lower but it was not rising significantly over time.

In all periods liquidity was on the average above

Figure 4-8. V_8 -The trend of current (Liquidity) ratio, 1970 - 1984



Source : Compiled from balance sheets and budgets of KNCU , TCB and CAT and from MDB reports

1.0, implying that current assets were greater than current liabilities all the time. This can be seen in the trend of V_8 as depicted graphically in Figure 4-8.

Not much has been done of financial ratios in Tanzania. Westergaard (1972) came out with a liquidity ratio of about 1.5 as being normal for efficient cooperatives in Tanzania for the period 1967 - 1969. According to this criterion KNCU was slightly over-liquid, implying that some capital was tied down. CAT, however, was under-liquid implying that it was facing problems in paying its creditors - no wonder it was sometimes unable to pay farmers on time.

4.2.2.10 Coffee sales

The results of the regression analysis were:-

i) $V_9 = 16.85 - 5.27D_1 - 0.65X_t + 0.494D_1 \boxtimes X_t$

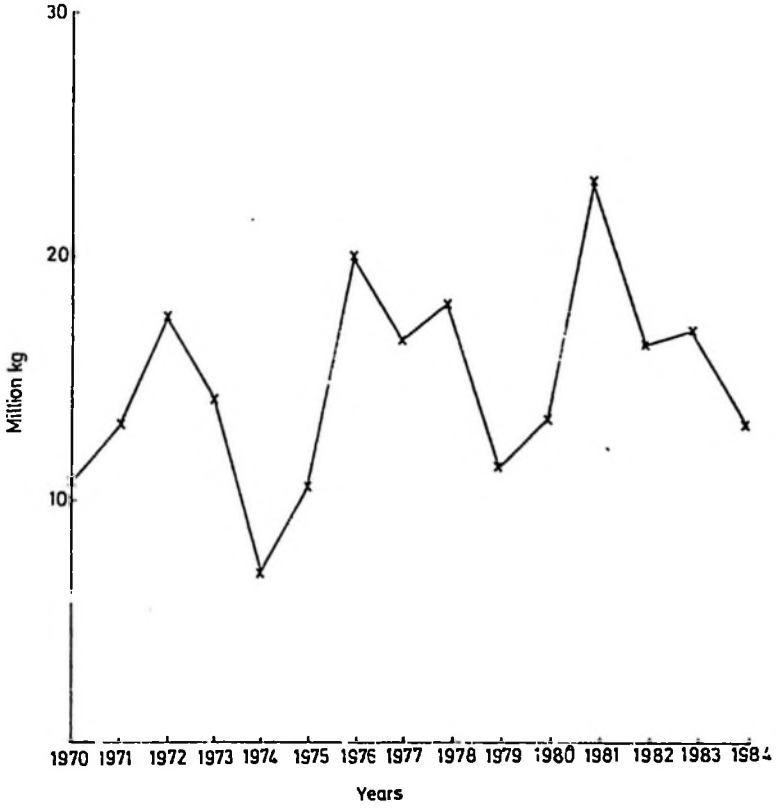
ii) $R^2 = - 0.089$

iii) $P (F > 0.618) < 0.05$

The low R^2 and F values indicate that not all variables were included in the regression equation or much of the variation in V_9 is determined by factors for which adequate measures were not achieved Corden and Buccola, 1980). Only time was considered in equation 4.2, whereas the quantity of coffee sold depends on many factors including the weather, factor input; diseases like CBD, prices, income and preferences of consumers, etc.

The result of structural stability test was that $F_{cal} < F_{tab}$ at $\alpha = 0.05$, df_{11} (0.225 < 3.98). From this result the null hypothesis can not be rejected and it is concluded that the true relation between V_9 and X_t was

Figure 4 -9. Vg - The trend of the quantity of coffee sold in Kilimanjaro region, 1970_1984



Source : Compiled from balance sheets and budgets of KNCU, TCB and CAT and from MDB reports.

more or less the same for both the sub - periods, 1970-1976 and 1977 - 1984. In other words there did not occur significant changes in the slopes and intercepts of the trend lines of the two sub - periods with the V_9 - axis. The difference in intercepts of the trend lines for the two sub - periods with V_9 - axis is given by the coefficient β_1. This difference was found to be statistically not significant at $\alpha = 0.05$ as shown in Appendix A-14. From this result it is inferred that there was not a significant change in the quantity of coffee sold during the periods under study.

During the KNCU time the quantity of coffee marketed in mill. kg was increasing significantly over the sub-period under study. During the CAT period, the quantity of coffee marketed was decreasing, albeit not significantly. This can be seen in the trend of V_9 as depicted graphically in Figure 4 - 9.

4.2.3 Summary of regression analysis

On the basis of structural stability tests (Table 4-1),

HO1: $\beta_1 = \beta_3 = \beta_5$ is rejected for all the variables except V_6 and V_9 and it is concluded that there occurred significant changes in the time relation between all the responses, V_t and X_t except for responses V_6 and V_9.

Since (i) there were significant changes in the trends of 77.8% of the dependent variables in favour of KNCU, ii) producer price as percentage of f.o.b price was significantly higher during KNCU time, and (iii)

unit marketing and administrative costs were significantly higher during CAT time, the hypothesis that coffee marketing system under KNCU was more efficient than under CAT cannot be rejected.

The structural changes in responses V_1, V_2, V_3, V_4, V_5, V_7 and V_8 have been explained on the basis of endogenous factors associated with mismanagement which included inefficiencies and corruptions. There are also exogenous factors which were not fully explained because they are beyond the scope of this dissertation. These are the factors which cause macro-economic disequilibrium in a national economy. This disequilibrium is commonly associated with:-

- current account balance of payments deficits
- high rates of inflation
- unsustainable budget deficits
- over-valued exchange rates

and it can arise from:-

- international forces - like declining terms of trade
- domestic, exogenous shocks - like draught or war
- structural weakness in the domestic economy - like emphasizing the production of export crops at the expense of food crops.
- policy errors - like too stringent barriers to importation of industrial and agricultural inputs.

Commonly several causes co-exist and compound each other over time (Scarborough, 1988).

4.2.4 Comparing marketing efficiencies of KNCU and CAT using Chi-square and t-tests.

4.2.4.1 Introduction

Both KNCU and CAT had the main objective of maximising the efficiency in marketing farmers' coffee. Thus their main objective was to have efficient crop purchasing which included the tasks of grading, weighing, inspecting, bagging, storing and transporting the crop. Then the farmer was to be paid after delivering the crop to the buying post. It is customary for the coffee producers to be paid in three instalments advance, interim and final payments.

In addition to the marketing of the crop these marketing institutions were also concerned with the development of the region in which they were operating and of the farmers economies. The main tasks which were identified in these roles were provision of inputs like fertilizer, pesticides, spray-pumps; credit, godowns/stores; building materials; consumer goods; seeds, gunny bags, twine and needles; and provision of extension services. How efficiently these tasks were carried out was assessed using field survey data to which parametric and non-parametric tests were applied.

4.2.4.2 Chi-square tests

i) A comparison of managerial efficiency of committee members

Before one can make a comparison of the managerial efficiency of committee members during KNCU period and that of CAT it was first of all necessary to test whether the managerial efficiency of committee members is independent of the type of organization in operation by means of Chi-square test. The managerial efficiencies of committee members were measured on an ordinal scale. The responses of the farmers were classified according to the order of managerial efficiency with which they assessed the committee members and according to the institution the committee member worked for. Table 4-2 shows the distribution of these responses in each efficiency class by type of organization. Since after pooling the classes, there was not much difference in weight, average number of responses were used in Chi-square test.

Table 4 - 2: Kilimanjaro Region. Response table showing a comparison of managerial efficiencies of committee members operating under CAT and KNCU[1]

Managerial efficiencies of committee members	Type of organisation		Total	P(s) Proportions
	CAT	KNCU		
	Average No. of Reponses			
1	10	17.6	27.6	0.356
2	17.4	16.2	33.6	0.433
3 - 5[2]	12.6	3.8	16.4	0.211
Total	40	37.6	77.6	

Source: Survey data, 1987

Scale : 1. Very well, 2. Well, 3. Fairly well
4. Badly 5. Very badly

1 The figures are average responses, for details see Appendix H.

2 The last three classes (3,4, and 5) were pooled together because their expected frequencies came out to be < 5.

The Chi-square findings were that X2 cal > X2 tab at α = 0.05, df = 2 (6.80 > 5.99). From this result the null-hypothesis that the managerial efficiencies of committee members are independent of the type of organization in operation is rejected and it is concluded that there is a significant association between the managerial efficiencies of committee members and the type of organization in operation. Since the proportion of the farmers who said that during the KNCU time the managerial efficiencies of committee members was very good is higher than those for CAT (0.47 > 0.25),it is obvious that the committee members were performing their jobs better during KNCU time than during CAT time. To take into account the other classes a weight4 was used and the proportion of the farmers who said that during the KNCU time the managerial efficiency of commottee members was very good is higher than those for CAT
(0.54 > 0.33). This confirms the above assertions.

(ii) <u>A comparison of promptness of paying farmers advance payment on delivery of crop buying posts</u>

Before one can make a comparison of promptness of paying farmers advance payment of delivery of crop to buying post during the respective institutional operation periods i.e. KNCU and CAT time, it was first of all necessary to test whether the promptness of paying farmers advance payment is independent of the type of organization in operation by means of Chi-square test. The promptness of paying farmers advance payment was

measured on an interval scale consisting of six classes of one week class intervals. The responses of the farmers were classified according to the week the advance payment was paid after delivering coffee to the buying post and according to whether the committee member was on duty during KNCU time or during CAT period. Table 4-3 shows the distribution of the responses in each week class by type of organization. Since after pooling the classes, the table had only two classes it was not necessary to use weighted responses in the Chi-square test.

Table 4 - 3 : Kilimanjaro Region. Frequency table showing a comparison of promptness of paying farmers advance payment by CAT and KNCU[1]

Promptness of paying farmers advance payment	Type of organization			P(S) Proportions
	CAT	KNCU	TOTAL	
Weeks	No. of Respomses			
<1	35	45	80	0.8
1 - 4[2]	15	5	20	0.2
Total	50	50	100	

Source: Survey data, 1987.

1 For details see Appendix I

2 The last two classes (1 - 2, 3 - 4) were pooled together because their expected frequencies came out to be < 5.

N = 50

The Chi-square findings were that X2 cal > X2 tab at α = 0.05, df = 1 (6.25 > 3.84).

From this result the null hypothesis that the promptness of paying farmers advance payment on delivery of crop to buying post is independent of the type of organization in operation is rejected and it is concluded that there is a significant association between the promptness of paying farmers advance payment and the type of organization in operation. Since the proportion of the farmers who said KNCU was paying them advance payment within one week was greater than that of those who were for CAT (0.9 > 0.7), it is obvious that KNCU was more efficient than CAT in paying farmers advance payment. In order to take into account the responses of farmers in the other classes, a weight5 was used and the proprotion of the farmers who said KNCU was paying them advance payment within one week was greater than that of those who were for CAT (0.92 > 0.75). This confirms the above asssertions and concurrs with test criterion (i), since it is the same committtee members who pay farmers at the buying post after receiving money from the marketing organization.

iii) <u>A comparison of efficiency of provision of inputs to farmers.</u>

Before one can makes a comparison of efficiency of provision of inputs to member economies during the specified period of the respective institutions i.e. KNCU and that of CAT time, it was first of all necessary to test whether the efficiency of

provision of inputs to member economies is independent of the type of organization in operation by means of Chi-square test. The efficiency of provision of inputs to member economies was measured on an ordinal scale. The responses of the farmers were classified according to the order of efficiency of provision of inputs to member economies and by type of organization. Table 4 - 4 shows the distribution of these responses in each efficiency Class by type of organization. For the Chi-square test, weighted responses were used so as to take into account the relative importance ofthe different classes.

Table 4 - 4 : Kilimanjaro Region. Frequency table showing a comparison of efficiency of provision of inputs to farmers by CAT and KNCU[1]

Efficiencies of provision of inputs to farmers	Type of organization CAT	KNCU	TOTAL	F (S) Proportions
	Weighted response			
1	1.58	0.07	1.65	0.14
2	6.0	3.73	9.73	0.47
3	3.05	2.45	5.50	0.26
4 - 5[2]	0.78	1.77	2.55	0.123
Total	11.41	8.02	19.43	

Source: Survey data, 1987

Scale: 1. Very good 2. Good 3. Fair 4. Bad 5. Very bad

N = 50

1 The figures are weighted frequencies (for details see Appendix J).

2 The last two class (4 and 5) have been pooled together to make the figures manageable in size.

The Chi-square findings, were that X2 cal > X2 tab at α = 0.05, df = 3 (17.7 > 7.8)
From this result the null - hypothesis that the efficiency of provision of inputs to member economies is independent of the type of organization in operation is rejected and it is concluded that there is a significant association between the efficiency of provision of inputs to member economies and the type of organization in operation. The proportion of the farmers saying that the provision of inputs by CAT was very good or good was 0.54 of all farmers interviewed compared to a proportion of 0.36 of those in favour of KNCU/TCB period. Since five classes are involved, weights[1] were used to take into account the responses of the farmers in other classes. Since the proportion of the farmers saying that the provision of inputs by CAT was very good or good was

0.67 of all farmers interviewed compared to a proportion of 0.47 of those in favour of KNCU/TCB period, it is obvious that CAT was more efficient than KNCU/TCB in the provision of inputs to farmers. This concurs with the reality since CAT put great emphasis on the provision of extension services including inputs to farmers and the Kilimanjaro Region was under Coffee Improvement Programme of CAT which received grants from EEC of about T.shs. 281.4 million for the period 1976/77 - 1983/84 (MALD, CAT, Balance Sheets).

iv) A comparison of marketing efficiencies by whether the farmer was being visited by extension staff or not.

One of the tasks of a marketing institution is to provide sales promotion. This is done by salesmen or in the case of crop production and marketing institutions by their extension staff. The extension staff of KNCU and CAT were required to teach farmers modern farming techniques especially the use of fertilizers and insecticides. The frequency of visits to farmers by extension staff is a proxy of measuring the efficiency of provision of extension services.

Before one can make a comparison of marketing efficiencies by whether the farmer was being visited by extension staff or not during KNCU time as compared to during CAT time, it was first of all necessary to test whether this marketing efficiency is independent of the type of organization in

operation by means of Chi-square test. The marketing efficiency of whether the farmer was being visited by extension staff or not was measured by

means of a nominal scale (Yes or No). The types of organization in question were the KNCU and CAT. The responses of the farmers were classified according to whether they said Yes or No to the question "Were you visited by Extension Staff?" and by type of organization. Table 4 - 5 shows the distribution of these responses in each nominal class by type of organization.

Table 4 - 5 : Kilimanjaro Region. Frequency table showing a comparison of marketing efficiencies by frequencies of visits to farmers by extension staff of CAT and KNCU

"Were you visited by extension staff?"	Type of organization CAT	KNCU	TOTAL	P (S) Proportions
	No. of Responses			
YES	32	8	40	0.4
NO	18	42	60	0.6
N	50	50	100	

Source: Survey Data, 1987

N = 50

The Chi-square findings, were that X2 cal > X2 tab at α = 0.05, df = 1 (24 > 3.84)

From this result the null - hypothesis that the marketing efficiency shown by frequencies of visits to farmers by extension staff is independent of the type of organization in operation is rejected and it is concluded that there is a significant association between the efficiency of provision of extension service through visits by extension staff and the type of organization in operation. Since the proportion of farmers who said Yes during CAT time is higher than that of KNCU (0.64 > 0.16), it is obvious that CAT was more efficient in the

provision of extension services to the farmers than KNCU. This concurs also with Test Criterion (iii) where it was found that CAT was also more capable than KNCU in the provision of inputs to members. This was because CAT had received EEC grants worth about T.shs. 281.4 million during the period 1976/77 - 1983/84 (MALD, CAT and TCMB Balance Sheets) for Coffee Improvement Programme; so that CAT had funds for extension and it was also managing the extension staff better than when they were under the Ministry of Agriculture during KNCU/TCB time.

4.2.4.3 t-test

i) A comparison of marketing efficiency by promptness of making interim payment.

The marketing efficiency in terms of promptness of making interim payment was measured by means of a nominal scale. The farmers were required to say Yes or No to the question: "Were Interim Payments paid in the right time?". Since the sample size was small compared to the universe (N = 50 <100), and assuming that the probability that a farmer will say Yes is p, while the probability of the farmer saying No is q, it is possible to test whether there was a real preference for the Marketing system under KNCU/TCB over the one under CAT by t-test using proportions. The responses of the farmers were classified according to whether they said Yes or No to the above quoted

question and by type of organization.

Table 4 - 6 shows the distribution of the proportions of the farmers responses in each nominal class by type of organization. The calculations of the t-test using proportions are shown in Appendix D.

The t-test findings was that $t_{cal} > t_{tab}$ at $\alpha = 0.05$, (4.45 > 1.96).

From this result it is concluded that the possibility that the survey results differ due to sampling errors is unlikely to be the case and, therefore, the proposition that there was a real difference in the proportions of those farmers in favour of KNCU/TCB to those in favour of CAT was proven. These proportions were 0.50 > 0.12.

Table 4 - 6 : Kilimanjaro Region. A comparison of marketing efficiency by promptness of payment of interim payment to farmers by CAT and KNCU

"Were interim payments paid in the right time?"	Type of organization CAT	KNCU/TCB
YES	$p_1 = 0.12$	$p_2 = 0.50$
NO	$q_1 = 0.88$	$q_2 = 0.50$

Source: Survey data, 1987

p and q are proportions

N = 50

This finding shows that KNCU/TCB was more efficient than CAT in paying interim payments to farmers.

ii) A comparison of marketing efficiency by promptness of making of final payment to farmers by CAT and KNCU

The marketing efficiency in terms of the promptness of paying farmers final payment was measured also by means of a nominal scale. The farmers were required to say Yes or No to the question: "Were Final Payments paid in the right time?"Since the sample size was small compared to the universe (N = 50 < 100), and assuming that the probability that a farmer will say Yes is p, while the probability of the farmer saying No is q, it will be possible to test whether there was a significant preference for the marketing system under KNCU/TCB over the one under CAT by t-test using proportions. The responses of the farmers were classified according to whether they said Yes or No to the above quoted question and by type of organization. Table 4 - 7 shows the distribution of the proportions of the farmers responses in each nominal class by type of organization. The calculations of the t-test using proportions are shown in Appendix D.

The t-test findings was that $t_{cal} > t_{tab}$ at $\alpha = 0.05$, (2.709 > 1.96).

From this result it is concluded that the possibility that the survey results differ due to sample errors is unlikely to be the case and, therefore, the proposition that there was a real difference in the proportions of those farmers in favour of KNCU to CAT was proven. These proportions were 0.34 > 0.12. Therefore it is concluded that the difference reflects that KNCU was more efficient than CAT in making the final payment to farmers.

Table 4 - 7 : Kilimanjaro Region. A comparison of marketing efficiency by promptness of making of final payment to farmers by CAT and KNCU

"Were final payments paid in the right time?"	Type of organization CAT	KNCU
YES	$P_1 = 0.12$	$P_2 = 0.34$
NO	$q_1 = 0.88$	$q_2 = 0.66$

Source: Survey data, 1987

p and q are proportions

N = 50

4.2.4.4. Summary of field survey results

From the field survey results (Section 4.2.4), it can be concluded that the cooperative societies were more efficient in the provision of managerial services like inspection, grading, weighing and bagging of the crop, supervising crop purchasing and promptness in paying farmers than the crop authority which took over. But the crop authority was better as far as the development of the farmers' farms is concerned for we have seen it proved to be more efficient in the provision of inputs and extension services to members farmers.

Footnotes to Sections 4.1.3 and 4.2.4.2.

1. Marketing margin = f.o.b. price - producer's price.
2. Marketing costs (M.C.) = Marketing margin - Export sales Tax. M.C. as defined here will consist of marketing organization charges to cover administrative expenses;levies; other marketing operations costs and donations if any.
3. For how the "Potential" final payment is calculated see Appendix A - 6.
4. The mean responses of class 1 were multiplied by 0.33 of class 2 by 0.27 etc. as shown in Appendix H.
5. The mean responses of class 1 were multiplied by 0.28 of class 2 by 0.24 and of class 3 by 0.19. The other classes had no entries (see Appendix I).
6. The mean responses of class 1 were multipled by 0.33 of class 2 by 0.27 -- of class 5 by 0.07 as shown in Appendix J.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the major issues of the study, with regard to its background, objectives, methodology and major findings. It also gives the conclusions, recommendations and suggestions for further research.

5.2 Summary

5.2.1 The problem background

Changing social and economic circumstances in Tanzania have necessitated institutional and conceptual adjustments of economic organizations to match with the new conditiqns. During the transition period, i.e. from a British colony, through an independent country with a predominantly mixed economy to a socialist country, Tanzania has relied heavily on the agricultural sector especially through agricultural marketing institutions to bring about rapid socio-political and economic development. So the socio-political and economic changes that Tanzania has undergone since Independence have also changed the country's crop marketing system.

3.2.2 Purpose and objectives of the study

The purpose of this study was to find out and narrate the causes, the effects and the salient features of the institutional changes of the Tanzania's crop marketing system through a pre-determined period. To simplify this enormous work the commodity approach to marketing was taken and one crop in one region was studied. Thus this study was limited to the institutions which were doing coffee marketing in Kilimanjaro Region in the years 1970 - 1984. The specific objectives of the study were, therefore:-

1) To compare TCB/KNCU and CAT when marketing coffee in Kilimanjaro Region in terms of marketing efficiency criteria to determine whether the changes in the marketing system effected by the government had significant effects on the efficiency of the marketing institution.

2) To find out the roles that KNCU and affiliated primary societies, TCB and CAT have played in marketing smallholder coffee in Kilimanjaro Region and then to test the attitudes of the farmers as to whether there was a significant preference of the marketing system under TCB to the one under CAT.

5.2.3 Methodology

The study involved KNCU, TCB and CAT and ten rural cooperative societies affiliated to KNCU. The rural cooperative societies studied were Masama-Mula, Nshara, Kibong'oto, Machame-Nkuu, Machame-North, Uru Central Mawella, Mamba, Mwika West, Marangu East and Marangu West.

The first five societies were in Hai District and the rest in Moshi Rural District; both of Kilimanjaro Region in Tanzania.

To find out the roles the coffee marketing institutions played and to be able to compare the marketing efficiencies of KNCU and CAT both primary and secondary data were collected. The primary data were used for measuring i) member-oriented efficiency and (ii) development efficiency. The secondary data were used for measuring business operational efficiency of KNCU and CAT.

To obtain the primary data, fifty (50) randomly selected members of a rural cooperative society and officials of KNCU and CAT were visited by enumerators and interviewed by means of a structured questionnaire.

The farmers responses were classified according to the test-criteria and type of organization in operation. Before one could make a comparison of marketing efficiency during KNCU

time to that during CAT time, it was first of all necessary to test whether the test criterion was independent of the type of organization in operation by means of Chi-square test. Since all the criteria were found to be significantly associated with the type of organization in operation, it was possible to compare the marketing efficiency of KNCU to that of CAT by using proportions of the responses of the farmers in favour of one organization to the other.

The type of secondary data that were needed were time series data of prices, sales, marketing costs structures, etc. The secondary data were collected from official files, budgets, balance sheets, annual reports and published and unpublished literature. These data were used to construct trends of such responses as producer's price as percentage of f.o.b. price, unit marketing costs, unit administrative costs, quantity of coffee sold, etc. Where it was necessary the nominal figures were changed to constant values by the use of National Consumer Price Index so as to take care of the galloping inflation in Tanzania.

The evolution of these responses through the period understudy were observed and their intercepts and slopes with the V_t - axis were estimated by means of OLS method.

Structural stability tests were conducted to test whether or not the true relation between the responses, V_t and the independent variable time, X_t was the same for both of the sub-periods, 1970 - 1976 and 1977 - 1984.

To test whether the difference in the intercepts and

slopes of the two sub-periods with the V_t - axis were significant, t-tests were conducted on the relevant coefficients of the regression equations.

5.2.4 Summary of the results

5.2.4.1 Regression analysis results

The regression analysis revealed that:

a) Producer's price as percentage of f.o.b price was significantly higher during KNCU time than during CAT period (86.929 > 27.963).

b) Unit marketing margin in constat prices was significantly higher during CAT period than during that of KNCU (34.121 > 1.149).

c) Unit marketing costs in constant prices were significantly higher during CAT period than during that of KNCU (4.728 > 1.586).

d) Unit marketing costs as percentage of f.o.b. price were significantly higher during the operation of CAT than during that of KNCU (25.576 > 11.69).

e) The "potential" final payment in constant prices was significantly higher during CAT period than during

that of KNCU (33.772 > 7.970)

f) There was not asignificant difference between unit administrative expenses as percentage of unit marketing costs of KNCU and those of CAT (24.129 : 22.402).

g) Unit administrative expenses in constant prices during KNCU period differed significantly from those during CAT time (0.414 < 0.898).

h) The liquidity ratio was significantly higher during KNCU time than during CAT time (1.914 > 1.05).

i) The annual quantities of coffee marketed did not differ much during the research period (11.6 : 16.8).

From these observations the hypothesis that the coffee marketing system under KNCU was more efficient than under CAT cannot be rejected.

5.2.4.2. Field survey results

Chi-square and t - tests were used and it was observed that:-

a) 64% of the farmers said that the managerial efficiencies of committee members were very good during KNCU/TCB operation, whereas only 36% were for CAT.

b) 56% of the farmers said KNCU used to pay them advance payment within one week, whereas 44% said so for the CAT period.

c) 80% of the farmers said they were being visited by extension staff during CAT time as compared to 20% who said they were being visited by extension staff during KNCU time.

d) 54% of all farmers interviewed said the provision of inputs was either very good or good during CAT whereas only 36% said so during KNCU time while 10% of the farmers were indifferent.

e) 50% of the farmers said that the interim payment was being paid in the right time during KNCU/TCB time, whereas only 12% said so for the CAT time.

f) 34% of the farmers interviewed said the final payment was being paid in the right time during KNCU time, whereas only 12% said it was being paid in the right time during CAT.

From these observations the hypothesis that the coffee marketing system under KNCU was more efficient than under CAT cannot be rejected.

5.3 Conclusions

The Tanzania economy is predominantly agrarian, based on small-scale peasant production. Agricultural sector is the main source of export earnings, contributing two fifths of GDP and is the source of livelihood of more than 80% of the population. In spite of its importance to the national economy, the sector's performance for the past decade or two has been poor. Among the

factors which have depressed the performance of the agricultural sector are bad weather, faulty macro-economic and sectoral policies.

In general the nations agricultural production depends on a lot of factors, among which is a properly functioning marketing system. In Tanzania the agricultural crops marketing cooperative societies and marketing boards do most of the marketing functions. In addition to performing the marketing function in Tanzania, cooperative societies have been utilized by the government and other governmental and non-governmental organizations for carrying out national, bi-lateral and multi-lateral developmental programmes.

But these crop marketing institutions have been prone to constant reshuffle and re-organization by the government. These changes have to a greater extent affected the proper performance of the marketing institutions and consequently the overall agricultural production output.

These changes in Tanzania's marketing system have been superficially justified on the grounds of dishonesty, inefficiencies or reflecting policy changes. All these changes have been, however, instituted without conducting a systematic research into these issues in order to understand the problems facing the marketing system.

The purpose of the study was to find out and narrate the causes, the effects and the salient features of these institutional changes of the Tanzania's crop marketing system through time. The focus of the research was to

find out whether the crop marketing parastatal CAT which took over the function of coffee marketing in Kilimanjaro Region, Tanzania, after the dissolution of the KNCU and affiliated primary cooperative societies, did its functions more or less efficiently than its precedent institution.Regression analysis of the secondary time series data has shown that unit administrative and marketing costs were significantly lower during KNCU period than during that of CAT. These factors enabled KNCU to pay farmers significantly higher producer's price as percentage of f.o.b. price than could CAT. From these findings it was concluded that KNCU was significantly more efficient than CAT when marketing farmers' coffee.This finding concurs also with other researchers' findings on other cooperative unions, marketing boards and crop authorities in Tanzania.

In general the cooperatives and marketing boards seem to be significantly more efficient in marketing farmers crops than crop authorities. Sample results from field survey in general have shown that KNCU was significantly more efficient in the provision of managerial services like inspection, grading, weighing and bagging of the crop; supervising crop purchasing; and promptness of paying farmers than CAT. The latter was, however,significantly more efficient in developing the farmers' economies through the provision of inputs and extension services.These findings are not unique in Tanzania. In general the cooperatives and marketing boards seem to be more concerned with the safety of crops

and cash, maintaining high standards of crop grade and quality and paying farmers promptly, high and just prices than the crop authorities. The latter have been concerned more with improving crop husbandry and with the processing and exportation of the crop and by-products and collecting taxes for the government.

The survey results have also shown that KNCU had effected many macro-economic developmental projects, whereas, CAT did almost nothing in this area, apart from training its own staff. Consequently it is concluded that cooperatives are more concerned with the macro-economic development of the country than crop authorities.These findings generally indicate that marketing function is a complex process that involves many aspects of organization and management skills which cannot be instilled by mere change of structures.If changes are at all to be implemented, they should take into account not only the political part of the system but more so on the strengths and weaknesses of the different types of marketing institutions and in particular the preferences of the farmers on the type of marketing system they would like to have.

5.4 Recommendations

Based on the research findings the following statements and recommendations are made:-

a) The cooperatives tend to serve the interests of farmers more than crop authorities which tend to serve the interests of the government. So the cooperatives seem to be more concerned with the

realization of higher producer's price than crop authorities. Consequently it is recommended that for the farmers to be able to run their agri-business most economically they should organize themselves into agricultural marketing cooperatives. These can be unified at a district or regional level by forming cooperative unions. The cooperative unions can act as agents of crop parastatals. Since agricultural marketing boards seem to be more efficient than crop authorities in marketing farmers' produce, it is recommended that the marketing boards should market farmers' crops at the national level and crop authorities should specialize in the aspects of crop husbandry including research, crop production and processing, pest and disease control, harvesting, drying and storage. This recommendation should be in line with the Agricultural Policy of Tanzania (Tanzania, 1983). If the government decides to replace crop authorities with marketing boards, then the latter should have extension service department for promoting their policies and marketing of their products and agricultural inputs. Should cooperative Unions want to take over the functions of marketing boards, a national institution will be required to co-ordinate the functions of the different cooperative unions in the country.

b) The study revealed that the centralization of a country's marketing system by, for instance, forming one monoploid crop parastatal reduces marketing efficiency, This reduction in efficiency is supposed to be caused by dishonesty, corruption, and mismanagement which have been the consequence of work-overload and cumbersome accounting system and bureaucracy in these parastatals. It is therefore recommended that for efficient marketing system, the Tanzanian marketing system should be decentralized on a regional or district basis. Specifically, crop marketing should be conducted by primary cooperative societies, regional or district cooperative unions and national marketing boards.

Cooperatives should be owned and controlled by their members on a democratic basis. The government, when utilising cooperatives for implementing its policies, should not tamper with these fundamental principles of cooperation.

The effectiveness of agricultural marketing boards can be improved by increasing the participation of farmers, processors, merchants and consumers in their decision making process.

Because monoploid crop marketing parastatals tend to relapse into inefficiency, corruption and mismanagement, permitting competition among different types of marketing agents -- private, cooperative, parastatal or foreign -- would raise the marketing

efficiency of these institutions. But the government will have to sort out which crops should be under its control and which should be left to the free market, so as to minimise the exploitation of the farmers or of the nation as a whole by predatory traders.

5.5 Suggestions for future research

The main purpose of the study was to give information and data needed for policy formulation and future projection. This study was conducted during a critical period when the cooperative movement was being re-established after having been dissolved in 1976. It was therefore difficult to make the respondents leave their pressing duties to answer researcher/enumerators questions. Also some of the archives had been lost or misplaced during the reshuffle. Sometimes it was difficult or impossible to get a break-down of cost structures of crop marketing. The study was also limited by lack of appropriate literature on cooperatives, especially cooperative marketing in socialist countries.

It is, therefore, suggested that in future:-

a) researchers should assist coffee marketing institutions in making an analysis of costs, expenditure and revenues indicating the different cost and revenue categories per unit of crop marketed.

b) model specification for the regression equation should be improved upon by including more

independent variables in the model e.g. prices of supplementary and competitive goods; income preferences and population figures of consumers; the weather; costs of factor input (as far as limitation of multi-collinearity will permit). And the time series data should be extended to the present time instead of ending in 1984.

c) the study should be extended to cover other regions of Tanzania and other important export crops.

d) researchers should visit other socialist countries and compare their experiences with Tanzania's.

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Appendinx A-1 : Coffee production by major producing countries[1], 1961 - 1976

(in thousands of metric tons)

Country	Average Annual 1968-65	1968	1969	1970	1971	1972	1973	1974	1975	1976
Africa	995.9	1183.9	1256.0	1345.2	1170.8	1355.5	1362.1	1291.1	1788.1	1228.4
Angola	185.0	198.0	215.0	204.0	228.0	225.0	210.0	224.8	68.4	72.0
Ivory Coast	188.0	287.8	210.1	279.6	239.7	268.8	310.8	195.9	270.4	304.8
Ethiopia	141.9	165.0	170.0	175.5	100.5	112.5	155.5	157.9	173.7	170.0
South America	2520.8	1729.6	1965.6	1465.5	2226.8	2118.3	1610.5	2294.1	2026.1	1117.5
Brazil[2]	1181.1	1057.7	1283.5	754.8	1151.5	1495.7	872.9	1610.0	1263.0	389.1
Columbia	468.4	480.0	480.0	507.0	468.0	432.0	538.0	468.0	540.0	510.0
Central America	645.1	670.4	711.3	734.6	772.8	777.0	806.0	790.0	839.9	866.4
Asia and Oceania	256.8	313.7	361.3	364.9	405.0	365.0	364.9	383.8	411.5	419.2
World	4418.6	3897.6	4294.3	3909.5	4575.8	4515.7	4143.5	4759.1	4455.8	3631.4

Source: Mechan 1982, Table 2-1

1 "Coffee" refers to the coffee beans before grinding and roasting

2 Official data reported in terms of dry cherry converted into clean coffee at 50 percent.

Appenix A - 2 : Percentage share of coffee production by major producing countries, 1961 - 1976

Country	Average Annual 1961 - 65	1968	1969	1970	1971	1972	1973	1974	1975	1976
Africa	22.5	30.4	29.2	34.4	25.6	27.8	32.9	27.1	26.7	33.8
Angola	4.2	50.8	5.0	5.2	4.9	4.9	5.1	4.7	1.5	1.9
Ivory Coast	4.3	7.4	4.9	7.2	5.2	5.9	7.3	4.1	6.1	8.4
Ethiopia	3.2	4.4	3.9	4.5	2.2	2.5	3.8	3.3	3.9	4.7
South America	57.0	44.4	45.8	37.5	48.7	46.9	38.9	48.2	45.5	30.8
Brazil	42.6	27.1	29.9	19.3	25.2	33.12	21.1	33.8	28.3	10.7
Columbia	10.6	12.3	11.2	12.9	10.5	9.6	12.9	9.8	12.1	14.0
Central America	14.6	17.2	16.6	18.8	16.9	17.2	19.5	16.6	18.8	23.9
Asia and Oceania	5.8	8.0	8.4	9.3	8.8	8.0	8.8	8.0	9.2	11.5
World	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source : Calculated from Appendix A - 1

Appendix A - 3 : Coffee exports by major exporting countries 1961 to 1976

(in metric tons)

Exporter	1961	1962	1963	1964	1965	1966	1967	1968
Africa	658850	729640	789460	848820	843430	940490	902930	987340
Angola	118210	156890	137930	138810	158170	156410	196510	188580
Ivory Coast	154710	144660	182070	204270	181520	181520	149130	214490
South America	1442020	1472970	1639630	1374320	1253960	1449390	1495700	1620450
Brazil	1019230	982570	1170780	896770	808930	1009910	1004250	1107470
Columbia	339050	393690	367940	384720	338060	333870	365620	395270
Central America	421030	489250	461370	489110	469790	492710	474760	527810
World	2715210	2842790	3087870	2856150	2755420	3086280	316140	3353790

Appendix A - 3 contd.

Exporter	1969	1970	1971	1972	1973	1974	1975	1976
Africa	98209	1011163	93862	1081045	1190678	1107073	1108083	1160419
Angola	182943	180581	181550	176811	212866	263621	163000	837000
Ivory Coast	178325	195342	184979	184979	188731	218655	254991	322825
South American	161995	1473448	1540773	1582014	163517	1206215	1397714	1341832
Brazil	1121375	962629	1034266	105156	107377	683784	805567	512391
Columbia	388619	390377	393354	390813	405065	412373	488270	37122
Central America	510443	502390	514619	611776	662871	681560	705456	767929
World	3433159	3278758	3301216	3510924	3651229	3391274	3569164	3671076

Source: Hyuha, 1982, Table 2 - 3

Appendix A - 4 Coffee exports by East African countries

(in metric tons), 1969 - 1978.

Year	Uganda	Tanzania	Kenya	East Africa
Exporter				
1969	190570	49670	51140	281380
1970	191244	44996	53855	290095
1971	174621	35645	56522	266788
1972	214183	54737	63187	322107
1973	223879	60273	75332	359484
1974	201462	41032	71749	314243
1975	193047	54385	67749	315181
1976	163416	57870	77587	298873
1977	132000	46900	96280	275190
1978	112680	49200	84900	246780

Source : Hyuha, 1982, Table 2-4

APPENDIX A-5 : Mild arabica: analysis of marketing costs and returns to producers 1969/70 - 1978/1979

	Volume metric tons	Value T.shs'000	Price T.shs/kg	Charges and levies	Curring charge	Sisal bags	Local roasting subsidy	Other costs[a/]	T.shs./ kg	%
1969/70[e/]	28,385	205,053	7.224	.206	.132	.048	.049	-	.435	6.0
1970/71[f/]	30,470	194,764	6.392	.392	.148	.130	.041	-	.367	5.7
1971/72	39,177	266,874	6.812	.089	.130	.051	.091	-	.361	5.3
1972/73	45,915	357,494	7.786	.058	.072	.073	.077	-	.280	3.6
1973/74	26,326	260,974	9.913	.020	.143	.067	.101	.249	.580	5.9
1974/75	35,833	286,949	8.008	.020	.155	.087	.053	-	.315	3.9
1975/76	43,520	822,180	18.892	.480	.201	.104	.192	-	.977	5.2
1976/77	33,436	1,313,131	39,273	1.518	.059	.090	.658	.728	3.053	7.8
1977/78	36,420	1,019,677	27.998	2.096	.311	.141	.054	.938	3.540	12.6
1978/79	33,773	773,388	22,899	3.050	.157	.179	-	.652[g/]	4.037	17.6

APPENDIX A-5 Cont.

Year Oct.-Sept.	Export Tax		Realisation A - (B + C) [b/]		Other costs	Producer price		
		%				per kg. clean		Parchment [d/]
	T.shs/kg		T.shs./kg	%	(est.) [c/]	T.shs.	%	Equiv.
1969/70 [e/]	.573	7.9	6.216	86.0	.400	5.816	80.5	4.653
1970/71 [f/]	.639	10.0	5.386	84.3	.400	4.986	78.6	3.989
1971/72	.700	10.3	5.751	84.4	.400	5.351	78.6	4.281
1972/73	1.398	18.0	6.108	78.4	.450	5.658	72.7	4.526
1973/74	2.604	26.3	6.729	67.9	.450	6.279	63.3	5.023
1974/75	1.369	17.1	6.324	79.0	.550	5.774	72.1	4.619
1975/76	3.215	17.0	14.700	77.8	1.100	13.600	72.0	10.880
1976/77	18.024	45.9	18.186	46.3	.080	18.106	46.1	14.485
1977/78	10.832	38.7	13.626	48.7	.125	11.501	48.1	8.801
1978/79	7.712	33.7	11.150	48.7	.125	11.025	48.1	8.820

Source : Ellis and Hanak, 1980,p.57 - 58, Table 10.

a/ this is partly a balancing item to reconcile the total with the main components (in 1976.71 and 1977.78 it is almost wholly procurement and transportation costs);

b/ proceeds paid to co-operative unions up to 1975.76;

c/ estimated deductions for union levy, society levy, district council cess (1969/70-1977), village levy hereafter;

d/ parchment equals 80 percent clean coffee by weight;

e/ data from TCB, Annual report, 1969/70;

f/ estimated costs according to fragmentary data;

g/ specified as 'Bank Interest' in source data.

APPENDIX A-6 Calculation of 'Potential' final payment in T.shs/kg for mild arabica coffee, Kilimanjaro Region, 1970 - 1984

Year	Actual final payment	levies,total	To income & Expenditure A/C	To Pest control fund	To Education Fund	Other	Surplus on I/E AC	Balance on crop realisation A/C	'Potential' final payment[1]
1	2	3	4	5	6	7	8	9	10
1970	(- 0.0975)	0.051			0.003	0.048	0.034	3.56	3.61
1971	0.47	0.093	0.03	0.01		0.053	0.046	4.56	5.26
1972	0.81	0.082	0.01	0.01	1.01	0.052	0.015	4.35	5.34
1973	0.62	0.03	0.01	0.01	0.01		0.010	4.81	5.50
1974	1.65	0.27	N.A	0.27	N.A		0.007	6.47	8.67
1975	0.69	0.03	0.001	0.001	0.001		(-0.03)	4.65	5.34
1976	3.47	0.24			0.02	0.02	(-0.06)	11.24	15.13
1977	3.00	0.96		0.87		0.09	0.01	18.95	23.83
1978	0.63	1.75		1.60		0.15	0.43	14.47	19.29
1979	0.37	1.86		1.86		-	(-1.93)	11.13	13.29
1980	1.42	4.92		2.75		2.17	0.053	13.34	25.15
1981	1.36	4.65				4.65	0	11.76	22.42
1982	3.90	3.77				3.77	(-1.52)	13.54	23.46[2]
1983	3.17	0.35				0.35	0.42	15.17	19.46[2]
1984	3.00	7.57				(-2.05)[3]	0.62	23.00	32.14[2]

Source : Author, 1987

Calculated from Balance Sheets of KNCU and CAT and from MDB reports for 1970 - 1985

* - The 1982 - 1984 figures have been estimated for audited balance sheets were not yet available

** - Price support subsidy

1) - Figures have been rounded to two decimal places

N.A - Not available.

APPENDIX A - 7 : Nominal protection coefficients of Tanzanian coffee in Kilimanjaro Region, 1970 - 1986

1	2	3	4	5	6
Year	Producer price Tshs/kg.	Export tax Tshs/kg	Producers price + export tax (243)	NPC = 2/4	Five years Average
1970	4.63	0.55	5.18	0.89	
1971	4.55	0.70	5.25	0.87	
1972	4.35	0.70	0.05	0.86	
1973	4.47	1.40	5.87	0.76	0.79
1974	6.47	2.90	9.37	0.69	
1975	4.67	1.38	6.05	0.77	
1976	10.56	3.45	14.01	0.75	
1977	18.90	18.03	36.93	0.51	
1978	14.47	10.83	25.30	0.57	0.59
1979	11.13	7.71	18.84	0.59	
1980	13.84	10.80	24.64	0.56	
1981	11.84	2.65	14.41	0.82	
1982 †	13.54	0	13.54	1.00	
1983	15.17	0	15.17	1.00	
1984	24.50	0	24.50	1.00	
1985	29.24	0	29.24	1.00	
1986	55.10	0	55.10	1.00	

Source : Author, 1987

† Coffee Export Tax abolished in 1982.

APPENDIX A - B : Value of coffee† sold in Kilimanjaro Region, 1970 - 1986

Year	Quantity (Million in kg)	Sales price Tshs/ kg (F.O.B. current price)	Value million Tshs. (current value)
1970	10.761	5.66	60.91
1971	13.087	5.11	66.89
1972	17.510	5.14	90.00
1973	14.153	6.17	87.31
1974	7.046	10.50	74.06
1975	10.504	6.22	65.31
1976	19.981	14.86	296.90
1977	16.508	39.10	645.54
1978	18.030	28.30	510.25
1979	11.386	22.69	258.44
1980	13.364	32.30	431.53
1981	23.253	21.86	508.25
1982	16.352	21.01	243.51
1983	16.872	26.08	439.96
1984	13.024	39.16	510.02
1985	14.435	54.90	792.76
1986	14.290	95.70	1367.55

Source : Author, 1987

Compiled from budget and balance sheets of KNCU and CAT and from MDR reports for 1970 - 1986.

† Factory clean mild arabica coffee.

APPENDIX A - 8 Cont.

Year	NCPI	Valuemillion Tshs. current value	Value million Tshs. constant value
1970	44.7	60.91	136.26
1971	46.8	66.89	142.93
1972	50.2	90.00	179.29
1973	55.6	87.31	157.03
1974	66.3	74.06	111.70
1975	83.9	65.31	77.84
1976	89.6	296.90	331.36
1977	100.0	645.54	645.54
1978	112.2	510.25	454.77
1979	126.7	258.44	203.96
1980	165.0	431.53	261.53
1981	207.4	508.25	245.06
1982	267.4	243.51	91.07
1983	334.2	439.96	131.65
1984	445.4	510.02	114.51
1985	636.0	791.76	124.63
1986	N.A	1367.55	N.A

Source : Authours 1987

Compiled from budsets and balance sheets of KNCU and CAT and from MDB reports for 1970 - 1986.

+ Factory clean mild arabica coffee

APPENDIX A - 9 : Value of coffee exports by Tanzania, 1933 - 1986

Year	Value Mill. Shs. (current prices)	Year	Value Mill. Shs. (current prices)
1933	8.6	1961	135.0
1934	9.9	1962	131.5
1935	9.7	1963	136.8
1936	6.8	1964	429.5
1937	8.6	1965	171.8
1938	7.7	1966	302.7
1939	9.3	1967	238.4
1940	8.8	1968	228.0
1941	9.0	1968	169.0
1942	13.1	1970	312.2
1943	11.1	1971	227.4
1944	17.0	1972	383.0
1945	17.9	1973	495.3
1946	13.5	1974	375.1
1947	19.5	1975	483.0
1948	17.9	1976	1282.7
1949	28.8	1977	1848.7
1950	68.9	1978	1293.8
1951	89.8	1979	1321.6
1952	110.4	1980	1180.0
1953	116.4	1981	1367.0
1954	200.0	1982	1239.0
1955	138.0	1983	998.9
1956	184.5	1984	1425.4
1957	139.5	1985	1833.5
1958	147.2	1986	1819.5
1959	114.2		
1960	145.7		

Sources : Kriesel, H.C. et al; 1970, p.12 Mbilinyi, 1976, p. 50;
Ellis and Hanake, 1980, p.7; MDB, R4/85, p.38

APPENDIX A - 10 Calculation of producer's price as balance on crop realisation account. Kilimanjaro Native Cooperative Union Ltd (KNCU) Coffee Realisation Account for the year ended 30/6/1972

		Total	Rate per payment kg
Gross proceeds from 14,420,903.99 basic kg @ shs. 7.4563 Per basic kg		107,526,586.40	5.14
Add. Proceeds from 87,659 kg coffee rejects sold in coffee pool		381,796.50	
Less: Deductions by Tanganyika Coffee Board (TCB)			
Board Admin. charges on 16,367,265 out-turn kg @ 0.042 kg	687,425.15		
TCB charges on coffee rejects	23,667.95		
Diversification levy on 16,367,265 out-turn kg @ 0.047/kg	769,261.45		
Curing charges on 16,367,265 out-turn kg @ 0.13/kg	2,127,744.45		
New sisal bags on 16,367,265 out-turn kg @ 0.051/kg	834,730.50		
Coffee Export Tax on 16,367,265 out-turn kg @ 0.70/kg	11,457,085.45	15,899,914.95	
		92,008,467.95	0.76
Board charges refunded by TCB:			
Curing charges refund		-	
Coffee Tax refund		-	
Sisal bags refund		-	
Net proceeds received from TCB		92,009,467.95	4.38

APPENDIX A - 10 cont.

		Total	Rate per payment kg
Deductions by KNCU			
Interest and Bank charges	873,621.30		
Insurance	31,308.95		
Repairs and maintenance of weighing scales	7,020.00		
Sundry transport	8,628.25		
Stationery	47,434.10		
Sisal bags for collections	235,860.00	(1,203,872.60	
Add: proceeds received from sale of samples and sweepings on 16,367,265 out-turn kg	439,085.70		
Miscellaneous income	3,296.90	442,382.60	
		91,246,977.95	
Less: Levies deducted by KNCU on parchment coffee charged to:			
I/E AC on 20,990,063 kg on coffee delivered to curing works @ 0.01 kg	209,980.70		
Education fund AC on the same	109,980.60		
Copper levy reserve AC on the same	209,980.65	629,941.00	0.03
Amount distributed to affiliated societies (producers price/kg)		90,617,036.05	4.35

Source : KNCU Balance Sheet for the year ended 30/6/1972.

APPENDIX A - 11 : Regression Analysis of trends of Kilimanjaro Region's coffee prices and cost structures, 1970 - 1976

LINE A : REGRESSION OF Y USING ONE PREDICTOR, X
t

		CONST.		b		R^2	$\bar{R}^2$	ESS	DF	F	d
Y 1		86.929		-2.550		0.388	0.266	287.10	5	3.171	1.80
	S.D.	(6.404)		(1.432)			(7.578)				
	t	13.57	SIG.	-1.78							
Y 2		1.149		0.4593		0.337	0.204	11.620	5	2.54	2.60
		(1.286)		(0.2881)			(1.524)				
		0.89	INSIG.	1.59	INSIG.						
Y 3		1.5857		-0.0011		0.0	-0.200	1.036	5	0.0	1.82
		(0.3846)		(0.0860)			(0.455)				
		4.12	SIG.	-0.01	INSIG.						
Y 4		11.619		-02196		0.207	0.808	5.166	5	1.308	1.26
		(0.859)		(0.192)			(1.016)				
		13.52	SIG.	-1.14	INSIG.						
Y 5		7.970		0.6775		0.194	0.033	53.44	5	1.202	2.89
		(2.763)		(0.6178)			(3.269)				
		2.88	SIG.	1.10	INSIG.						

APPENDIX A-11 Cont.

	CONST.	B	R^2	R^{-2}	ESS	DF	F	d
V6	24.129 (3.790) 6.37 SIG.	-1.6235 (0.8658) - 1.88 INSIG.	0.468	0.335 (4.485)	30.450	4	3.517	2.32
V7	0.4143 (0.0509) 8.13 SIG	-0.03555 (0.01164) -3.05 SIG.	0.699	0.624 (0.0603)	0.0145	4	9.375	1.28
V8	1.194 (0.1735) 11.05 SIG.	-0.139 (0.0396) -3.51 SIG.	0.754	0.693 (0.2053)	0.1687	4	12.287	1.56
V9	11.574 (3.988) 2.90 SLIGHTLY SIG.	0.4293 (0.8917) 0.48 INSIG.	0.044	0.147 (4.718)	111.31	5	0.232	1.63

Source: Computer Printout, 1987

APPENDIX A - 12 : Regression Analysis of trends of Kilimanjaro Region's coffee prices and cost structures, 1977 - 1984

LINE 2 : Regressing V using one predictor, X
t

		CONST	B	R^2	R^{-2}	ESS	DF	F	d
V 1	S.D	27.963	2.2875	0.629	0.567	129.82	6	10.156	2.00
	S.D	(8.416)	(0.7178)		(4.652)				
	t	3.32 SIG.	3.19 SIG.						
V 2		34.121	-2.2513	0.832	0.804	43.05	6	29.669	1.36
		(4.847)	(0.4133)		(2.679)				
		7.04 SIG.	-5.45 SIG.						
V 3		4.728	-0.1110	0.151	0.010	2.9033	6	1.068	2.87
		(1.259)	(0.1073)		(0.6956)				
		3.76 SIG.	-1.03 INSIG						
V 4		-25.576	4.5185	0.835	0.808	169.16	6	30.418	2.60
		(9.607)	(0.8193)		(5.310)				
		-2.66 SIG.	5.52 SIG.						
V 5		33.772	-1.9692	0.715	0.667	65.01	6	15.024	1.49
		(5.956)	(0.508)		(3.292)				
		5.67 SIG	-3.88 SIG.						

APPENDIX A-12 Cont.

	CONST.	B	R^2	$\bar{R}^2$	ESS	DF	F	d
V6	22.402	-0.4595	0.070	-0.086	118.73	6	0.448	1.60
	(8.049)	(0.6864)		(4.448)				
	2.78 SIG.	-0.67 INSIG.						
V7	0.8979	-0.02786	0.287	0.168	0.0812	6	2.409	0.94
	(0.2104)	(0.01795)		(0.1163)				
	4.27 SIG.	-1.55 INSIG.						
V8	1.05	0.0052	0.076	0.078	0.014	6	0.492	2.47
	(0.0876)	(0.0075)		(0.048)				
	11.99 SIG.	0.70 INSIG.						
V9	16.845	-0.0650	0.002	-0.164	94.68	6	0.0114	2.22
	(7.187)	(0.6129)		(3.972)				
	2.34 INSIG.	-0.11 INSIG.						

Source: Computer printout, 1987.

APPENDIX A - 13 : Regression Analysis of trends of Kilimanjaro Region's coffe prices and cost structres, 1970 - 1984

Restricted Model : Regressing Y using one predictor, X_t

		CONST.		B		R^2	$\bar{R}^2$	ESS	DF	F	d
Y 1	S.D.	82.013		-2.1579		0.483	0.443	1398.2	13	12.117	1.02
		(5.635)		(0.6196)			(10.37)				
	t	14.55	SIG.	-3.48	SIG.						
Y 2		3.921		0.2328		0.04	-0.033	361.0	13	0.546	1.06
		(2.863)		(0.3149)			(5.270)				
		1.37	INSIG.	0.74	INSIG.						
Y 3		1.2165		0.1704		0.464	0.422	9.400	13	11.238	1.14
		(0.4620)		(0.0508)			(0.8503)				
		2.63	SIG.	3.35	SIG.						
Y 4		1.321		2.2204		0.709	0.687	566.62	13	31.679	0.94
		(3.587)		(0.3945)			(5.602)				
		0.37	INSIG.	5.63	SIG.						
Y 5		12.382		-0.1830		0.032	0.043	295.53	13	0.427	1.17
		(2.546)		(0.2801)			(4.687)				
		4.86	SIG.	-0.65	INSIG.						

APPENDIX A-13 CONT.

	CONST.	B	R^2	$\bar{R}^2$	ESS	DF	F	d
V 6	19.994 (2.612) 7.65 SIG.	-0.3091 (0.2804) -1.10 INSIG.	0.092	0.0160 (4.611)	255.08	12	1.215	1.90
V 7	0.2748 (0.09634) 2.85 SIG.	0.0212 (0.010034) 2.05 INSIG.	0.260	0.198 (0.170)	0.347	12	4.222	0.72
V 8	1.550 (0.1197) 12.95 SIG.	-0.0394 (0.01295) -3.07 SIG.	0.439	0.393 (0.2112)	0.5355	12	9.401	0.77
V 9	12.278 (2.200) 5.58 SIG.	0.3138 (0.2420) 1.30 INSIG.	0.115	0.046 (4.049)	213.14	13	1.681	1.93

Source: Computer printout, 1987.

APPENDIX A-14: Regression Analysis of trends of Kilimanjaro Region's coffee prices and cost structures, 1970 - 1984.

Regressing V with X_t, D_1, $D_1 \boxtimes X_t$

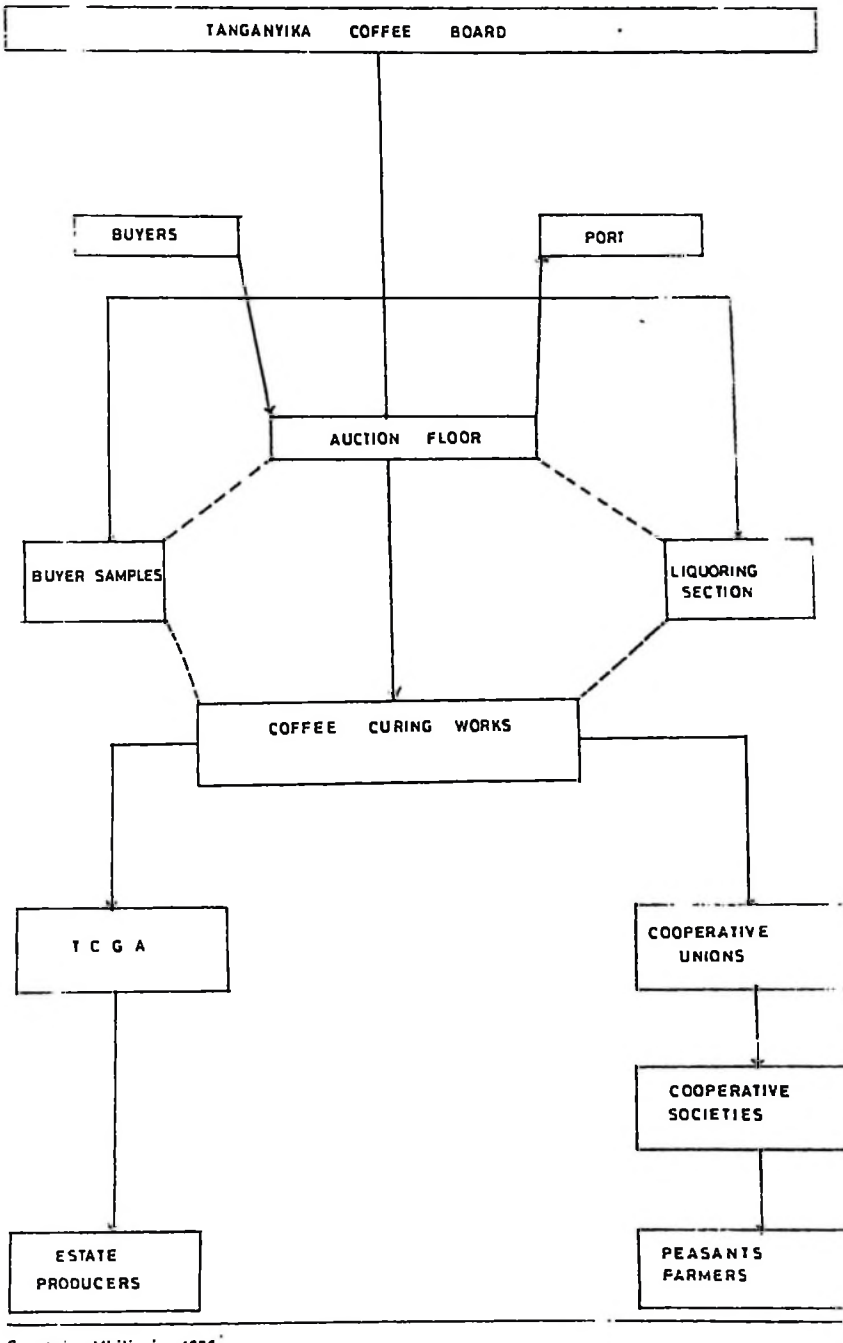
	β_0 CONST.	β_1 D_1	β_2 X_t	β_3 $D_1 \boxtimes X_t$	R	R^2	R^{-2}	ESS	F
V1	27.963	58.966	2.288	-4.837	0.920	0.846	0.804	416.93	20.10
	S.D	(12.295)	(0.950)	(1.5020)			(6.157)		
	t	4.796 SIG.	2.41	-3.22 SIG					
V2	34.121	-32.97	-2.251	2.711	0.925	0.855	0.815	54.67	21.56
	S.D	(4.452)	(0.345)	(0.544)			(2.229)		
	t	7.406 SIG.	-6.54	4.98					
V3	4.728	-3.143	-0.110	0.110	0.881	0.775	0.714	3.939	12.648
	S.D	(1.195)	(0.092)	(0.146)			(0.598)		
	t	2.630 SIG.	-1.202	0.753 INSIG.					
V4	-25.58	37.195	4.518	-4.738	0.954	0.911	0.886	174.32	1.368
	S.D	(7.950)	(0.614)	(0.971)			(3.981)		
	t	4.67 SIG.	7.36	-4.88					
V5	33.77	-25.80	-1.969	2.647	0.774	0.598	0.489	118.45	5.46
	S.D	(6.553)	(0.506)	(0.801)			(3.28)		
	t	-3.937	-3.891	3.305 SIG.					

APPENDIX A - 14 Cont.

	β_0		β_1	β_2	β_3					
	CONST.		D_1	X_t	$D_1 \otimes X_t$	R	R_2	-2 R	ESS	F
V 6	22.402		1.726	-0.460	-1.164	0.539	0.291	0.078	199.1888	1.368
		S.D.	8.913	(0.689)	(1.103)					
		t	0.194 INSIG.	-0.668	-1.055 INSIG.					
V 7	0.898		-0.484	-0.279	-0.761	0.892	0.796	0.735	0.0957	13.00
		S.D.	(0.195)	(0.015)	(0.024)			(0.0978)		
		t	-2.48 SIG.	-18.6	-31.71 SIG.					
V 8	1.05		0.865	-0.524	0.144	0.899	0.809	0.751	0.183	14.09
		S.D.	(0.021)	(0.033)	(0.033)			(0.135)		
		t	3.20 SIG.	24.95	-4.364					
V 9	16.85		-5.27	0.65	0.494	0.360	0.144	-0.089	205.98	0.618
		S.D.	(8.642)	(0.668)	(1.056)			(4.327)		
		t	-0.610 INSIG.	0.973	0.468 INSIG.					

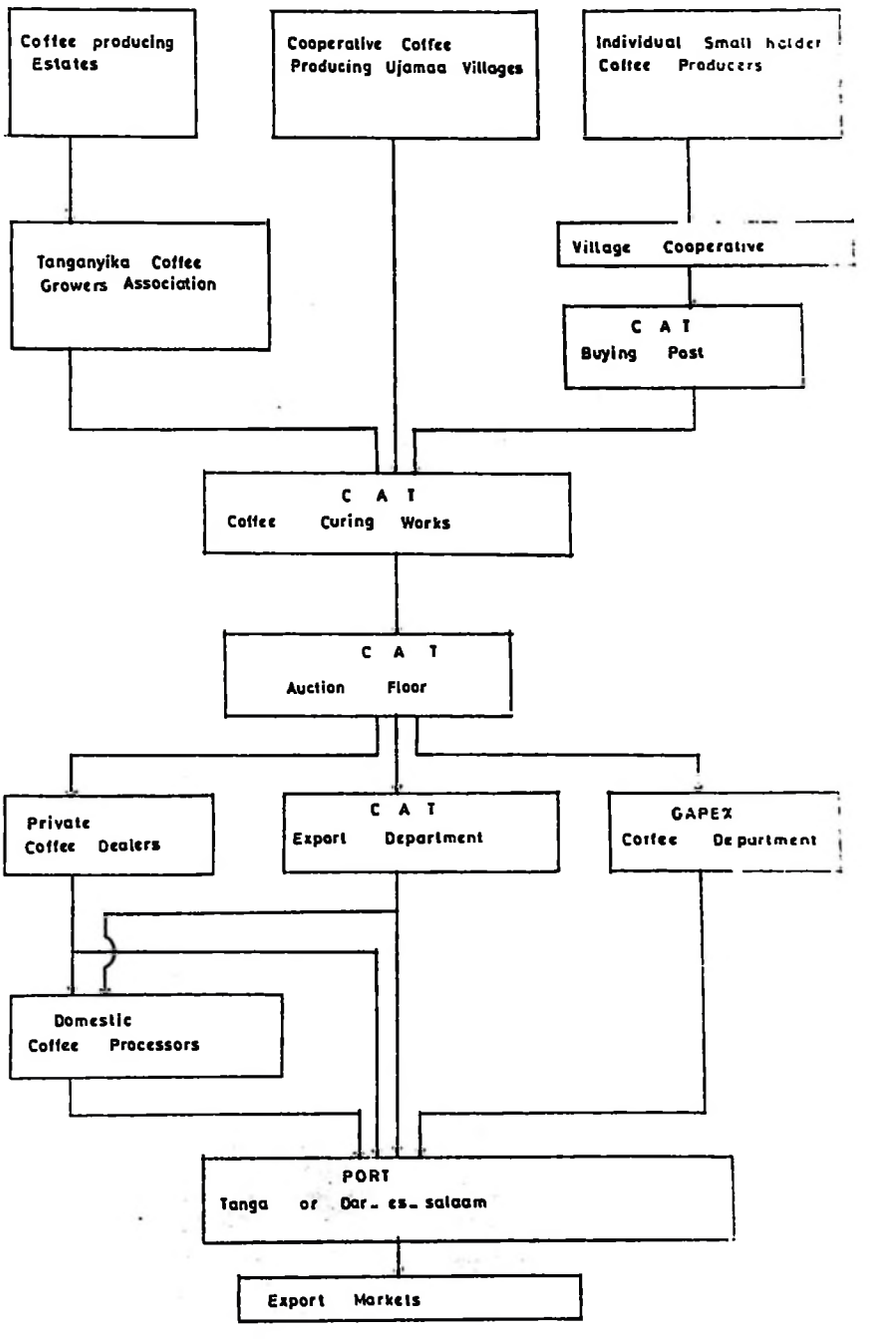
Source : Computer print out, 1987.

Appendix B - 1 The Organisation of the Coffee Industry in Tanzania up to 1976



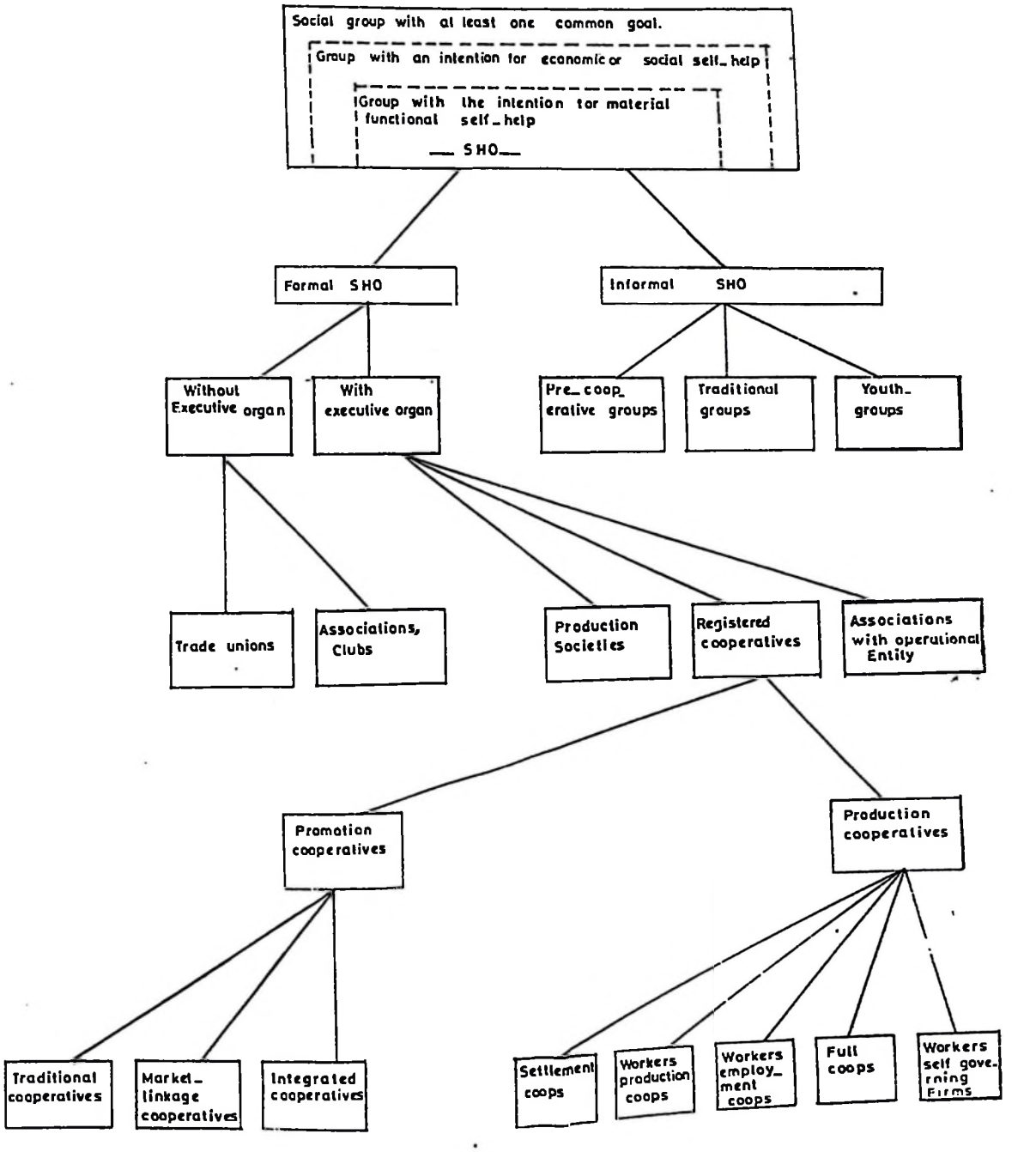
Source: Mbilinyi, 1976

Appendix.....B:.2..... The Organisation of the Coffee Industry in Tanzania 1976_1984



Source: Msuya, 1979

Appendix B.3. Classification of SHOs.



Source: Baldus, 1976, P. 10
Free translation from German by the author.

APPENDIX B-4 Programme coding form

Name: Shuma Thesis B7

Program title: Shum I DAT 16/10/1987

Obs No.	D_1	X_t	$D_1 \boxtimes X_t$	V_1
1	1	1	1	81.8
2	1	2	2	86.0
3	1	3	3	84.6
4	1	4	4	72.4
5	1	5	5	61.6
6	1	6	6	75.1
7	1	7	7	73.6
8	0	8	0	48.3
9	0	9	0	51.1
10	0	10	0	49.0
11	0	11	0	46.10
12	0	12	0	53.45
13	0	13	0	65.4
14	0	14	0	58.2
15	0	15	0	62.5

APPENDIX B-4 Cont.

V 2	V 3	V 4	V 5	V 6	V 7	V 8	V 9
2.33	1.87	11.57	7.94	24.10	0.45	2.07	10.76
1.18	1.64	12.00	10.98	20.73	0.34	1.46	13.09
1.57	1.52	11.20	10.38	14.47	0.22	1.32	17.51
3.06	1.31	9.36	9.86	19.08	0.25	1.27	14.15
6.08	1.39	9.30	12.67	-	-	-	7.05
2.34	1.03	10.79	6.33	20.39	0.21	1.17	10.50
4.34	2.31	10.96	16.60	8.66	0.20	1.00	19.98
20.19	3.14	8.00	22.90	17.83	0.56	1.05	16.51
12.60	5.05	20.24	15.63	11.09	0.56	1.10	18.03
9.12	3.29	18.21	9.02	21.88	0.72	1.20	11.39
9.79	3.25	16.60	12.26	21.85	0.71	1.06	13.36
4.93	3.66	34.72	8.57	19.57	0.72	1.10	23.25
2.68	2.68	34.10	7.36	18.66	0.50	1.13	16.35
3.26	3.26	41.79	5.59	14.11	0.46	1.11	16.87
3.29	3.29	37.43	7.68	11.85	0.39	1.13	13.02

Source: Author, 1987.

APPENDIX C: Structural stability tests calculations

F - tests

$$F1 = \frac{(1398.2 - 416.92) / 2}{416.92/11} = \frac{490.64}{37.90} = 12.95$$

$$F2 = \frac{(361.0 - 54.67) / 2}{54.67/11} = \frac{153.165}{4.97} = 30.82$$

$$F3 = \frac{(9.400 - 3.939) / 2}{3.939/11} = \frac{2.7305}{0.358} = 7.63$$

$$F4 = \frac{(566.62 - 174.326)/2}{174.326/11} = \frac{196.147}{13.41} = 12.38$$

$$F5 = \frac{(285.53 - 118.45) / 2}{118.45/11} = \frac{83.54}{10.77} = 7.76$$

$$F6 = \frac{(255.08 - 199.180) / 2}{199.18/10} = \frac{27.95}{19.92} = 1.40$$

$$F7 = \frac{(0.347 - 0.0955) / 2}{0.0955/10} = \frac{0.126}{0.00955} = 13.19$$

$$F8 = \frac{(0.536 - 0.183) / 2}{0.183/10} = \frac{0.1765}{0.0183} = 9.65$$

$$F9 = \frac{(213.1 - 205.98) / 2}{205.98/11} = \frac{3.560}{18.725} = 0.190$$

APPENDIX D : Calculations of t-tests using proportions

$$t_{calc} = \frac{P_1 - P_2}{\sqrt{\frac{P_1 q_1}{n_1} + \frac{P_2 q_2}{n_2}}}$$

4.2.4.3 (i) Payment of interim payment

$$t_{calc} = \frac{0.12 - 0.50}{\sqrt{\frac{0.12 \times 0.88}{50} + \frac{0.5 \times 0.5}{50}}} = -4.45$$

4.2.4.3 (ii) Payment of final payment

$$t_{calc} = \frac{0.12 - 0.34}{\sqrt{\frac{0.12 \times 0.88}{50} + \frac{0.34 \times 0.66}{50}}} = -2.709$$

APPENDIX E: Sampled rural cooperative societies in Kilimanjaro Region.

	Rural Cooperative Society	District
1.	Masama - Mula	Hai
2.	Nshara	Hai
3.	Kibong'oto	Hai
4.	Machame-Nkuu	Hai
5.	Machame-North	Hai
6.	Uru Central Mawella	Moshi rural
7.	Mamba	Moshi rural
8.	Mwika - West	Moshi rural
9.	Marangu-East	Moshi rural
10.	Marangu West	Moshi rural

APPENDIX F: Agricultural parastatals operating in Tanzania up to 1984

Organization	Activities
	AGRICULTURAL MARKETING
National Milling Corporation (NMC)	Sole right to buy food grains domestically and to import them.
Sugar Development Corporation (SUDECO)	Sole rights to market, export and import sugar
Tanzania Cotton Authority (TCA)	Sole rights to purchase and export cotton
Coffee Authority of Tanzania (CAT)	Sole rights to purchase and export coffee
Tanzania Pyrethrum Board (TPB)	Sole rights to purchase and export pyrethrum
Tobacco Authority of Tanzania (TTA)	Sole rights to purchase and export tobacco
Cashewnut Authority of Tanzania (CATA)	Sole rights to purchase and export cashews.
General Agricultural Produce Exports Corporation (GAPEX)	Sole rights to cts purchase and export a range of minor crops

APPENDIX F Cont.

Organization	Activities
National Agricultural and Food Corporation (NAFCO)	Crop production, principally wheat and rice
Kilombero Sugar Corporation	Cane and sugar production
Tanganyika Planting Company	Cane and sugar production
Mtibwa Sugar Estates	Cane and sugar production
Dairy Farming Corporation (DAFCO)	Livestock and milk production
Livestock Industry Development Agency (LIDA)	Livestock and milk production
National Ranching Corporation (NARCO)	Livestock and milk production
AGRICULTURAL CREDIT	
Tanzania Rural Development Bank (TRDB)	Provision of agricultural credit and inputs
Agricultural inputs and supplies company (AISCO)	Importation of agricultural inputs and equipment
State Motor Corporation (SMC)	Sole rights to import vehicles and vehicles parts
Tanzania Fertilizer Company	Production and marketing of fertilizers
Tanzania Seed Company (TANSEED)	Production and marketing of of seed

Source: ACDI, 1982, pp. 15 - 16.

APPENDIX G: Questionnaire to evaluate the role played by coffee marketing institutions to coffee small-holders in Kilimanjaro Region, 1970-1984

Note:i) Parts I and II of the questionnaire are to be answered by the member or functionary of a primary Cooperative Society. Part III is to be answered by officials of KNCU or Tanzania Coffee Marketing Board.

ii)If the space provided is inadequate use back of paper or use additional paper and attach to this questionnaire as an annex.

Serial number of rural primary Cooperative Society:.....

Name of Enumerator:.....

Date of Interview:.....

Name of Supervisor:.....

G.P. Shuma

1. Identification particulars

1. Name of Village .....
2. Registration Number of Village.....
3. Ward..... 4. Division.....
5. District..... 6. Region.....
7. Respondent's Name.....
8. Respondent's Occupation(s).....
9. Are you a member of the new Cooperative Society?
   Yes [ ] No [ ]
   If Yes, state:
   9.1 Name of Coop. Society.....
   9.2 Registration No. of Coop. Society.....
   9.3 Date of Registration of the Coop. Society.....
   9.4 Lenght of membership in the new Cooperative Society.....
10. Name the main food and cash crops grown in the village
   10.1 Food crops:.....
   .....
   10.2 Cash crops: .....
   .....

II. Data on crop marketing efficiency

A. Data during CAT time, 1976 - 1984

1. Name of buying post.....
   .....
2. Were the buying seasons starting in the right time? Yes [ ] No [ ]
   If no give explanations: .....
   .....
3. Show whether the committee members performed the following duties of crops purchase:
   1. Very well 2. Well 3. Fairly well
   4. Badly 5. Very badly

Function	1	2	3	4	5
i) Inspection					
ii) Grading					
iii) Weighing					
iv) Supervision					
v) Paying farmers					

4. How many weeks did it take on the average before the first payment was paid after delivery of crops to buying post?
   Tick (✓) the proper class interval
   Less than 1
   1 - 2
   3 - 4
   5 - 6
   7 - 8
   More than 9

5. Were the interim and final payments paid in right time,so that you could get money for maize cultivation in time?
Yes [ ] No [ ] If no give explanation:

i) Interim Payment.....
.....
.....

ii) Final payment .....
.....
.....

6. Was the coffee producer's price sufficient to cover coffee farming costs. Yes [ ] No [ ] If no give explanation
.....
.....

7. Did crops pile up in village godowns/stores.
Yes [ ] No [ ]
.....
.....

8. Did any crops get spoiled because of bad storage/ transportation?
Yes [ ] No [ ] If yes give explanations/comments
.....
.....

9. Were you visited by crop authority extension staff?
Yes [ ] No [ ] If Yes, how many times did they visit you on the average per month or per year?
Specify:
.....
.....

B. Data During KNCU/TCMB time, 1984

1. Name of rural cooperative society
.....

2. Are the buying seasons starting in right time?
Yes [ ] No [ ] If no give explanation
.....
.....

3. Show whether the committee members are performing the following duties of crop purchase:
1. Very well 2. Well 3. Fairly well
4. Badly 5. Very badly

Function	1	2	3	4	5
i) Inspection					
ii) Grading					
iii) Weighing					
iv) Supervision					
v) Paying farmers					

4. How many weeks does it take on the average before

the first payment is paid after delivery of crops to buying post? Tick (✓) the proper class interval

Less than		1
1	-	2
3	-	4
5	-	6
7	-	8
More than		9

5. Are the interim and final payments been paid in right time? Fore example, so that you can get money for maize cultivation in time.
Yes [ ] No [ ] If No give explanation.
i) Interim payment.....
.....
ii) Final payment .....
.....

6. Do you think the coffee producer's price is now sufficient to cover coffee farming costs?
Yes [ ] No [ ]
If no give explanation.....
.....

7. Are you crops piling up in village godowns/stores.
Yes [ ] No [ ] If yes, give explanation
.....
.....

8. Are any crops getting spoiled because of bad storage/transportation? Yes [ ] No [ ]
If Yes give explanation/comments.....
.....

9. Are you being visited by KNCU/TCMB extension staff?
Yes [ ] No [ ] If Yes how many times did they visit you on the average per month or per year? Specify
.....
.....
.....

C. <u>Provision of inputs to member economies</u>

Put 1. Very good 2. Good 3. Fair 4. Bad 5. Very bad; depending on how you judge the performance of the provision of inputs by the marketing organization indicated.

Input	CAT	KNCU/TCMB
1. Fertilizer		
2. Pesticides		
3. Spray pumps		
4. Credit		
5. Transportation		
6. Building materials		
7. Consumer goods		
8. Seeds		
9. Gunny bags, twine & needles		

D. <u>Extra particulars of the farmer</u>

1. Farmer's Coffee Farm in acres.....
2. Farmer's Income in T.shs. per:
   Month..... or per
   Year .....Specify/Year
3. Has the farmer ever uprooted his coffee trees to plant other crops. Yes [ ] No [ ] If Yes, specify which crops were involved and why?

E. General Assessment by the Farmer

Which marketing system do you prefer? Tick (✓)

Village government/CAT.....

KNCU/TCMB .....

III. Socio-economic development brought about by the marketing organization

A service/infrastructure	Number or Amount Executed			
	CAT	YEAR	KNCU/TCMB	YEAR
1. School built				
2. Dispensaries				
3. Pulpery machines				
4. Scholarships offered				
5. Roads constructed				
6. Godowns/stores built				
7. Contribution to TANU/CCM				

B. General Assessment by Officials

Tick (✓) the marketing system you prefer.

Village government/ CAT.....

KNCU/TCMB.....

APPENDIX H : Frequency table showing a comparison of managerial efficiencies of committee members operating under CAT and KNCU

Tasks / Managerial efficiency of committee members	Inspection		Grading		Weighing		Supervision		Paying farmers		Average No. of Responses		Weight	Weighted mean Responses	
	No. of Responses														
	CAT	KNCU	CAT	KNCU	CAT	KNCU	CAT	KNCU	CAT	KNCU	CAT	KNCU		CAT	KNCU
1	7	16	9	15	8	21	14	19	12	17	10	17.6	0.33	3.3	5.9
2	17	17	16	17	19	14	14	15	21	18	17.4	16.2	0.27	4.6	4.3
3	12	4	12	3	11	3	10	4	6	3	10.2	3.4	0.20	2.0	0.7
4	4	1	4	1	2	0	1	0	1	0	2.4	0.5	0.13	0.2	0.1
5	0	0	0	0	0	0	0	0	0	0	0	0	0.07	0	0
Total	40	38	41	36	40	38	39	38	40	38	40	37.7	1	10.1	11.0

Source : Survey data, 1987

Scale : 1. Very good, 2. Good, 3. Fair, 4. Bad, 5. Very bad

N = 50, some respondents were indifferent to some of the questions.

APPENDIX I: Frequency table showing a comparison of promptness of paying farmers advance payment by CAT and KNCU

	CAT		KNCU		Total sample			CAT	KNCU
Weeks	Responses	Percent	Responses	Percent	Responses	Percent	Weight	Weighted Responses	
<1	35	35	45	45	80	80	0.29	10	13.05
1 - 2	10	10	5	5	15	15	0.24	2.38	1.20
3 - 4	5	5	0	0	5	5	0.19	0.95	0
4 - 6	0	0	0	0	0	0	0.14	0	0
7 - 8	0	0	0	0	0	0	0.10	0	0
>9	0	0	0	0	0	0	0.05	0	0
Total	50	50	50	50	100	100	1	13.33	14.25

Source: Survey data, 1987

N = 50

APPENDIX J : FREQUENCY TABLE showing a comparison of efficiency of provision of inputs to farmers by C.A.T. and KNCU

Inputs / Efficiency of provision of inputs to farmers	Pesticide		Fertilizer		Spray pumps		Credit for inputs		Average No. of Responses			Weighted mean Responses	
	No. of Responses												
	C.A.T	KNCU	C.A.T.	KNCU	C.A.T.	KNCU	C.A.T.	KNCU	C.A.T	KNCU	Weights	C.A.T.	KNCU
1	10	2	2	10	7	3	0	1	4.75	4.0	0.33	1.58	0.07
2	20	7	8	20	31	13	31	16	22.5	14.0	0.27	6.0	3.73
3	18	10	20	14	10	11	13	14	15.25	12.25	0.2	3.05	2.45
4	4	24	8	2	1	5	2	2	3.75	8.25	0.13	0.5	1.1
5	1	3	12	4	1	17	3	16	4.25	10.0	0.07	0.28	0.67
Total	53	46	50	50	50	49	49	49	50.5	48.5	1	11.41	8.02

Source : Survey data, 1987

Scale : 1. Very good, 2. Good, 3. Fair, 4. Bad, 5. Very bad

N = 50, some respondents were indifferent to some of the questions.