

**CASHEWNUT PRODUCTION AND MARKETING IN MKURANGA
DISTRICT, TANZANIA**

BY

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
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ABSTRACT

This study analysed the performance of cashewnut production and marketing in Mkuranga District. More specifically, the study dealt with identifying major problems affecting cashewnut production and marketing, profitability of cashewnuts and its competing crop enterprises. In addition, an analysis of factors influencing buyers' net profit was done. The survey was conducted using a sample of 120 households, 24 traders and four secretaries of primary cooperatives. A structured interview, personal observation and key informants were methods used to collect the primary data. On the other hand secondary data were obtained from key organizations in the industry. Tools of data analysis included descriptive statistics, gross margin, as well as regression and correlation analyses. The results of analysis in this study showed that low prices, unreliable markets, high input costs, pests and diseases were the most important constraints. The highest and lowest gross margin obtained from cashewnuts were 159 054 Tshs/ha and 82 110 Tshs/ha for coconut, respectively. The results of correlation analysis showed that selling price was positively correlated with market margin ($r = 66.5\%$; $P = 0.003$). The regression results indicated that education, selling price, and transport cost significantly ($P < 0.05$) affected the traders' net profit, whilst buying price, and trading experience, were not significant ($P < 0.05$). The existing marketing system actors comprised of producers, agents, collectors, cooperatives, traders and consumers. Generally, cashewnuts marketing system was seen to be inefficient and underdeveloped. Thus, cashew development interventions should be directed to both production technological gaps and marketing problems. The study recommends the use of

warehouse receipts system, designated buying posts and improvement of research and extension services in cashew industry.

DECLARATION

I, SHIJA LYELLA LUSENDAMILA, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work has neither been submitted nor being concurrently submitted for degree award in any other Institution.

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Date

The above declaration is confirmed

Dr. R.M.J. Kadigi
(Supervisor)

Date

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DEDICATION

I dedicate this dissertation to my father the late Lyella Maseselo and mother Mary Lyella who made a lot of effort in laying down the foundation for my education.

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LIST OF ACRONYMS AND ABBREVIATIONS

AEC	Agricultural Extension Centre
AMCOs	Agricultural Marketing Cooperatives
BET	Board of External Trade
BTC	Belgium Technical Cooperation
CATA	Cashewnut Authority of Tanzania
CBT	Cashew Board of Tanzania
CFC	Common Fund for Commodity
CTAHR	College of Tropical Agriculture and Human Resources
DALDO	District Agriculture and Livestock Development Officer
DED	District Executive Director
FAO	Food and Agriculture Organization of United Nations
FINCA	Foundation for International Community Assistant
FoB	Free on Board
GDP	Gross Domestic Product
Gm/ha	Gross margin per hectare
HH	Household
IMF	International Monetary Fund
IFAD	International Fund for Agriculture Development
ITF	Input Trust Fund
LDC	Least Development Countries
LEISA	Low External Input and Sustainable Agriculture
MAFC	Ministry of Agriculture, Food security and Cooperatives
MDB	Marketing Development Bureau
Mt	Metric tons
NGOs	Non Government Organizations
PMD	Powdery Mildew Disease
PDN	Product Dispatch Note
PPD	Plant Protection Division
PRIDE	Promotion of Rural Initiative Development
SACCOS	Saving and Credit Cooperative Society
SEDA	Small Enterprise Development Association
SNAL	Sokoine National Agriculture Library
SPSS	Statistical Package for Social Science
SSA	Sub-Saharan Africa
SUA	Sokoine University of Agriculture
TCMB	Tanzania Cashewnut Marketing Board
Tshs	Tanzanian Shillings
URT	United Republic of Tanzania
WB	World Bank

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Identifying markets for agricultural products including cashewnuts, is often considered a critical element in the effort to increase farm income, generate additional employment and reduce post harvest losses in Africa (Mutakubwa, 2007). In Tanzania agriculture is considered as the backbone of the national's economy, whereby about 80% of the population depend on agriculture (URT, 2001). However, agricultural production and marketing problems, such as limited access to farm inputs by smallholder farmers have affected the agricultural industry since liberalization policies were operationalised in Tanzania in 1990s (Lumbana, 2000).

In general improvement of farm yield requires that farmers are able to buy inputs, use improved technologies like appropriate farm inputs and implements which in turn depend on the level of income generated from farming (Gabagambi, 1998). The performance of marketing systems for both farm produce and inputs is also equally important. Thus, linking rural producers to lucrative markets could help commercializing the smallholder farming systems in Tanzania. Arguably, under favourable marketing channels more efficient interregional trade within the country can accelerate aggregate production, since it encourages farmers to increase production (Gebreselassie and Sharp, 2007; Mwalili, 2008).

Cashewnut is one of the traditional export crops in Tanzania, in which its marketing systems have been affected by market reform policies which occurred in the mid

1990s (Chachage and Nyoni, 2001). It is generally argued that the liberalization policy in the country has not benefited cashewnut producers in the country. In Mkuranga District for example, a downward trend of production is reported and this is associated with lack of both reliable factor and produce markets (Kaoneka, 2006). Mitchell (2004) reported that farmers in Mkuranga district are not satisfied with the performance of cashewnut marketing and do complain of being exploited by private traders. Moreover, the cashewnut cooperatives have failed to perform their key roles namely: timely distribution of inputs, buying of crops and dissemination of agricultural information to farmers (Mole, 2000). Rweyemamu (2002) reported that cashewnuts markets are partially competitive and that farmers might be receiving disadvantageous prices for their nuts.

In order to meet their desired production and marketing systems requirements, an institutional innovation is needed to provide input credit to farmers through successful enforcement of interlocking contracts to finance the production system. This can be achieved through the use of traders association, formal or informal credit sources and farmer's organizations.

Another challenge is to overturn the culture of loan default which is predominant amongst loan beneficiaries inhibiting the expansion in provision of seasonal credit (Masambu *et al.*, 2007).

1.2 Problem Statement and Justification

Cashewnut is among the major cash crops in Tanzania. However, market prices have been reported to show downward trends which discourage smallholder farmers to increase production (Fig.1 and 3). Among the factors contributing to this is poor performance of the marketing channels for crops (Shoo, 1997; Lumbana, 2000; Mitchell, 2004; CFC, 2006). In Mkuranga District, for example, cashewnut has been the most important traditional and cash crop but the marketing systems for the crop are poorly performing characterised by low producer prices.

Other constraints reported by other studies are low productivity of the crop, weak institutional framework and lack of standards which are harmonized with international markets (Jaffee, 1995; Mkude, 2003; CFC, 2006; Kaoneka, 2006). These are attributed to the collapse of the former marketing system following the trade liberalization policies. Moreover, the problem of mismanaged cooperatives has caused farmers to sell their produce to different channels such as private traders. Being accustomed to marketing through the regulated and much formalized cooperatives and parastatal boards, for the majority of farmers, selling produce through a network of buyers is a new phenomenon. Additionally, trade liberalization policies have resulted in the entry of new actors such as cooperatives, farmers' group, financial institutions, Non Governmental Organizations (NGOs), government agencies and private traders on the scene. To date not much is known about the performance of the different participants in the marketing channel of cashewnut, particularly in Mkuranga District.

Most of the studies done so far on agricultural marketing provide generalized information related to the outputs and profit margins, a generalization which might be erroneous. As recommended by Limbu (1993), cited by Gabagambi (1998) case study analyses are essential for establishing specific areas for tackling agricultural marketing problems and confers promising solutions.

This study analysed the performance of cashewnut production and marketing in Mkuranga District, examining whether cooperatives and other buyers provide adequate incentives to cashew farmers. The study also identified the major problems affecting the cashew industry in the district.

1.3 Objectives of the Study

1.3.1 General objective

The main objective of this study was to analyse the performance of cashewnut production and marketing systems in Mkuranga district.

1.3.2 Specific objectives

- i. To analyse profitability of cashewnut and its competing farm enterprises.
- ii. To identify the problems affecting cashewnut production and marketing.
- iii. To determine factors influencing the performance of marketing systems for cashewnut in the study area.

1.3.3 Research questions

- i. What are the costs and benefits accrued by different actors in the marketing channels for cashewnut?
- ii. What are the problems in cashewnut production and marketing?
- iii. What are the determinants of performance in the marketing channels for cashewnut in the study area?

1.4 Organization of the Dissertation

This dissertation is organised into five chapters. The first chapter presents an introduction to the study. The second chapter provides a review of the relevant literature. Chapter three describes the theory and methodological frameworks of the study. Chapter four presents the findings of the study and a discussion of the results. Chapter five winds up the dissertation by presenting some concluding remarks and policy recommendations.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 The Agricultural Sector in Tanzania

The agricultural sector in Tanzania plays an important role in the economy of the country and has high potential to advance the country's objectives of economic growth and poverty reduction. It contributes significantly in terms of aggregate growth, exports, employment and linkages with other sectors. The sector still contributes the most to the gross domestic product (GDP). However, the said contribution has been fluctuating; for instance there was a decline from 48.9% and 48.2% in 1999 and 2000, respectively. It further declined to 48.1% and 47.5% in 2001 and 2002, respectively. Agricultural products contribute well over half of Tanzania's exports. Judging from the sector's recent performance relative to growth targets for effective poverty eradication the overall performance of the agricultural sector is rather unimpressive. The overall agriculture GDP has grown at 3.3% per year since 1985 where as the GPD for the six main food crops is growing at 3.5% per year, and that of export crops have grown at 5.4% (MAFC, 2006). The same author concluded that components like livestock (4.8%) and forestry recorded lower performance. It implies that changes in productivity show a stagnant trend.

2.1.1 Agricultural sector policies

The current agricultural policy includes the liberalization of all agricultural markets and removal of state monopolies and withdrawal of government from production projects (URT, 1997). Others are the decentralization of agricultural extension and transfer of administrative and implementation responsibility to district councils and

government's continued responsibility for regulation (URT, 2001). These policies are broadly entrenched as a guide to government activity in the agricultural sector but they are not yet fully implemented and, thus, further action or cessation of action is required to enable the beneficial impact to be fully realized by farmers at the micro-level.

2.2 The World Cashew Economy

According to CFC (2006) cashewnuts is the largest single export item for the Least Developed Countries (LDCs), having accounted for 53% of the total LDC exports of fresh and dried fruit and nut in value over the last five years. Other exports consisted of fresh and dried tropical fruits: melons, papaya, pineapples, avocado, guava and mangoes (30% of LDC exports), fresh and dried grapes 7%, other fresh and dried temperate fruits 5%, banana 4% and citrus fruits 1%.

India is the world's leading exporter of cashewnuts. Its shipments account for 65% and consist of both local cashewnut and raw imported products mostly from African countries and Vietnam (CFC, 2006). Among the LDCs, Tanzania is the biggest cashewnut producing country representing 11% of the world's exports. Its main export destinations are India, China and Singapore. Other major African exporters of cashewnuts supplying the Indian processors are Guinea Bissau, Nigeria, Cote d'Ivoire and Benin in West Africa, as well as Kenya, Mozambique and Madagascar in East Africa. Kaoneka (2006) reported that the largest decline in LDC cashewnut production and export of edible nuts in 2001/02 season (Fig. 1) resulted from severe drought in Tanzania.

2.3 Cashewnut Production in Tanzania

In terms of global production Tanzania ranks fourth after India, Nigeria and Brazil (URT, 2006). Over the last decade Tanzanian cashewnut production has shown considerable fluctuation (Fig.1).



Figure 1: Cashewnut production trend in Tanzania from 1997/98 - 2007/08
(Source: CBT, 2008)

In the last eleven years, overall production was highest in 2000/01 season whereby 121 379 metric tons (Mt) were produced and lowest was 64 441Mt in 2001/02. There was also increase in production for the year 2002/03 season (82 064 Mt). In 2003/04 were 76 770Mt and decreased to 66 708Mt in 2005/06. Also, production increased to 69 259 Mt and 75 887 Mt in 2006/07 and 2007/08 respectively (Fig. 1). The average production over the 11-year period was 86 219 Mt.

Various factors are responsible for the decline in cashewnut production. Shomari (1990) indicates that villagilization policy of Tanzanian government in the 1970s which moved people from their original settlements to communal villages contributed to some extent to the decline in cashewnut production, since most farms were left unattended when the villagers moved to new settlements. However, Sijaona (2002) reports that low yields in the 1980s were associated with factors such as poor crop husbandry, pests and diseases and low producer prices, which discouraged many farmers from investing in cashew cultivation.

In the early 1990s, trade liberalization policies, combined with improved crop husbandry, improved tree stock and more investment in research activities resulted in an improvement in both cashewnut production and the cashew industry (MDB, 1992). Currently, small scale farmers are the majority of cashewnut production in Tanzania, in mono-or mixed production systems (Topper *et al.*, 1998). The government is actively supporting farmers in upgrading their current farming systems and practices in order to improve the condition of the trees and maximize the agronomic potential. Current yields are about 5kg per tree, but under optimum conditions, yields of 25 kg per tree can be realised (Poulton, 1998).

2.3.1 Cashewnut production in the Coast region

According to the Regional Commissioner's office (2008) total production in the region increased steadily to 9 638.6 Mt and 12172 Mt in the 2002/03 and 2003/04 seasons, respectively, and then dropped in the 2004/05 season to 10 563 Mt. In 2005/06, 13 829 Mt were produced, which decreased to 6 623.5 Mt in 2006/07.

2.3.2 Cashewnut production trends in Mkuranga District

The economy of the district depends on agriculture, mainly production of cashewnuts. About 80% of income generated in the district comes from cashewnut production. Records available in the office of District Agricultural and Livestock Development Officer (DALDO) showed that production of cashewnut increased from 5396 Mt in 2002/03 to 8100 Mt in 2003/04 season following availability of sulphur powder that was sold at an affordable price. However, production dropped in the 2004/05 season to 5400 Mt due to excessive rainfall. The said production increased in the 2005/06 and 2007/08 seasons to 6064 Mt and 8000 Mt, respectively.

2.4 Farmers Incentives for Crop Production

Like several other cash crops, production of cashewnuts is influenced by various internal and external factors. However, most of these factors are external, including: market price of the product, climatic conditions; competition amongst the local buying agents; quality; disease; pests and fire outbreaks.

Price plays a major role in determining production of cashewnuts. Higher prices act as an incentive to farmers and vice versa (Jones and Muthuura, 1989). As far as the climatic conditions are concerned, the better the weather during the flowering season, the better the harvest. When there is deficit in rainfall or sunshine, the quality of cashewnuts is lowered. Local buying agents play a vital role in the cashewnut supply chain in Tanzania, and there is the tendency for production to increase whenever there are many agents trying to secure supplies (Rweyemamu, 2002). The agents penetrate in the villages' production areas and become source of supplies.

Competition, especially when export prices are attractive, tends to develop between established buyers and local firms (Chachage and Nyoni, 2001). Pests and diseases lower production and harvest. Bush burnings, occur especially during the dry season, and coincide with the harvesting season. Whenever such fire outbreaks do occur, cashew farms are affected (Mkude, 2003).

2.5 Utilization of Cashewnut Products

Cashewnuts production is one of several livelihood strategies that smallholders employ to meet their economic and social needs in a changing socio economic and demographic environment (Behrens, 1996). Livelihood strategies can be defined as the range of activities adopted and choices made by smallholders in pursuit of household economic and social security (Mitchell, 2004). Shoo (1997) and WB (2000) pointed out that due to its unique physical and chemical properties, cashewnuts is used in numerous food products such as roasted and salted nuts, ice creams, cakes, chocolates and appetizer to cocktail drinks. Apart from being a source of useful products for food, medicine and by products applications, cashew trees give a useful shade, while ornamental and alley trees are suitable for the control of soil erosion, particularly for the protection of water shades and dams.

Cashewnut is rich in minerals like calcium, phosphorus and iron (Nayar, 1998). It has a very low content of carbohydrates, as low as 1% of soluble sugar hence does not add to obesity and helps control diabetes. It is an excellent nerve tonic, a steady stimulant and a body builder.

2.6 Agricultural Marketing Node and Inter Sectoral Linkages

A marketing node is defined as any point in the marketing chain where an exchange and/or transformation of agricultural commodities take place (Mwalili, 2008). There are many areas to which agricultural production and marketing activities are inter linked. Among these areas include market institutions, agricultural input availability, price of agricultural products and agricultural marketing.

Torero and Gulati (2004) reports that market institutions play five roles in strengthening markets for commodities produced, bought and sold by small scale farmers, the said roles are: reducing transaction costs; managing risks; building social capital; enabling collective action and redressing missing markets. Market institutions include research and extension services, Agricultural marketing cooperatives (AMCOs), Agricultural finance and credit, market information, Physical infrastructures, grades and standards (Akiyama *et al.*, 2001).

2.6.1 Research and extension services

Extension and research provide farmers with knowledge and skills important for production and marketing of agricultural commodities (Mole, 2000). For example in Tanzania, the provision of these services is fixed in the agricultural extension system whereby the costs of such services mostly are paid by Government (URT, 2001). Following market liberalization in the mid 1980s, the private sector has been increasingly participating in the provision of extension services. Such services are use and sale of agricultural inputs and marketing of cash crops like tobacco, coffee, cotton and cashewnuts (Shepherd, 2004). However, to the most of farmers

availability and access to extension services are rather difficult after the said market liberalization, for the majority of these farmers do lack capital to pay for the services provided by the private sector (Wangwe and Lwakatare, 2004).

In view of the resource constraints faced by most farmers in rural areas, attractive production options are largely seen as those that enable them to use their land, labour and capital in a better way (Duncan and Jones, 1993). Agricultural research and extension services have a central role in facilitating this through the development of appropriate production recommendations and the transfer of new technology to farmers (Mole, 2000). For instance, improved agriculture depends heavily on the input of research through development of higher yield potentials of crops/livestock which can provide high return to producers (Ehirim, 2004).

2.6.2 Agricultural marketing cooperatives (AMCOs)

Cooperatives as one of the marketing agents are of great importance to smallholder producers in articulating farmers' need and promoting collective actions on overcoming problems in commodity and capital markets (Msuya, 2003). In addition to this, cooperatives also play a major role in facilitating job creation, economic growth and social development (MDB, 1992). Ranging from small scale to multi-million dollar businesses across the world, cooperatives are estimated to employ more than 100 million both women and men, and have more than 800 million individual members. According to Gregory (1995), cooperatives mainly operate in agricultural marketing and supply, finance, wholesale and retailing, health care and insurance.

In view of cashewnut marketing, Lumbana (2000) suggests that development of local cashewnut market place, and/or improving farmer bargaining power through group selling actions, as well as market awareness activities, as opposed to each farmer ‘selling in the store’, could provide incentives to on-farm storage and the development of larger markets with economies of scale. Golleti and Babu (1995) reported that cooperatives would help to prevent a few resourceful and ‘monopoly like’, trader groups or individuals from trying to act together to pay lower prices to uninformed farmers.

2.6.3 Agricultural finance and credit availability

Finance is defined as monetary support for an enterprise, whilst credit is defined as a transaction between two parties in which one (the creditor or lender) supplies money, goods, services or securities in return for promised future payment by the other (the debtor or borrower). Such transactions normally include payment of interest to the lender (Sacedorti, 2005). Existing literature shows that credit plays a vital role in reactivation, expansion and enhancement of modernization of trade. Small and micro enterprises require assistance for start up capital, capital for leasehold and working capital (Vicent, 2005).

Generally, there are three sources of credit/finance to agricultural enterprises categorized as formal (commercial banks), semi formal such as Micro finance institutions e.g. Promotion of Rural Initiative Development (PRIDE) Tanzania, Small Enterprise Development Association (SEDA), Foundation for International Community Assistance (FINCA), Non Governmental Organizations (NGOs), and

Cooperatives, and informal sources which are mutual support group, and individuals (Ledgerwood, 2002).

According to Onumah (2002) the basic reason in providing credit to producers is that most of smallholder producers lack assets (movable and fixed) and that they have low capital which restrains their ability to use capital intensive technologies in agricultural production. Gabrekidan (2006) noted that agricultural credit removes financial compels, which confront the small rural farmers. It provides an incentive for the farmers to purchase and adopt improved technologies which will increase levels of public and private sector investment at all levels of agricultural activities, including primary production, marketing, input supply and processing.

Lending to agriculture by Banks and financial institutions has dramatically declined following economic liberalization both in scope and outreach (Masambu *et al.*, 2007). Furthermore, most small farmers and other rural entrepreneurs experience great difficulty in accessing urban based Banks due to their dispersed location and general poor rural infrastructure. Philip (2001) reports that the problems of financing agricultural production and marketing are associated with the nature of the development of financial markets and biases in credit allocation that favours more urban dwellers.

According to IFAD (2001) it is evident that most of rural producers could manage to borrow from formal credit sources, but that they prefer to use informal sources of finance due to lower transaction costs compared to formal sources. For example

Masambu *et al.* (2007) show that the use of formal credit is rare at peasant farm level. On average less than one percent of the total formal credit goes to peasant farmers. A follow up survey conducted in 2002 indicated that only between 6%-8% of the total rural credit demands were met by existing formal financial sources IFAD (2002), cited by Brown (2007). Moshi (2003) indicates that due to inadequate access to formal financial services, agricultural traders, processors and producers have been relying on informal /and or semi formal financial sources. Experience has shown that institutional weaknesses in developing countries, coupled with a failure of governments to provide an appropriate legal environment, has led the banking sector to move out of agricultural finance. These shortcomings must be addressed.

2.6.4 Market information

Market information is crucial to producers, wholesalers and consumers to help them make decisions on what and whether to buy and sell. In general, information is required on prices, traded or available quantities, forecasts of future supplies and demand, and general market conditions (LEISA, 2007). According to Ramatu *et al.* (2000) information must be relevant, accurate and timely and reflecting all sectors of the market, especially consumer demand. Such information can be used by traders to shift to those goods having high consumer demand (Kaoneka, 2006). Mukhebi (2004) reported that an effective market information system reduces risks to traders, eventually reducing market margins.

2.6.5 Market infrastructure

A well-developed and maintained rural infrastructure is essential for agricultural growth and overall rural development. Investments in rural roads, transportation, storage, rural markets, communication and stock auction markets are critical to stimulating increased agricultural production (URT, 2001). Furthermore, roads occupy a pivotal position in the integration of markets and the national economy (Rates, 2003). Poor rural roads limit farmers' access to markets for inputs and produce. They also increase cost of the transporting inputs and output, reducing the net income of farmers, suppliers and traders (Orr, 1999).

2.6.6 Grades and standards

Uniform measurements are established and maintained. These measurements could be in terms of quality or quantity (Mwalili, 2008). For example, standardization of cashewnuts may be based on weight per bag, percent of damaged kernels, moisture contents, and percent of foreign material. Other bases of standards are used depending on type of good, e.g. fat content, size, and colour (MAFC, 2006).

2.6.7 Availability of agricultural inputs

Eric and Christopher (2003) noted that liberalization of agricultural marketing ensures greater efficiency. Hence producers can expect to get timely and adequate supply of agricultural inputs, and receive the payment for the sales of the commodities on time. Rweyemamu (2002) indicated that after implementation of the Economic Recovery Program the increase in farm inputs prices became higher

especially on account of the removal of input subsidy and the liberalization of the factor and product markets.

Kashuliza (1994) showed that sequels of the trade-liberalization measures in conjunction with the IMF-mandate, termination of subsidies and currency devaluation have dramatically increased the price of inputs required for both food and export crops. World Bank (2006) reported that by 2004/05 only 20% of rural households in Tanzania were using agricultural inputs.

Martin (1993) recommended that although the liberalization of marketing system provides incentives for farmers to expand production, it limits the ability of poorest farmers to finance purchase of Sulphur, which is a constraint to increased cashewnut production. After liberalization it was expected that Regional Cooperatives Unions and private traders would both procure inputs on their own account for distribution to farmers. On the other hand, Gibbon and Hemele (1992) reported that in 1997/98 the cooperative had severely reduced their procurement level and that private cotton traders were uninterested in entering in the market. The reason given to this was that supplying inputs involve tying-up working capital that could have been used for buying cotton instead. However, as far as cashewnut is concerned the distribution of agricultural inputs is increasingly becoming the role of the private sector (URT, 2001).

2.6.8 Prices of agricultural products

Producer prices are among the most important and effective tools for influencing agricultural production (Eric and Christopher, 2003). Chachage and Nyoni (2001) argued that the decrease in cashewnut production in Mtwara and Lindi regions in the 1970s was due to a fall in price of the crop, in favour of food crops which were progressively being produced in large quantities in these regions. Poulton (1998) argued that although there has been an increase in nominal producer prices for a number of crops, following market liberalization, devaluation and persisted inflation have more than wiped out the gains. He further argued that producer prices have fallen both in absolute term and as a percentage of the Free on Board (FoB) price. According to Banda (1995), farmers are unable to negotiate price with traders who come to their villages. They only decide whether or not to sell at the price provided and have to reach this decision without knowing FOB price or traders marketing costs. Furthermore, Katinila *et al.* (1995) found that each buyer had a different price in different districts. Sometimes within the same district, buyers purchase cashewnuts using different prices. The difference in prices of cashewnut may be due to accessibility of the village by buyers, cashewnut quality, and the intensity of competition in the respective village.

2.6.9 Marketing of agricultural commodities

Since the adoption of the new economic reform in 1990s, Sub-Saharan Africa (SSA) agricultural markets have been reformed and prices of commodities are determined through market mechanisms (Onumah, 2002). However, due to the weak bargaining power of producers, and harvest fluctuations, the price free notion of markets has

been found to affect small holder farmers (LEISA, 2007). Agricultural product markets for instance in Tanzania are mainly characterized by seasonal supply and shortages which in turn affect the marketing behaviour of rural farmers, traders and consumers (URT, 2007).

Rates (2003) revealed that firms, individual traders and cooperatives in Tanzania perform marketing functions such as collecting, transporting, processing, retailing and exporting of agricultural products. It was further noted by Colander (2004) that market can potentially contribute to development of crops or any other commodities in two ways. First, it can provide a way to allocate resources ensuring the highest value of production, and secondly, it can stimulate growth by promoting technological innovation.

Msuya (2003) showed that marketing of produce has direct relationship with the farmer's income. He furthermore noted that timely marketing and finding the right buyers who pay at the right time is important in the whole cycle of farming. On the other hand Gabagambi (1998), cited by Silomba (2000) concluded that there should therefore be no doubt that the creation of a prosperous and equitable agricultural sector depends on the efficiency of agricultural commodities marketing. This is supported by Massawe (2007) who reports that the lack of agricultural marketing makes rural people to be food insecure even if food production at a particular time is satisfactory.

2.7 The Cashewnuts Marketing in Tanzania

2.7.1 Cashewnuts marketing: historical perspectives

In Tanzania, single channel marketing for the cashew crop through the government was practiced in the 1960s and 1970s. This was undertaken by the Tanzanian National Agricultural Products Board, later reconstituted as the Cashewnut Authority of Tanzania (CATA) in 1973, and eventually replaced by the Tanzanian Cashewnut Marketing Board (TCMB) in 1985. Cooperative Unions collected cashewnuts from primary societies for sale to CATA/ TCMB (Jaffee, 1995). Chachage and Nyoni (1992) showed that liberalization started in early 1990s where TCMB was transformed into the Cashewnut Board of Tanzania (CBT) with highly restricted functions. These included licensing, provision of market information, regulation and promotion of the quality, marketing and export of raw and processed cashewnuts and strategic planning on cashewnuts. Private companies were allowed to enter into crop marketing. An enormous upsurge of competition between the cooperative unions and private traders in cashewnut marketing ensued, leading to an improved price regime for cashewnut producers.

2.7.2 Marketing channels for cashewnuts

Marketing channels facilitate the flow of cashewnuts from producers to consumers (Abbott and Makeham, 1990). A variety of well established, although informal, marketing channels exist in Tanzania for distribution and sale of cashewnuts in both the domestic and export markets (DAIPESA, 2003). Apart from the growers, the participants in cashewnut activities are the assembly traders, commission agents, regional traders, exporters, wholesalers, and retailers (Fig. 2). In this case

government agencies play a supportive role, such as collecting and publicizing market information, issuing licenses to traders, and generally regulating fair trading practices (Mitchell, 2004). In his study on the improvement of the price of cashewnut in Mkuranga District, Kaoneka (2006) reports that cashewnuts are being bought at all sorts of posts including the primary societies offices, village godowns, shops and in farmers' residences. In terms of the spatial distribution of these places, the southern cashew growing areas (namely Lindi and Mtwara) use more of the formal selling places while the northern areas (e.g. Tanga and Coast region) use more informal cashewnut selling places.

According to CFC (2006) it is envisaged that the number and size of buyers also vary widely. However, many of them are small in size. Lumbana (2000) shows that in 1996/97 and 1997/98, nineteen companies were involved in exporting cashewnut and the five biggest companies exported 63% of the crop. After bulking, cashewnuts are transported to main processing or export points after specifications regarding name of buying post, produce destination, lot size, grade and buying price have been specified in a Produce Dispatch Note (PDN) issued by the CBT. The cashewnuts are either exported raw to India or processed locally. Most (90%) of cashewnuts produced in Tanzania are exported raw mainly to India (CBT, 2007).

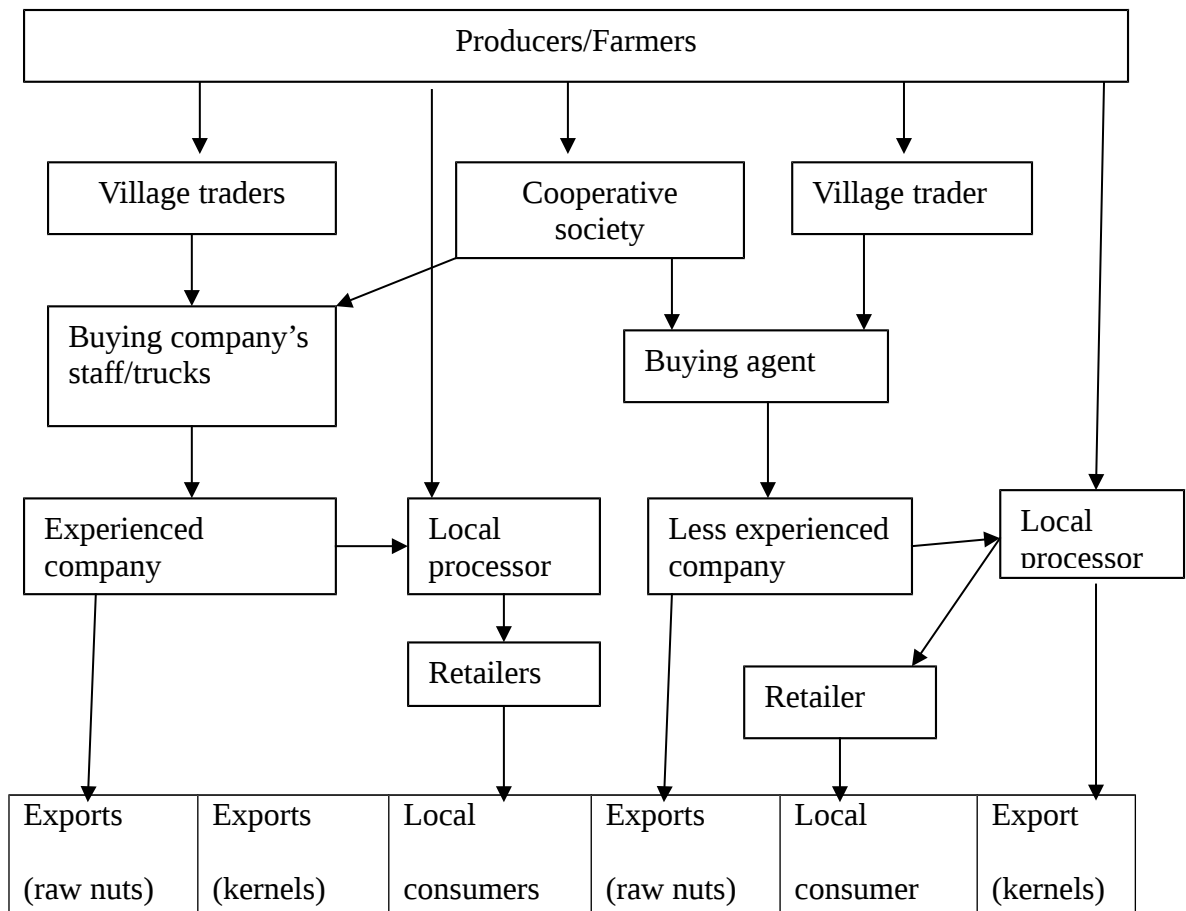


Figure 2: Marketing channels for cashewnuts in Tanzania

Source: CFC (2006)

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2.7.3 Cashewnuts marketing performance

The producer's price is a function of many considerations and influences, the most important of which are production cost structures, the international cashewnut supply and demand dynamics, the domestic market situations, the effectiveness of regulation mechanism and the tax structure on the agricultural sector (Sijaona, 2002). Average producer prices for raw cashewnut in Tanzania have been increasing since 1990/1993, after liberalization of cashewnut marketing. However, comparatively the average Producer price offered to farmer is not increasing in the same proportional as the export price rate (Kaoneka, 2006). It can be noted that the average producer price of cashewnut increased substantially in 1994/95 after liberalization of the agricultural marketing system. The price continued to improve steadily and reached a record level of Tshs 600 (US\$ 0.67) per kg in 1999/2000 (Fig. 3). However, the producer price fell drastically in the following market season (2000/01) due to decline in the world market prices of kernels caused by over supply of cashewnuts (Katinila *et al.*, 2001). From 2002/03 to 2006/07 season, the price was increasing at the positive trend, with the export price at a greater magnitude than producer price.

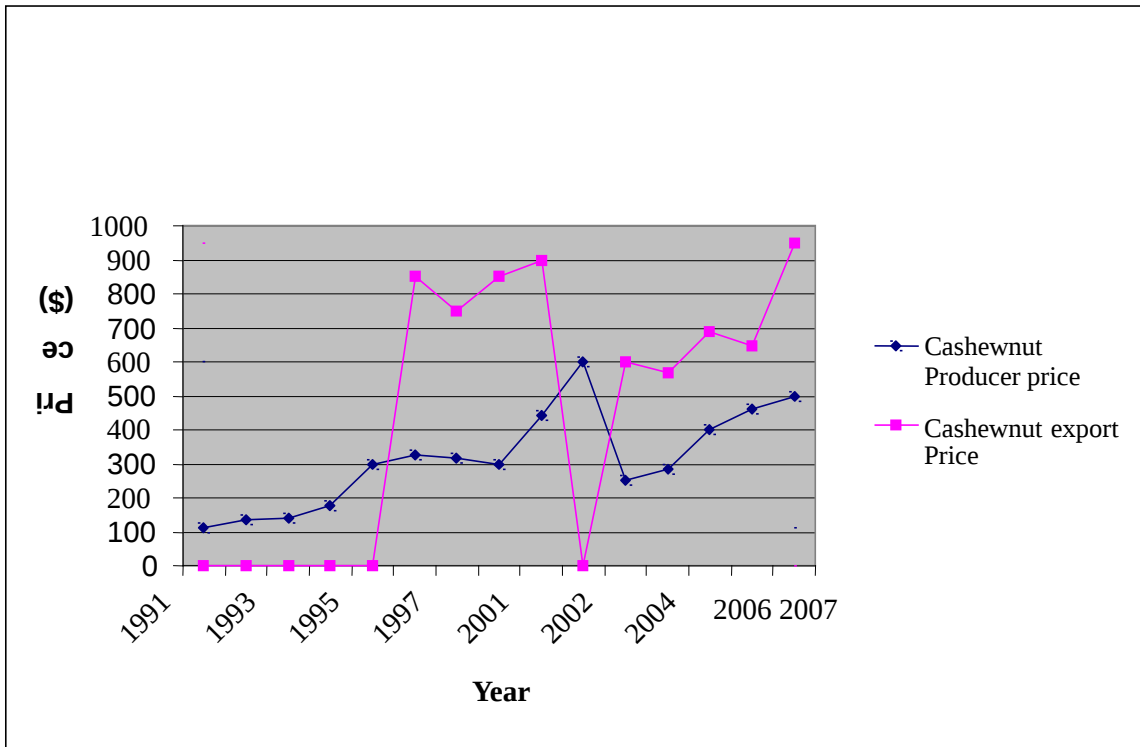


Figure 3: Average producer and export prices for raw cashewnuts in Tanzania from 1991-2007 (Source: CBT, 2008).

2.7.4 Cashewnut quality control

Shepherd and Ralolfi (1999) argue that harvested cashewnut and the raw nuts should have a blue greyish colour, which is retained when storage conditions are acceptable (Plate 1) and the moisture content of the nuts should remain at levels of 8% or lower. Common Fund for Commodities (2003) noted that when the nut is left too long under the tree after having fallen, moisture content may remain too high or may even rise again, leading to deterioration of the shell to a brownish colour. Bakker (2001) admits that farmers are required to harvest cashewnuts and dry them immediately after collection. If nuts are not dried promptly moulds may infest them and hence reduce their quality. The classifying of nuts means sorting of nuts into different

qualities, the purpose is to increase the total revenue, on a level that the add value and earn extra revenue that exceed the extra costs (usually labour costs) necessary to create that added value.

However, grading cashewnuts using the old system (i.e. on the basis of colour and size) is no longer practical because of the presence of Powdery Mildew Disease (PMD) and pests (which discolour the nuts) and (because of) the existence of large white nuts with under grade kernels (CFC, 2006). Instead, at present the new way of cutting and testing is preferred, whereby kernels are cut and graded by considering physical integrity of the product such as percentage of broken pieces (Plate 2).



Plate 1: Good quality cashewnuts



Plate 2: Whole cashewnuts and pieces

2.7.5 Processing of raw cashewnuts

The processing of cashewnut involves many steps including cleaning and grading, humidifying, roasting, shelling, drying, peeling off the testa, sorting of whole and broken kernels (Plate 2) and grading into the international standards, based on size and colour (URT, 2006). According to Porto (2005), the exportation of raw nuts supports developments elsewhere rather than in the area of production. This is because cashewnut is one of the crops with high price in the world market, but that producers are earning little from the sale of their produce.

Rweyemamu (2002) admits that although several cashewnuts factories were built in the southern regions, large amounts of unprocessed cashewnuts are shipped from the Mtwara port to India every year. Mwalili (2008) added that the continuation of unprocessed export of cashewnuts, mainly to India, can be seen as an unsatisfactory development for a number of reasons. Firstly, there is a loss of added value in relation to employment opportunities and the up and down streams of effects that would result from local processing. Secondly, there is a possible loss of profit as processed commodities fetch premium price compared to unprocessed goods.

2.7.6 Pricing mechanisms for cashewnuts

Normally the indicative price for the cashewnut is the prevailing price of the same crop at the world market (CBT, 2007). As it is the case with all other traded products, market forces, i.e. demand and supply forces, determine the magnitude of fall and /or rise in the price of cashewnut. In Tanzania pricing is done based on unprocessed cashewnut, which is contrary to pricing at the world market where it is based on

processed cashewnuts (URT, 2001). This is because raw cashewnut is traded both domestically and in the export market. The estimation of producer price is done at the domestic market to get the equivalent price. The indicative price is announced by the Cashewnuts Board of Tanzania (CBT) just before the beginning of the cashewnut marketing season, which officially begins on 1st October, of each year.

Usually the indicative price is announced after a stakeholders' meeting involving the CBT management, officials from the Ministry of Agriculture, Food and Cooperatives, managers of existing co operative societies in the districts where cashewnut is grown, District Executive Directors (DEDs) from the districts where cashewnut is grown, officials from the Board of External Trade (BET), District Agricultural Development and Livestock Officers from the districts where cashew is grown, companies dealing with cashewnut business, and cashewnut farmer's organizations. In determining the indicative price the farmer's production costs (e.g. input cost, labour) and buyer costs (e.g. transaction costs, administrative costs, levy, and shipment) are computed. The indicative price is set for the cashewnut standard grade. The price for one kilogram of under grade cashewnut is obtained by calculating 80% of the standard grade, the indicative price is announced by the CBT, through Government media (radio, newspapers, and Television) (CBT, 2008).

2.7.6 Cashewnut marketing costs

It has been reported by Mitchell (2004) that there are several costs which are involved in the cashewnut marketing chain in Tanzania. At farm level, the costs involved are those of production including labour charges, input costs, and storage.

All these are incurred within the farm. According to Banda (1995) for FoB price, all the costs involved from the farm gate to the point of export are included; among them is transport from the farm gate to the first point of sale (28.5%), levy paid to the government (8.5%), handling costs (20.7%), marketing costs (18%), and adjustment for currency overvaluation (6.3%) and shipping costs (18%).

2.7.7 Cashewnuts marketing margins

The marketing margins for cashewnut measure the share of the final cashew selling price that is captured by a particular agent in the marketing channel; including costs and, sometimes, additional net incomes (Kikoka *et al.*, 1997; Alli and Lashari, 2001). Variability of cashewnut prices in Tanzania is higher at the farm gate level than at the wholesale and retail levels. Meanwhile, the variation in gross marketing margin is higher than that of cashewnut prices at the farm, wholesale, and retail levels (Chachage and Nyoni, 2001). This implies that, traders face as much or more uncertainty in profit margins as farmers. Alli and Lashari (2001) note that the assessment on whether the pricing mechanisms are fair or not can be done by looking into the distribution of returns to different participants in the marketing chain compared to the costs they incur in the marketing process.

2.8 Review of Analytical Techniques

2.8.1 Gross margin analysis

Gross margin (GM) is an analytical method that has been widely used in estimating economic profitability of farm productivity in different locations. Johnsen (2003)

defines gross margin as the difference between total revenue and total cost of production.

Gross margin is a good measure for comparing the economic and productive efficiency of similar-sized farms. More importantly, it represents the minimum break even price that a farm must generate to stay in business. Even if a farm was to lose money, a positive gross margin would enable it to continue to operate, at least in the short run. But it is not a good measure of a farm's true profitability or a farm's long-term viability (CTAHR, 1998). Its main advantage is that it does not involve tedious calculations and is within the comprehension of any farmer. It is also more flexible in accommodating personal expectation and limitation of the given condition (Ehirim, 2004).

It is worth noting that due to limited resources rational farmers tend to allocate their resources more to those enterprises that have more economic benefits. It was useful to compare the gross margin of cashewnut to other competing crops particularly maize, cassava and coconut in the study area, in order to establish the relative economic profitability of cashewnuts and its competing farm enterprises. Producers tend to allocate more resources to enterprises giving higher returns per unit of resource used. Thus more returns guarantee future production of a particular crop as transferable resources are switched from low paying enterprises to the higher paying ones.

2.8.1.1 Limitations of the gross margin (GM) analysis

According to Ferris and Malcolm (2000), the GM analysis has the following major limitations:

- i. GM is not a profit figure. Fixed costs have to be covered by the GM before arriving at a profit figure,
- ii. GM can vary widely from one year to another year. This is due to differences in market price, supply conditions affected by weather conditions and efficiencies.

However, Phiri (1991) argue that although gross margin is not a good measure of profitability, it remains the most effective measure of resources use efficiency in small scale farming.

2.8.2 Determinants of net profit

Various factors could be responsible for observed net profit in cashewnut marketing. Eze (2007) asserts that net profit may arise from socio-economic factors, like buying prices, selling prices, marketing costs, experience in business, age and education level of the trader. In this study, the estimated net profit was related to different predictors using data from cashewnut traders. Gujarati (1995) reported that the parameters are estimated to give a "best fit" of the data. Further, he argued that most commonly the best fit is evaluated by using the ordinary least squares (OLS) method.

A regression analysis can be used for prediction, making inference, and modelling of causal relationships. These uses of regression rely heavily on the underlying

assumptions. According to Gujarati (1995), the classical assumptions for regression analysis, among others, include:

- i. The sample is representative of the population for the inference prediction,
- ii. The error is a random variable with a mean of zero conditional on the explanatory variables,
- iii. The predictors are linearly independent, and
- iv. The variance of the error is constant across observations (homoscedasticity).

In this study, a linear regression model was adopted to determine the factors that influence net profit margins in the study area.

2.8.2.1 Limitations of using OLS estimation procedure

Mukras (1993) observed three limitations of OLS in estimation models:

- i. Although parameter estimates for econometric models can be obtained by OLS, they are generally biased,
- ii. With non-linear models, variances of the parameter estimates can not be obtained easily and estimates do not have well behaved statistical properties that lend themselves to statistical theory,
- iii. Testing of parameter is not possible because the sampling distributions of the parameter estimates are in most cases unknown.

However, OLS estimation technique is simple to use, eloquent and gives the best estimator and it does not require the knowledge of the probability distribution of underlying population being studied. Of all estimation rules, ordinary square

estimation (OLSE) leads to best linear unbiased estimator and hence its popularity in applied econometrics (Gujarati, 1995).

CHAPTER THREE

3.0 METHODOLOGY

3.1 Overview

This chapter explains the conceptual framework and methodological approach used in this study. The chapter also presents a description of the study area, research design, types and sources of data collected, the sampling procedures, sample size and tools of data analysis used in the study.

3.2 Conceptual Framework of the Study

Fig. 4: describes the conceptual framework for this study. The framework is based on the understanding that the main factor that determines the household's cashewnut production and marketing is the ability of the household to produce the crop. Access to credit is also considered as an important factor which enables the producer to purchase and use improved technologies like improved seed nuts, pesticides and farm tools such as motorized blowers. Farmers may use many channels to sell their produce, e.g. through cooperatives or private buyers using officially designated purchasing stations.

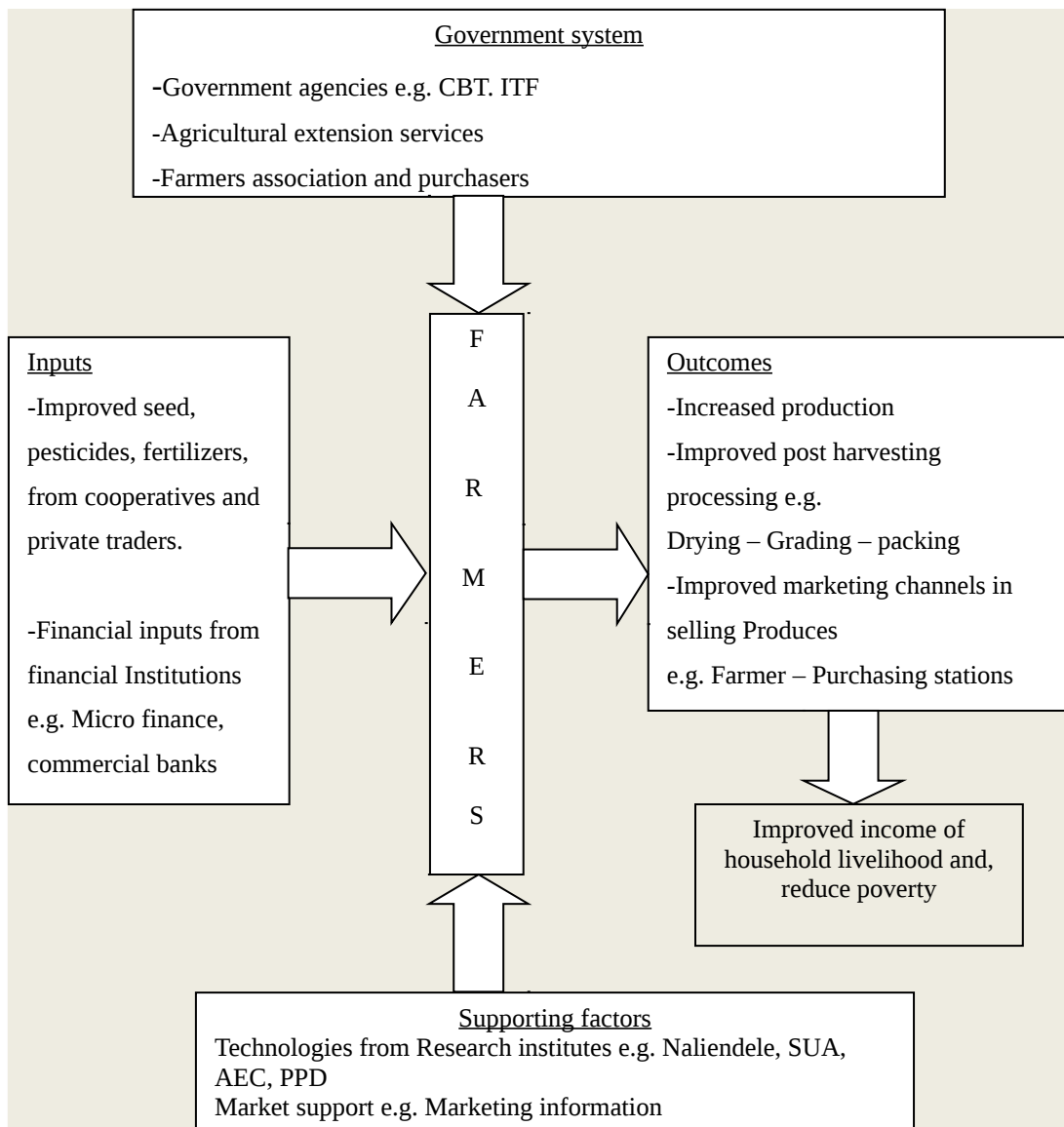


Figure 4: Conceptual framework for the study

Farmers demand several farm inputs for cashewnut production, which are normally supplied by both private and public sectors, these include seed, fertilizer, pesticide, technology just to mention a few. While some factors are relatively well supplied under market mechanisms, others have involved the government's participation and other supporting programs. Four main support services are needed in cashewnut production; technology transfer, either from the Agricultural Extension Centre (AEC)

located at Ministry and District levels, Plant Protection Division (PPD) or directly from the research institutions and universities like Sokoine University; credit support for purchase of fertilizer and pesticide; input support e.g. in form of high yielding varieties/seeds from the government; and other market supports such as provision of market information for both local and international trades. Access to these support services determine to a large extent the level of production and marketing performance in the marketing channels of cashewnuts.

3.3 Description of the Study Area

3.3.1 Geographical location

Mkuranga district is one of the six districts in the Coast Region. The district is located in the Coast Region between latitude $6^{\circ} 50'$ and $7^{\circ} 33'$ South of the equator and between longitudes $38^{\circ} 5'$ and $39^{\circ} 28'$ east of the meridian of Greenwich. It is bordered in the north by the Dar es Salaam city, in the West by the Rufiji district and in the East by the Indian Ocean. Other districts that make up the Coast region are Bagamoyo, Kibaha, Kisarawe, Mafia and Rufiji (Mkuranga District Council, 2007).

3.3.2 Climate and vegetation

The climatic condition is conducive for human settlement and agriculture. The Mkuranga district experiences dual rainfall, firstly the short rains (*vuli*) with effect from September to December and, secondly the long rains (*masika*) from March to June. Normally the long rains are more reliable and evenly distributed than the short rains. Rainfall ranges from 800mm to 100mm. The average Temperature is $28^{\circ}C$ per annum. There are different types of soils in the district, namely sandy and loamy

soils in Mkamba, Mkuranga and Kisiju divisions, and black clay soils in the Shungubweni division. The vegetation found in the district includes the Coast forests (mangroves), miombo woodland and swampy vegetation (Mkuranga District Council, 2007).

3.3.3 Human population

Based on the census conducted in 2002, Mkuranga District has a population of 187 428 people of whom 91 714 are males and 95 714 are females. The number of household are 42 937 having an average size of 4.4 people. Data from the population census also indicates that the population density for Mkuranga District is 27 people per km² (Mkuranga District Council, 2007).

3.3.4 Agro-ecological zones

Geographically, the Mkuranga district has three distinct agro-ecological zones, which are coastline zone, upland zone, and low-lying basins and valleys which are found in both the coastline zone and upland area. The livelihoods of the people and the economy of the district at large depend mainly agriculture. It is estimated that about 97% of the total households are engaged in agricultural production. Cultivated perennial crops are cashewnuts, coconut and a variety of citrus fruits, pineapples, mangoes, paw paws and watermelons. Food crops include cassava, paddy, maize, sweet potatoes and legumes. The average farm size cultivated by small holder farmers ranges from half an acre to two acres. There are no plantations/estates run by commercial farmers. Therefore, the type and scale of agriculture in this district is

purely subsistence. About 80% of the income generated in the district is through cashewnut production (Mkuranga District Council, 2007).

3.4 Study Design

The study used a non-experimental design whereby a cross-sectional survey was employed during November and December 2008. This design was used on the basis that it allows collection of data on different units of respondents at one point in time. The design has greater degree of accuracy and precision in social science studies.

3.5 Sampling Techniques

3.5.1 Sample size

During the first stage sampling, the study employed a purposive sampling technique, whereby one district of Mkuranga was selected because it is the major producer of cashewnuts in the Coast region. A random sampling method was used to select cashew producing wards in the district. The sample wards and their respective villages in parentheses included the Mkuranga (Kiparang'anda A and Hoyoyo), Mwarusembe (Bigwa and Kiziko), Kimanzichana (Kimanzichana and Kiimbwanindi) as well as Tambani (Miseko and Mwanambaya). The sample villages from each ward were also selected using the random sampling technique. In each village a simple random sampling was used to select cashewnut farmers. The sample traders and cooperative officials were selected using a purposive sampling technique. These included, traders/exporters, rural collectors, rural agents and cooperative officials. Table 1 shows the number and distribution of respondents by wards and

villages in the study area. A total of 148 respondents were selected for the study, constituting 120 farmers, 24 traders and four officials of primary cooperatives.

Table 1: Distribution of respondents by wards and villages

Ward	Village	Respondents			Total
		Farmers	Traders	Cooperatives	
Kimanzichana	Kimanzichana	15	3	1	19
	Kiimbwanindi	15	3	-	18
Mkuranga	Kiparang'anda	15	3	1	19
	Hoyoyo	15	3	-	18
Mwarusembe	Bigwa	15	3	1	19
	Kiziko	15	3	-	18
Tambani	Miseko	15	3	-	18
	Mwanambaya	15	3	1	19
Total		120	24	4	148

3.5.2 Types and sources of data

The types of data used in this study included both primary and secondary information. The primary data were collected through informal and formal surveys. Informal surveys were carried out to get in-depth understanding of issues related to cashew cultivation. The formal surveys involved personal interviews using a pre-tested questionnaire.

The questionnaire contained both open and closed ended questions (Appendix 1). The questionnaire was designed to include both quantitative and qualitative data on smallholder cashew growers and traders. It contained two main parts, with the first part comprising of basic questions for household. These included the household identification questions; farm activities; farm resources, inputs used; farm output and marketing arrangements; farm related credit/loans; farmers' organization and support

services received. The second part constituted questions to be administered to traders and it was divided into four sections namely: traders' basic information and trading practices; marketing costs; traders' access to credit/loans availability; and problems that traders face.

3.5.3 Data collection

3.5.3.1 Primary data collection

Prior to the main survey a pre-testing was done in mid October 2008 in order to test the validity of questionnaire during which a total number of ten households were interviewed in Tambani and Kizapala villages. A preliminary survey was also used to establish the sampling frame, determine the approximate time required in completing a questionnaire, and conducting a situation analysis of the study area.

Primary data were collected using a questionnaire, interviews, observation, and focus group discussion (FGD). The questionnaire was administered by the researcher, with the help of village extension agents responsible for each village and two trained enumerators.

3.5.3.2 Secondary data collection

Secondary data were collected from different sources including office records and published reports/papers from District Council, Sokoine National Agriculture Library (SNAL) and websites, reports from the Ministry of Agriculture, Food and Co-operatives and Cashewnut Board of Tanzania (CBT) (Table 2).

Table 2: Type of information gathered from secondary sources

Source	Information gathered
CBT, BoT	Data on production, marketing, producer prices, and export prices.
DALDO, RC –offices	Description of the study area, data on production and marketing trends in Mkuranga district.
PCs, ITF, Traders	Marketing costs, inputs and data on inputs and loan to farmers
Electronic	General cashewnut information

3.6 Data Analysis

The collected data from the primary sources were verified, coded and analyzed using the Statistical Package for Social Science (SPSS). The descriptive analysis was done and the information was summarised using frequencies, percentages, means, standard deviation, correlation and a regression model.

3.6.1 Gross margin analysis

The gross margin analysis was used to analyse profitability and the profit margins were calculated by deducting variable costs from total or gross revenue. The estimation of average variable costs for inputs like fertilizers, seeds/cuttings, labour and transport was based on current prices. For all crops enterprises, gross margins were calculated based on the formula below:

$$GM_i = TR_i - TVC_i \quad (1)$$

Where: GM_i = Gross margin of crop i Tshs per hectare

TR_i = Total Revenue from sale of crop i Tshs per hectare

TVC_i = Total variable cost Tshs per hectare for crop i

3.6.2 Correlation analysis

The correlation analysis was done to test to what extent marketing margin is statistically associated with prices (i.e. buying and selling prices). It aimed at testing as to whether or not price changes were passed to the other market level. This was done by running simple regression model as given below:

$$Y = \alpha + \beta\chi + \mu \quad (2)$$

Where; Y = marketing margin in Tshs

χ = buying or sell prices in Tshs

β = degree to which buying and selling prices influence marketing margin of a commodity at a given marketing level in Tshs

μ = an error term.

3.6.3 Regression analysis

A multiple linear regression analysis was used to assess the determinants of profitability in cashewnut production and marketing. The following model was used:

$$P = \alpha + \sum \beta_i \chi_i + \varepsilon_i \quad (3)$$

Where: **P** = dependent variable

β_i = degree to which predictor variables affect dependent variables at given market level

χ_i = independent variable

α = constant

ε_i = a random error term

Presenting the independent variables for the model in equation 3 above, the model becomes:

$$P = \alpha + \beta_1 \chi_1 + \beta_2 \chi_2 + \beta_3 \chi_3 + \beta_4 \chi_4 + \beta_5 \chi_5 + \varepsilon_i \quad (4)$$

Where: **P** = profitability as measured from the net profit margin in Tshs

α = constant

χ_1 = buying price in Tshs

χ_2 = selling price in Tshs

χ_3 = transaction cost in Tshs

χ_4 = experience of the trader in years

χ_5 = education level of the trader in years

$\beta_1 - \beta_5$ = coefficients of predictors and

ε_i = a random error term

Variables such as buying price and transport cost were expected to have negative influence on net profit because they do increase the cost incurred by traders in business and hence reduce profit. On the other hand, experience, selling price and education of the traders may positively influence net profit because they can enhance business diversification and ability to take business risks for better profit.

3.6.3.1 Problems of parameter estimation

Problems of parameter estimation often emanated from violation of the basic assumptions of the linear regression model. The commonest problems encountered in the regression analysis include multicollinearity, heteroscedasticity, and autocorrelation. However the commonest problem in linear multiple regression models is multicollinearity (Gujarati, 1995). Multicollinearity refers to a situation where it becomes difficult to identify the separate effect of independent variables on the dependent variable due to the existence of strong relationship among independent variables. Thus, confluence analysis was used to identify the collinear variables (total cashewnut traded in kg and buying price) by regressing the dependent variable on each explanatory variable separately and keeping the useful and superfluous variables while discarding the detrimental variable (total cashewnut traded in kg) which affected considerably the sign or values of some coefficients.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Overview

This chapter presents results of analysis and discussion of the study findings. The chapter is divided into seven sections. The first section presents socio-economic characteristics of sample cashew growers. This is followed by a section of results and discussion related to cashew production and marketing issues, the factors affecting cashewnut marketing, farmers' organization and support services, profitability of cashewnut and other farm enterprises. Issues related to trading practices and determinants of profitability are also discussed.

4.2 Socio-economic Characteristics of the Sample Households

The respondent's gender, age, marital status, education level, household size and occupation were used to describe the characteristics of sample households (Table 3).

4.2.1 Gender of the heads of households

The majority (83.3%) of sampled farmer's households producing cashewnuts were headed by males (Table 3). Only 16.7% were female headed households.

4.2.2 Age of the heads of households

The distribution of the age of head of households is presented in Table 3. The majority (52.5%) of household age had the age between 19 and 50 years, implying that majority of household head were within the active working age group.

Table 3: Socio-economic characteristics of the sample households

Variable	Frequency	Percent
Age distribution:		
Above 50 years	51	42.5
19-50 years	63	52.5
15-18 years	5	4.2
10-14 Years	1	0.8
Total	120	100.0
Education level:		
Primary education	65	54
Non formal education	25	20.8
Adult education	21	17.5
Secondary education	9	7.5
Total	120	100.0
Gender of respondent:		
Male	100	83.3
Female	20	16.7
Total	120	100.0
Marital status:		
Married	97	80.8

Single	10	8.3
Divorce	5	4.2
Separated	2	1.7
Widow	6	5.0
Total	120	100.0
Employment status:		
Farming	88	73.3
Employees	8	6.7
Own business	6	5.0
Others	18	15.0
Total	120	100.0
Household size:		
1-3	29	15.8
4-7	86	71.7
>7	5	2.5
Total	120	100.0

4.2.3 Marital status of heads of households

It was also observed that the majority of household heads (80.8%) were married (Table 3). This implies that married individuals have family obligations, they engage in cashewnut farming activities in order to generate cash income to meet various family needs and requirements.

4.2.4 Size of household

The survey result indicates that the majority (71.7%) of households have family size ranging from 4 to 7 members (Table 3). The average family size was 8 people. The reason for higher household size could be that, most of males in the study area marry more than one wife and thus have more children per average household.

4.2.5 Education level of the heads of households

Table 3 shows that the majority of households head have attained a primary level of education and could read and write, with exceptional of only 20.8% who reported not to have attained any formal education. Roughly it shows that the formal education attained by the majority of farmers 61.7% could be explained by the adoption of

improved cashew production and marketing technologies if empowered in terms of resources, skills and knowledge.

4.2.6 Employment status

The employment status of an individual affects ones income and his/her productivity. The results in Table 3 shows that majority of respondents in the study area were farmers (73.3%). The remaining were government employees (6.7%), business entity (5%) and others (15%). The category of others includes masons, gardeners and casual labour.

4.2.7 Other sources of income

Besides income received from crop production, 40.8% of household had other sources of income (Table 4).

Table 4: Distribution of households by other sources of income

Source	Frequency (n=49)	Percent
Petty trading	10	20.4
Shop keeping	8	16.3
Milling machine	6	12.2
Tailoring	6	12.2
Livestock	5	10.3
Masonry	4	8.2
Casual labour	3	6.1
Handicraft	3	6.1
Carpentry	2	4.1
Gardening	2	4.1
Total	49	100.0

The Table 4 shows activities that provide extra sources of income to cashewnut farmers. The study found that 20.4% of households received extra incomes from petty trading, while shop keeping was carried out by 16.3% of the households. Other

activities undertaken were milling and tailoring (12.2%) each, livestock keeping (10.3%), masonry (8.2%), casual labour and handicraft (6.1%) each, carpentry and gardening (4.1%) each. The findings in this study highlight the relatively diversified nature of rural livelihood; it is implied that sources of income other than agriculture played important roles in contributing to social economic development of the people in Mkuranga District. However, most of them were characterised by small number of households.

4.2.8 Poverty level

Observation and discussion with knowledgeable people and local authorities carried out at all levels indicated that a rich person in the society of Mkuranga district was seen to own 10ha of land and above, other indicators were: motorbike ownership, motorized blower, a good iron sheet roofed house, ability to save money, household assets capital and amenities, produce enough food the year around and surplus to support others, contribute for various village development activities. Furthermore, the haves were able to consume three meals per day as well as being able to pay school fees for his /her children and footing bills for health services.

The medium person was envisaged to have five hectares and above but less than 10ha, an un-cemented iron roofed house, own bicycle as a transport means, two meals a day, and able to pay his/her children's school fees in community schools. Furthermore, he/she was able to produce enough food for about eight month of the year.

The poor person might keep poultry, had land below five hectares, could possess a wooden constructed and grass thatched house or hut, afford two or one meal a day

and, was said to face food shortage for about five to seven months. On the other hand, a poor individual could not afford to pay for his/her children's education and may need support from local authorities.

Table 5 shows distribution of households by wealth status and indicates that there were a few (7.5%) of the households in the rich group, around 27.5% placed in medium group while the poor constituted (65%).

Table 5: Distribution of households by wealth status

Wealth status:	Frequency	Percent
Poor	78	65.0
Medium	33	27.5
Rich	9	7.5
Total	120	100.0

These results implies that majority of households were poor, which might be attributed to the fact that the majority of farmers have less output to sell due to subsistence production and/or they sold produce at low prices which rendered very low returns and, therefore, remained poor, as so succinctly reported by Gregory (1995) in Peru.

4.2.9 Ownership of household assets

The potential for ownership assets to contribute to the wealth indicator was explored by comparing the relative distribution of each asset to different wealth status (Table 6).

Table 6: Distribution of assets by wealth category (%)

Type of assets	Wealth status		
	Rich (n = 9)	Medium (n = 33)	Poor (n = 78)
Car	0	0	0
Motorbike	66	0	0
Radio	55	42	26
Table	100	82	29
Wardrobe	89	85	5
Chairs	100	76	33
Wooded bed	89	67	15
Modern mattress	100	58	47
Refrigerator	2	0	0
Mobile phone	89	18	0
Sewing machine	44	3	0
Charcoal stove	100	82	0
Kerosene stove	67	6	0
Local stove-mafiga	33	100	100
Tractor	0	0	0
Bush knife	100	100	94
Hand hoe	100	100	86
Axes	89	100	83
Blower	22	0	0
Spade	100	88	23
Iron roofed house	100	100	0
<i>Makuti</i> thatched	0	0	100
Cemented house	100	79	2
Cattle	11	0	0
Sheep/goats	0	24	6
Poultry	55	48	61

It was found that assets such as motorbike, motorized blower, cattle and refrigerator were more indicative of wealth than others as seen in the distribution across the wealth categories only owned by rich households, while grass thatched houses were

owned by poor household's category conferring a clear indication of wealth category (Table 6).

Further analysis of ownership assets showed that majority of rich and medium households owned mobile phone, sewing machine, kerosene stove, cemented and iron roofed house, though at different magnitude. The ownership of hand hoe, local stove, bush knife, axe, was higher amongst wealth categories. This suggests that majority of households in the study area depended merely on simple technologies in their economic activities probably due to lack of capital. The study findings also showed that farming activities were done by hand hoe and other simple tools since no household among all categories reported to own a tractor/car. Thus, based on the distribution of assets across wealth categories, these assets were selected as an indicator of the households' wealth status as they appear to be very expensive to the majority of poor people. Such assets include: ownership of blower, mobile phone, motorbike, cattle, refrigerator and, corrugated iron roofed and painted house.

4.3 Crop Production and Marketing Issues

4.3.1 Land acquisition

The average total land owned by households was 0.77ha for cashewnut, 0.91ha for cassava, 0.69ha for coconut and 0.75ha for maize. Table 7 presents the various models of land acquisition from the sample households in Mkuranga District. The field data showed that the majority 56.6% of households' plots of land were offered by village authorities, 29.2% by inheritance, and only 14.2% acquired land through purchase.

Table 7: Distribution of households by land acquisition methods

Mode of land acquisition	Frequency	Percent
Given by village government	68	56.6
Inherited	35	29.2
Bought	17	14.2
Total	120	100.0

4.3.2 Labour use and allocation

Labour is one of the most important resources in smallholder agriculture. It's availability in smallholder agriculture determines not only the size of economic activity that a farmer can engage in but also the scope of improvement of production of farm produces. Most of households (62.5%) used family labour in managing their cashewnut fields, while 37.5% used both family and hired labour; no farmer employed hired labour (Table 8).

In the informal interview most of respondents claimed that during weeding and application of pesticides labour becomes a problem because the same operations are also done on the other crops. However, labour for cashewnuts harvesting was not a problem since it is effected during the dry seasons, when farmers had less field work.

Table 8: Sources of labour for the sample households

Type of labour	Frequency	Percent
Family labour	75	62.5
Hired	0	0.0
Both	45	37.5
Total	120	100.0

4.3.3 Farm activities

Cashewnut production in the study area was characterised by low level of technology, such as hand hoes, axes and bush knives, low input use and, hence, low outputs. Cultivation was done on small plots. On average the households had less than one hectare for each crop (i.e. maize, cashewnuts, coconut, cassava) with low average yields (Table 9). The low yields can be attributed to several reasons ranging from the poor technology in place to low use of inputs, implying that farmers in the study area were predominantly smallholders.

Table 9: Distribution of crop enterprises by farm size and yields

Enterprises	Total (Ha) cultivated/crop	Average farm size (Ha)/HH	Average yields (kg/HH)	Average yields (kg/Ha/HH)
Cassava	108.9	0.91	726.089	797.6
Cashewnuts	92.4	0.77	731.5	950
Maize	90.2	0.75	1037.25	1383
Coconuts	82.2	0.69	480.102	695.8

4.3.4 Farmers' organization and availability of support services

Credit services to cashew farmers are required to enable them buy agricultural inputs like agrochemicals, farm implements and tools. In analyzing sources of agricultural finance it was observed that there were diverse sources (Table 10). The sources of finance that were found to be available in the study area include own savings, Input Trust Fund (ITF), relatives and friends, Saving and Credit Cooperative Societies (SACCOs) and micro-finance institutions, Foundation for International Community Assistant (FINCA) and Promotion of Rural Initiative Development (PRIDE). The majority of cashewnut farmers (76.7%) use own saving for their farm operations,

others include Input trust fund (9.2%), relative and friends (7.5%), SACCOs (5%) and Microfinance institutions (1.7%) each (Table 10).

Table 10: Distribution of households by sources of credit

Sources	Frequency	Percent
Own saving	92	76.7
SACCOs	6	5.0
Relatives & Friends	9	7.5
MFI	2	1.7
ITF	11	9.2
Total	120	100.0

Furthermore, the financial landscape in the study area was comprised of three main providers, including informal financial institutions, semi formal financial institutions and government credit programs (Input Trust Fund). About 107 (89.1%) of the respondents used informal financial sources for their agricultural activities, followed by the government through farmers' ITF 11 (9.2%) while the rest of respondents 2 (1.7%) secured from semi formal financial sources. These sources of finance provided credit both in kind and cash. ITF provides in kind credit in form of pesticides, fertilizers, blowers and bags, while other sources provide in cash. The credits provided support in farm clearing, purchase of seeds, farm tools, pesticides, harvesting and transport services. Farmers were obliged to pay the entire loan with an interest of 10-20% in a single season depending on the sources involved. The inaccessibility of credit institutions in the study area has necessitated the farmers to use their own savings and/or informal sources to finance farm operations. Furthermore, in the 2007/08 season, there were no any formal financial institutions operating in the study area. From these findings it can be noted that informal sources

had been established to be important in the study area as alternative financial sources in agricultural production. This is in line with the study conducted by Philip (2001) who also found that informal sources of credit played big a role in both dairy and sugarcane production in Tanzania.

All respondents were asked how much money was received as credit (Table 11).

Table 11: Information on credit for farm operations, 2007/08

Variable	Number	Weighted
Amount of credit received (Tshs)	n=28	Percent
30 000 – 50 000	6	21.4
60 000 – 100 000	8	28.6
150 000 – 200 000	12	42.9
Above 200 000	2	7.1
Total weighted	28	100
Access to credit	N=120	
No	92	76.7
Yes	28	23.3
Total	120	100.0
Condition required for loan	n=28	
No condition	5	17.9
Farm record	9	32.1
Collateral	10	35.7
Others	4	14.3
Total weighted	28	100.0

The majority (76.7%) of respondents did not take loan for their farm operations, the rest 23.3% of respondents did. Those who took loan reported that the amount of credit ranged from Tshs 30 000 to Tshs 200 000. A few (7.1%) of the respondents had received more than Tshs 200 000, implying that chances of getting financial credits seem to be narrow for the majority of farmers a factor which lowers their capacity to produce more agricultural outputs.

Other supports to cashew farmers included extension services. Extension services are important in raising productivity of the agricultural sector because it bridges the gap between the available technology and farmers' practices through the provision of technical advice, information and training. These, facilitate farmers' ability to adopt new technologies and crop varieties, which would benefit their production and incomes. The study indicated that 60.8% of the farmers had received extension advices from extension workers while 39.2% did not (Table 12).

Table 12: Provision of extension services

	Frequency	Percent
Yes	73	60.8
No	47	39.2
Total	120	100

However, the study showed that the extension services provided, mostly by the government agencies did not have any notable impact on encouraging the farmers to properly manage their cashew fields due to lack of resources to buy required inputs. They were also observed to be less useful in providing market information and educating the farmers on methods to improve market information and productivity. It

was also noted that there was only one Subject Matter Specialist-Cashewnut in the whole district. This implied that there was lack of effective cashewnut extension services in the study area. Other means of getting farm knowledge like news papers, agricultural news letters, posters, were not available. However, about 41% of respondents owned radios. In this case information dissemination of agricultural package through radio broadcasting could be feasible.

In response to the problem of inadequate extension services, the Naliendele Research Institute had started a programme tailored to providing extension services to cashewnuts growers. This programme provides inputs like improved seed nuts, sulphur and blowers in kind. This could be effective rather than providing technical packages.

4.3.5 Factors affecting cashewnuts marketing

The study revealed six factors which affected cashewnut marketing including categories of buyers, selling prices, mode of payments, selling places, access of market information and lastly exploitative marketing tricks.

The findings in this study revealed that 34.2% of the households sold their nuts to cashewnut traders, 32.5% to cooperatives, 23.3% to village agents, and 10% to village collectors. The implication of these results is that farmers in the study area had mainly four outlets for the sale of their products as shown in Table 13. Further analysis of cashewnut buyers show that export companies dominated cashewnut

business. This could be due to the fact that cashewnut trading activities require large capital outlay for possible operations.

Table 13: Distribution of household by category of buyers

Category of buyers:	Frequency	Percent
Large traders	41	34.2
Cooperatives	39	32.5
Village agents	28	23.3
Village collectors	12	10.0
Total	120	100.0

Furthermore, there were variations in selling prices of cashewnuts sold in 2007/08. The minimum price was Tshs 250 per kg and the maximum was Tshs 610 per kg. The mean price was Tshs 400 per kg. According to the indicative price given by CBT for the 2007/08 season, the price for standard grade was Tshs 610 per kg and under grade was Tshs 488 per kg. It is important to note that the maximum price received by farmers for standard grade was equal to the indicative price. However, the under grade was underpaid less than the indicative price during that season (Table14). From these results it can be observed that the price paid in the study area was different among farmers and within localities, implying that cashewnut producers had less bargaining power in marketing their nuts.

Table 14: Cashewnut selling price and distance to markets

Variable	Mean	Maximum	Minimum	Std. deviation
Selling price (Tshs)	400	610	250	92.71954
Distance to markets (km)	3.7	15	0.5	3.01843

The price setting procedure of cashewnuts was negotiated and agreed upon by the Tanzania Cashewnut Council. The Council is made up of representatives from the Ministry of Agriculture, CBT, local government authorities, farmers association and traders. The prices reached are referred to as indicative. A number of factors are considered before reaching this price, such as the world market price. The price is officially announced by CBT just before marketing cashewnuts begins. After the announcement of the indicative price traders are allowed to buy nuts at any amount above it. As reported earlier in this study cashewnuts prices offered by different buyers in Mkuranga District were almost the same.

Table 15 provides summary of the views given by cashew growers on how they thought the pricing policy could be improved. The majority of farmers (47.5%) believed that full farmers' participation in the pricing exercise was necessary to ensure fairness in pricing. That means more farmers representatives should be included amongst the price setters. Although farmers had some representatives during pricing process, those representatives could not influence decisions reached during price setting.

Table 15: Propositions on improving cashewnut pricing

Views	Frequency	Weighted Percent
Fully farmers participation	67	35.1
Government monitor the exercise	49	25.6
Indicative prices be adhered to	42	22.0
Under grade be avoided	21	11.0
Training of farmers on proper grading	12	6.3
Total-weighted	191	100.0

The analysis of terms of payment indicated that both cash and credit systems were used (Table 16). About 24% of households sold their nuts on credit basis to some cashew buyers. Payments on this system were made twice per selling season, first, in the middle and second at the end of selling season. However, credit payment arrangements were perceived to be bad and unsatisfactory compared to cash payments which are preferably good and satisfactory. This finding implies that cash payment is the motive for both farmers and traders while trading.

Table 16: Mode of payment

Mode	Frequency	Percent
Cash	91	76
Credit	29	24
Total	120	100

The majority of household (39.2%) sold their produce at their homestead (Table17).

Table 17: Distribution of households by selling places

Selling place	Frequency	Percent
At home	47	39.2
At cooperatives	38	31.7
At buyers collection place	35	29.2
Total	120	100.0

The arrangements were attributed to the increase in private traders who appointed agents (most of them based in cashew producing areas). The price paid by agents at homestead or shops was pre-determined by buyers and were usually below the indicative prices. This arrangement provided room for manoeuvring which occasioned low pricing of cashewnuts. The difference in price was also determined by the distance where the produce was to be purchased. The more the distance the lower the price, since there was more transaction costs faced by buyers. The study established that the mean distance of the market centre from farmers' homesteads was 3.7km, where as the maximum distance were 15km, and the minimum was 0.5km (Table 14). This justified that there were variation in distances where the business was carried out though not very far from farmers' vicinity.

The results in Table 18 study indicate that the majority of respondents (34.2%), that is, farmers accessed market information by direct visit to the market place. The study further showed that most of respondents either directly or through their fellows accessed the information on prices announced by the CBT at the time of harvest, in most cases through government radio and Television broadcasts. However, the information received had not been useful to farmers because they had to sell at prices set by traders instead of the rates announced by CBT (Table 14). This was attributed to lack of common agreements among farmers on the selling price versus household cash needs pressurising farmers to sell their produce devoid group action, for cashewnut was the major source of income in the study area.

Table 18: Sources of market information

Source	Frequency	Percent
Visit market	41	34.2
Middlemen	33	27.5
Friends	21	17.5
Radio	16	13.3
Others	9	7.5
Total	120	100

Moreover, the study found different exploitative tricks which were used by traders in buying cashewnuts from farmers (Table 19). The majority of farmers 47.5% complained about undercut pricing and 36.7% of farmers noted use of unstandardized measuring facilities in measuring nuts. A few respondents (15.8%) reported no problems. This implies exploitation of farmers in the sector, apparently involving using unstandardized measuring equipments, conducting business in unregistered areas difficult to monitor, same giving room for unfair business and low pricing.

Table 19: Exploitative tricks used by traders

	Frequency	Percent
Undercut pricing	57	47.5
Unstandardized measuring facilities	44	36.7
Others	19	15.8
Total	120	100.0

4.4 Profitability Analysis for Crop Enterprises

Farmers in Mkuranga District produce various food and cash crops in addition to cashewnuts. In this study three major crops that compete with cashewnuts in resource use were included. These were coconuts, maize and cassava. Using the gross margin analysis the gross margins for cashew and other crops were calculated. The prices and output used in the calculation of gross margins were those of 2007/08. The

detailed calculations of the gross margins for the mentioned crops are shown in Tables 9; 20 and 21.

Table 20: GM for maize, cashewnut, coconuts and cassava for 2007/08

Item	Maize	Cashewnuts	Coconuts	Cassava
Average yearly yield (kg/ha)	1 383	950	695.8	797.6
Average price per kg (Tshs)	112	400	188	194
Gross income	154 896	380 000	130 810	154 734
Variable costs (Tshs/ha)				
Seeds/Cuttings	5000	0	0	2750
Fertilizer	21 000	0	0	0
Labour	39 000	37 500	27 000	33 000
Sulphur	0	113 636	0	0
2oil/Petrol	0	20 110	0	0
Blower hiring	0	18 000	0	0
Ropes	0	0	7200	0
Other costs	3 600	31 700	14 500	25 000
Total variable costs	68 600	220 946	48 700	60 750
Gross margins (Tshs/ha)	86 296	159 054	82 110	93 984
Return to labour (Tshs) per man-day	1 463	2 485	2 219	1 382

Table 21: Labour requirements by crops (man-days/ha)

Operations	Cashewnuts	Maize	Cassava	Coconuts
Field clearing	15	14	18	11
Ploughing	0	12	14	0
Planting	0	4	6	0
Weeding	0	14	18	0
Sulphur dusting	9	0	0	0
Pruning	9	0	0	0
Harvesting	19	8	5	16
Crop haulage and marketing	12	7	7	10
Total man-days	64	59	68	37

Results from Table 20 indicate that maize, cashewnuts, coconuts and cassava are profitable ventures in the study area with gross margins per hectare of Tshs 86 296; 159 054; 82 110 and 93 984, respectively. Cashewnut had relatively higher gross margin (Tshs/ha) compared to other crops, followed by cassava, maize and coconut. According to these findings, total gross margins (income) from all crops was Tshs 421 444, implying that 20.5% of household income was generated from maize, cashewnuts 37.7%, coconut 19.5% and cassava 22.3% respectively. Further analysis of gross margins (Tshs/ha) indicates that maize, coconut and cassava being sold at low prices, their prices would have to increase about twice as much in order for them to overtake cashewnut in profitability. Hence, if gross margin was the only criterion for income generation, then it could be aptly to state that cashewnut is the first most important crop in terms of income generation and benefits in the study area. That a clear indication that cashewnut enterprise is more profitable as it yields higher gross

margin, thus a desirable venture to undertake. Based on its profitability, cashewnut contributes more to household's income than other crop enterprises.

The assessment of returns to labour and labour requirements, showed that cashewnut had higher return to labour (Tshs 2 485 per man-day), followed by coconut (Tshs 2 219 per man-day), maize (Tshs 1 463 per man-day) and cassava (Tshs 1 382 per man-day) (Table 20). But, coconut had the lowest labour requirements of 37 man-days compared to other farm crops (Table 21). The results imply that it would therefore be paying for the farmers to produce more cashewnuts as they do obtain the best from their labour than other farm enterprises.

4.5 Problems Encountered in Cashewnut Production and Marketing

The study portrayed many problems as far as cashewnut production and marketing is concerned, as presented in Table 22. Low prices (54.2%), unreliable market (25.3%), pests and diseases (40.1%), and high input costs (25.3%), featured as the most important constraints. This is an indication that the majority of the farmers were not satisfied with prices offered by cashewnuts dealers.

Table 22: Cashewnut production and marketing constraints

Constraint	Frequency	Weighted Percent
Cashewnut production:		
Pests and diseases	65	40.1
High input costs	41	25.3
Poor extension services	22	13.6
Lack of access to inputs	14	8.6
Lack of capital	12	7.4
Theft	8	5.0
Total weighted	162	100.0
Cashewnut marketing:		
Low prices	103	54.2
Unreliable market	48	25.3
Lack of market information	26	13.7
Low demand of their produces	13	6.8
Total weighted	190	100.0

Furthermore, the major constraint in cashewnut production is pests and diseases. The problem is most severe at the cashew flowering stage, when a parasitic fungus known as *Oidium anacardiae* causes the disease known as Powdery Mildew Disease (PMD) attacks the said flowers, severely affecting both the quantity and quality of the cashewnuts. The problem is worsened by the unavailability of such inputs as sulphur and blowers essential for combating of the disease, as reported by 8.6% of farmers. The study also reveals that cashewnut producers rely much on services provided by private suppliers such as BYTRADE (T) Ltd Agent, MUKPAR, and Input Trust Fund (ITF) at cost. Services offered include fertilizers, pesticides and packing materials. However, these services are provided at high prices. About 25.3% of farmers complained of high costs of production due to high price of inputs (Table 22). And 7.4% of farmers complained of lack of capital which occasions 62.5% of farmers failing to hire labourers in their farms (Table 8).

4.6 Cashewnut Marketing

4.6.1 Cashewnut selling

Like any other agricultural product cashewnut marketing is not under control of the government since after the trade liberalization, and has been confined to farmers' organization and individual private traders. Informal interview with different cashewnuts actors showed that marketing of nuts in Mkuranga District basically involved simple linkages of farmers to exporters through middlemen. It was further noted that private traders oscillate the buying prices as they wish in order to magnetize farmers to sell to them. Most of farmers complained that no grading had been considered that rather all nuts were purchased at the rate of under grades. Also there were no weighing machine inspectors to ensure that farmers were not cheated. This shows that there is weakness in CBT supervision, for their failure to regulate the price of cashewnut. One solution to this problem, and which is officially supported by government, is formation of producer marketing groups which can develop a key link to the traders/exporters. Also, it can facilitate direct marketing, thereby shortening the marketing chain and therefore increase farm incomes.

4.6.2 Transportation of cashewnuts

Cashewnuts traders are responsible for transportation of purchased nuts from buying posts to exporting companies or processing mills. The study found that various means of transport are used in transporting cashewnuts, among others includes, head loads, bicycles, pickups, Lorries, and public transport (Table 23). Furthermore, transport costs depend on the means and type of transport, road conditions and the distance to be covered. The modes of transport also determine how much can be

profitably transported and sold. However, most small scale traders consider owning vehicles expensive because the business deal is seasonal. As such small traders prefer hiring vehicles to avoid increased overhead costs.

Table 23: Means of cashewnuts transportation

Means of transport	Frequency	Percent
Lorry	12	42.9
Public transport	10	35.7
Pickups	4	14.3
Bicycle and head load	2	7.1
Total	28	100.0

4.6.3 Cashewnut storage facilities

Primary Cooperative Societies' (PCSs) godowns were the most storage facilities used by farmers and traders in keeping their produces because these facilities are the authorized ones. However, most of godowns were seen to be in very poor conditions with leaking roofs, rendering spoilage of the stored nuts. It was also found that the present storage godowns were insufficient. As a result some small and big cashewnuts dealers used their own rooms or hired houses for storing their nuts during the buying season.

4.6.4 Sources of finance

As far as sources of finance are concerned, it was noted that most of traders obtain credits from informal sources. The sources of finance that were found to be important in the study area are, own saving, relatives and friends, and family savings. Among the three sources of finance own saving and family savings were the most important ones. Among the traders interviewed 54.1% started the business from their own

savings. The remaining 29.2% earned same from family members. Only 16.7% of the traders solicited to relatives and friends (Table 24). This means that majority of business owners depend on informal sources of finance in order to start up or improve their enterprises.

Table 24: Distribution of traders by sources of credit

Source	Frequency	Percent
Own saving	13	54.1
Family	7	29.2
Relative and Friends	4	16.7
Total	24	100.0

Shortage of financial credit was noted to be a major problem in cashewnuts business. The majority of traders (70.8%) reported lack of collateral as the major problem in securing loans (Table 25).

Table 25: Reasons for not getting access to credits

Reason	Frequency	Percent
Lack of collateral	17	70.8
Lack of interest	3	12.5
Not aware	4	16.7
Total	24	100.0

The main forms of collateral mentioned were permanent structures like houses and other immovable assets like land. 16.7% of the traders were not aware of the availability of credit. The remaining 12.5% had no interest in securing credit to expand their business due to high associated risk in cashewnuts business, because of unexpected high competition from other unregistered cashewnut dealers. It was further noted that lack of finance inhibited the ability of cooperatives to compete

with private cashewnuts exporters in exporting nuts. This situation gave room to larger traders to dominate the cashewnuts business by providing interest free credit to small buyers and Primary Cooperative Societies (PCSs), so that they could buy and supply them with large quantities of produces.

4.6.5 Cashewnut marketing channels

Exchange organization defines the structure of the market in terms of the nature of marketing chains, bargaining relationships, volume and prices paid for products and functions performed by various participants in the marketing system. While other marketing channels might exist in the same district for the same product, it was sufficient for the researcher to identify and analyse the most important ones. The existing cashewnut marketing channels have been identified and their brief functions are described here under.

Producers: Cashew cultivation is carried out by a large number of producers who are geographically dispersed of various locations in Mkuranga District. Cashewnuts producers, in general, belong to farming families. Their farms are allocated to them by village authorities, inherited, or purchased. The producers harvest the nuts and supply the product to the traders.

Village agents: They are small scale traders who normally do not involve themselves in the supply of inputs or credits. These agents function as outlets for local farmers, a retail market for local consumers and a bulking-up market for exporters/ traders who tend to buy large quantities of nuts destined for district, urban or even export markets.

Collectors: They are usually based in town or villages located on trunk roads. They function as retail markets but they are also important as assembly points for lorry loads (3 to 10 tons) of cashewnut to be transported to the main urban centre (Dar es Salaam city). They do collect some quantities of cashewnuts and sell them directly to exporters or wholesalers. They are not responsible for the transportation of the said collection from the farm gates for the suppliers do cater for same. Instead, they do transport purchased nuts from their site to exporting companies' arena.

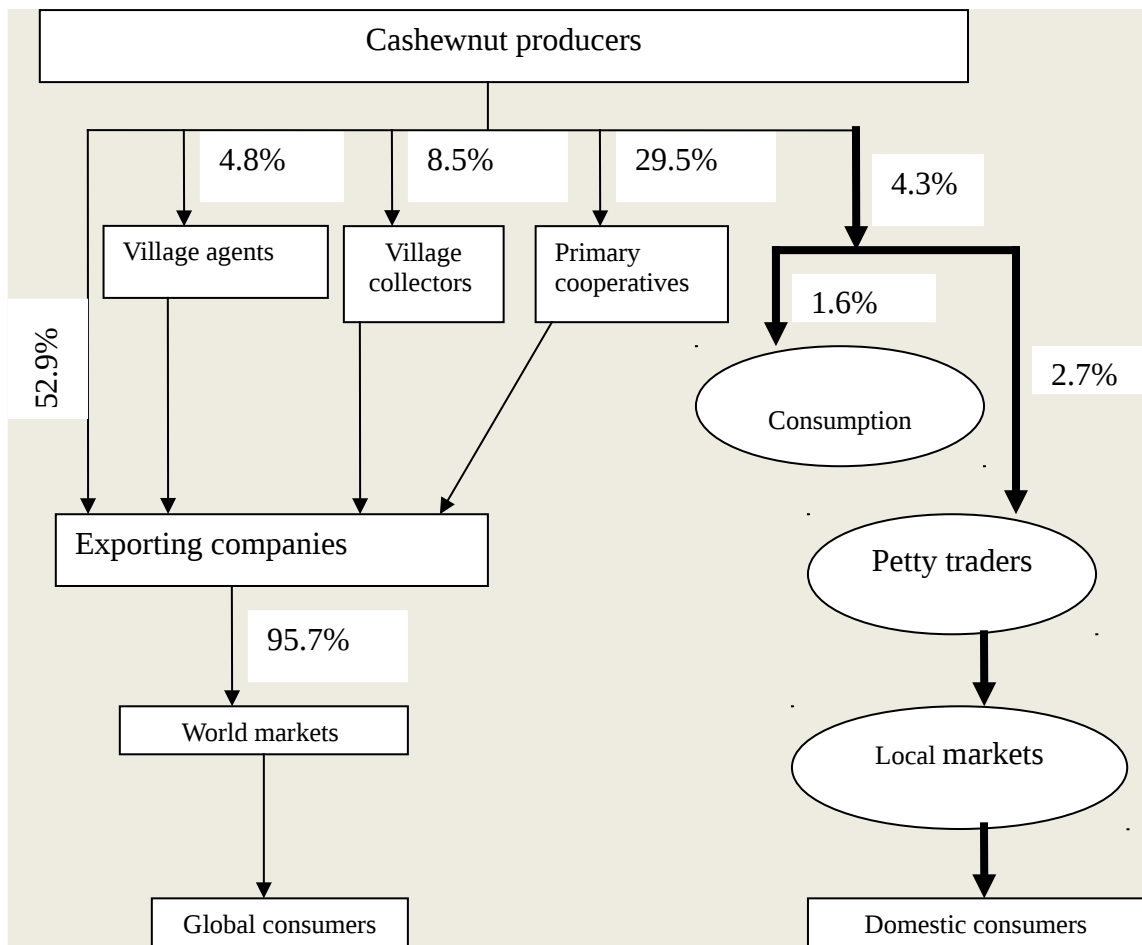
Primary Cooperative Societies: The primary cooperative societies (PCSs) form the major link between farmers and traders. The marketing functions of purchasing cashewnuts, cash payments, and supply of inputs to cashewnut farmers are conducted by cashew dealers through PCSs. Each PCS is under the leadership of its chairperson, vice chairperson, secretary and members. PCSs are charged with the following functions: (i) act as centres for supply of sulphur and other inputs to members through ITF and other input distributors in the district; (ii) collection of cashewnut from farmers and selling them to the exporting companies; (iii) provision of loans for farm inputs and weeding, to their members; (iv) effecting payments to farmers after cashewnuts sales and deduct the amounts of loan provided; and (v) identification and reporting to government authorities, production problems encountered by farmers.

Exporting companies (traders): Exporters buy and sell large quantities of cashewnuts from cashew growers and rural agents and sell the products to foreign markets. The said quantities, of loads of various sizes and shapes, are then packed

into large uniform units. In so doing, the exporters provide information to suppliers (e.g. cashew growers, rural assemblers). They also facilitate mass and specialized storage operations, transportation and, in general, the subsequent distribution operations involving cashewnuts exportation.

In addition, roadside retail markets (petty traders) perform an important function. These markets are a common feature of the major roads and act as an additional outlet for farmers.

Consumers: The last links in the marketing chain, families usually personify the final consumer. However, processing companies are considered the user or consumer, albeit at the intermediate stage. Fig. 5: below summarizes the cashewnut marketing channels used in the study area.



Source: Modified from CFC (2006)

—————> Global markets —————> Local markets

Figure 5: Marketing channels for cashewnuts in the study area

As is evident in Fig. 5 transactions handled by traders fall into four major categories; those occurring between rural assemblers constituting 8.5% of the traders' total transactions and those between producers and agents 4.8%, and as producers-cooperatives 29.5%, whilst producers and exporters constitute 52.9%. Rural assemblers, agents and cooperatives were involved in accumulating supplies from producers for re-sale to exporting companies, mostly in urban (Dar es Salaam city) markets. This study finding implies that 95.7% of traded nuts in the study area were exported to world markets (Fig. 6). In this context, cashewnut is a good source of

foreign exchange earnings. The remaining 4.3% of the nuts were consumed at family levels, given to relatives and friends, or sold to petty traders who re-sale the same to local markets. The volume handled was given as a percentage total of cashewnuts traded (Table 26). Prices were 250 to 610 Tshs per kg at producer level as reported earlier in this text, but 750 Tshs per kg in urban markets. The difference in prices was due to the difference in quality and market segmentation. Farmers can therefore exploit other rewarding market avenues in urban areas if they sell large volumes of cashewnut through economies of scale, same which may reduce marketing their nuts at low prices.

Table 26: Buyer categories by volume of cashewnut traded

Category	Volume (kg)	% total
Village agents	4 225	4.8
Village collectors	7 482	8.5
Cooperatives	25 966.8	29.5
Exporters	46 564.2	52.9
Petty traders/consumption	3 785	4.3

Total	88 023	100.0
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4.6.6 Correlation analysis

Correlation analysis was done to test the extent to which prices and market margin are related to each other (Appendix 2). Results showed high correlation between margin and selling price, this indicates that 66.5% and 26.7% of the market margin were correlated to selling and producer prices in that order. It also implied that 33.5% and 73.3% of the given variables were due to other factors, for instance transaction costs (market levies, transport costs and others). The negative correlation between margins and producer price shows that price change may be passed on subsequent market intermediary in market channel. Taking these into account it would mean that buyers are earning more profit (which does not reflect marketing costs). In this case producers meet most of the marketing costs which were supposed to be paid by buyers. Further analysis observed a strong association ($r = 66.5\%$; $P = 0.003$) between marketing margin and selling prices. A negative association between marketing margin and producer price implies that as producer prices increases market margin decreases and the vice versa. It can be noted, therefore, that selling prices were relatively stable compared to producer prices.

4.6.7 Regression analysis

Table 27 presents the regression results that show the determinants that influence traders' net revenue. Analysis of results indicated that the coefficient of determination ($R^2 = 0.748$) showed that 74.8% of the variation in net profit was accounted for by the independent variables using this model, only 25.2% of the

variation in the cashewnut net profit is explained by variable not included in the model.

The coefficients for two out of the five variables were found to be significantly different at ($P < 0.05$). These were buying price and experience in business. Further, results indicated that the transport costs, education level and selling price were found to be significant at ($P < 0.05$). However, transport costs and buying price were inversely related to the net profit. This implies that traders received less net profit when the buying price and transport costs of cashewnuts were higher. Also, selling prices had positive effect on their profit. This is attributed to the fact that higher selling price of cashewnuts forced traders to buy large quantity from farmers with expectation of earning higher profit. Experience of the traders was positively related to the net profit. This implying that traders with enough experience earn more profit because had good knowledge of market dynamics and lobbying skills acquired in cashewnut business. The significance ($P < 0.05$) of the extent of education, and its positive relationship with net profit, shows that the higher the level of education, the more the traders were willing to invest to make more profit. Similar conclusion for education was reached by Mutayoba (2005) and Eze (2007) in Tanzania and Nigeria respectively.

Table 27: Determinants of net profit margin in cashewnut marketing

Dependent Variable: Net profit margin				
Variable	Coefficient	SE	T-value	Sig
Constant	61.589	1.384	45.500	0.000*
Buying price	-0.085	1.563	-0.054	2.281
Selling price	0.867	0.043	0.555	0.000*

Transport cost	-0.0223	0.165	-0.135	0.002*
Experience (Years)	0.169	0.097	1.742	0.064
Education level	0.3270	0.051	6.412	0.045*

*Significant (P < 0.05)

$R^2 = 0.748$

CHAPTER FIVE

5.0 CONCLUSION AND POLICY IMPLICATIONS

5.1 Conclusion

The gross margin analysis in this study showed that on average cashewnut farmers earned 159 054 Tshs/ha as net return from cashewnut production. This is relatively a larger profit margin compared to those earned from other crops and hence making cashewnut a profitable enterprise although the productivity (kg/ha) was low. The returns per man-day were the highest in cashewnut (2 485 Tshs) and the lowest in cassava (1 382Tshs).

Marketing of cashewnut in the study area can be characterised as highly dependent on cooperatives, individual traders and exporter companies. However, these actors

have not provided adequate incentives to cashewnut farmers in terms of pre-harvest services and marketing performance. Many problems noted from the study indicated gross inefficiency in the entire production-marketing system. These problems increase production costs associated with low producer prices which eroded much of the profit margins received by farmers.

Four main cashewnut marketing channels were identified in the study. The first channel involved producers selling to village agents and these sell the nuts to exporters who sell to consumers. The channel accounts for 4.8% of the total nuts traded. The second channel involved producers who sell cashewnuts to collectors who are agent of exporting companies who sell to consumers. This channel handles 8.5% of the total cashewnut traded. The third channel involved selling cashewnuts from farmers to cooperatives to exporting companies and finally to consumers. The channel constitutes 29.5% of total produce traded. The fourth channel involved farmers selling cashewnuts directly to exporting companies and then to consumers. The channel represents of 52.9% of cashewnut purchased.

The findings in this study show that low producer prices, unreliable markets, high input costs, and pests and diseases constituted the major problems affecting cashewnut production and marketing system in the study area.

The correlation analysis in this study showed positive correlation between net profits and selling price ($r = 66.5\%$; $P = 0.003$) and indication that selling price and net profits were moving together across the season. There were three determinants of the

cashewnut profits, education level, selling price and transport costs which were significant ($p < 0.05$). Other factors such as buying price and experience in cashew business were insignificant ($P < 0.05$).

5.2 Policy Implications

Based on the findings in this study three fundamental recommendations are made for improvement of the production and marketing systems in the study area:

5.2.1 Producer price

Farmers were selling raw cashewnuts at low prices. The government should promote cheaper local processing techniques for cashewnuts by farmers by providing credits or subsidizing the purchase of processing technologies. This will enable farmers to add value to their produces and hence get higher producer prices and earn more incomes from cashewnut production. The use of warehouse receipts system in cashewnut marketing can stabilize the producer prices when backed up with legal provisions through which the stored produces can serve as collateral, be packaged under a future contracts system.

5.2.2 Cashewnut production

The study recommends that public services and policies related to the development of cashewnut production should give more support to smallholder farmers. This support can be in the form of facilitation of the acquisition of working capital and access to lucrative markets through production of value added cashewnuts. Moreover, support for the improvement of cultivation practices to increase

productivity and quality of cashewnuts should also be prioritized by the government. This should involve development of a compatible and integrated strategy that will ensure reliable access to inputs, credit and subsidies by cashewnut farmers. Increases in yield require building capacity in research and development of highly yielding cashewnut varieties as well as well improved extension and education services.

5.2.3 Cashewnut marketing

To improve cashewnut marketing, it is important to use designed official buying posts. These have a number of advantages. First, they have appropriate marketing facilities such as weighing scales, and storage facilities for fair and open transactions. Such posts are also more likely to maximize the potential for collective bargaining for cashewnut producers. These will also make it easier to enforce quality control and traceability by using registered codes.

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APPENDICES

Appendix 1: Questionnaire for Cashewnuts farmers and traders

Questionnaire no.....Date of interview.....

PART ONE: FARMERS QUESTIONS.

Module A: Household identification variables

1. Farmer's name.....Gender 1=male 2=female
2. Village.....WardDistrict.....

3. Ecological zone/land form 1=coastline zone 2=upland zone 3=low land zone
4. Farmer category 1=poor 2= medium 3= rich
5. Gender of Household head 1=Male 2=female, Age.....(years)
6. Marital status of household head: 1=married 2=single 3=divorce 4=separated 5=widow
7. Level of education of household head 1=none 2=adult 3=primary 4=secondary 5=others.....
8. Occupation of household head: 1=farmer 2=employee 3=casual labour 4=own business 5=others
9. Household composition

Age group	Males	Females	Total
10-14 years			
15-18 years			
19 - 50 years			
Above 50 years			

10. Overview of Household Resources

Land resources	Unit	Quantity	Estimated value
-Total land	Hectare		
Cultivated plots(all crops)	Hectare		
Fallow land	Hectare		
Plots for Cashewnuts	Hectare		
Distance to Cashewnuts plot	Km		
Livestock resource			
Cattle	Number		
Goats/Sheep	Number		
Poultry	Number		
Housing and assets: House condition			
Type of wall	1=Mud and wood 2=Burnt bricks 3=Non-burnt bricks 4 =cemented bricks		
Type of floor	1=Mud floor 2=Cemented floor		
Type of roof	1=Grass thatched 2=Iron sheet		
Type of toilet	1=None 2= pit hole type 3=modern		
Source of water	1=piped 2=not piped		
Type of assets present in the household			
	Type of asset	Number	Value
Transportation	Car		
	Motorbike		
	Bicycle		
News media	Radio		
	Radio cassette		
	Clock/watch		
	TV/video		
House assets	Tables		
	Chairs		
	Sofa set		

Coconut													
Maize													

Convert all local units (e.g. gunia, debe) into kg equivalents and fill the av price (H) accordingly

- 13. please estimate amount of cashew sold to petty traders if any.....kg
- 14. How did you get information on market prices? 1=direct visit to the market 2=cross checks with the middlemen 3=hear from friends 4=others.....
- 15. At what time did you sale produces? 1=immediately after harvest 2=wait for higher price 3=you already had a deal before harvest 4=others
- 16. What factors did you consider when you decide to sell your Cashewnuts 1=price offered 2=personal ties 3=Household cash need 4=Need to repay back the loan 4=others.....
- 17. To whom do you sell your Cashewnuts? 1=Middlemen 2=Cashewnuts traders 3= primary Cooperative 4=processors 5= collectors 6= retailers 7= village agents 8= consumers
- 18. At what price did you sell your Cashewnuts in 2007/08 season?.....TAS/kg
- 19. Are you satisfied with the price? Yes=1 /N=0
- 20. If, no why?
- 21. Who set price for your Cashewnuts?
- 22. Are you satisfied with price setting procedure (s)
- 23. What are the conditions for sale? 1=cash 2=credit 3=others
- 24. How far in the marketing centre from your home?km
- 25. Where do you normally contact buyers? 1=at your home 2=at the primary cooperative 3=buyers collection place 4=others.....
- 26. When do buyers announce the price they will offer for your Cashewnuts? 1=at the start of buying season 2=before planting season 3=mid way between 1 & 2.
- 27. Do you know different buyers of Cashewnuts in your area? Yes=1 /N=0 if no go 30
- 28. If yes, mention the price each buyer was willing to offer during the 2007/08 season?

Cashewnuts buyers	Price offered (TAS/kg)

- 29. Are there observed any exploitative Cashewnuts marketing tricks? 1=unfair conduct 2=the use of unstandardized measurements facilities 3=No 4=undercut pricing 5=others.....
- 30. What problems do you face in production and marketing your Cashewnuts: **production** 1=lack of access to inputs 2=theft 3=high input cost 4=low capital 5 poor extension services 6=pest and diseases 7 others specify.....: **Marketing:** 1= low prices 2= unreliable market 3= lack of marketing information 4=low demand of the product 5=exploitative through various tactics 6 others specify.....

Module C. Farm resource and inputs availability and use

- 31. For each input, indicate price and total costs of each crop enterprise

Inputs	Crop grown			
	Cashewnuts	Cassava	Maize	Coconuts

Fertilizer				
Amount (kg)				
Cost/kg				
Seeds				
Amount-specified unit				
Cost per s/unit				
Pesticides (Sulphur)				
Amount (Lt)				
Cost per litre				
2T oil/petrol				
Amount-(Lt)				
Cost per Litre				
Blowers hiring				
Ropes for climbing				
Others				
Total costs				
Hired labour	man days	Man days	man days	man days
Land preparation				
Ploughing				
Planting				
Weeding				
Sulphur dusting				
Pruning				
Harvesting				
Transporting				
Processing/sorting				
Marketing costs				
Security				
Others....				
Total costs				
Family labour				
Land preparation				
Ploughing				
Planting				
Weeding				
Sulphur dusting				
Pruning				
Harvesting				
Transporting				
Processing/sorting				
Marketing costs				
Security				
Others...				
Total costs				

Module D: farm credit and selected financial data

32. Please provide your sources of finance for purchase agricultural inputs: 1= own saving 2=bank 3=SACCOs 4=relatives 5=microfinance institutions (Specify) 5=input trust fund
33. Did you take any loans for farm operations 2007/08 season? (Yes=1, No=0)
34. If yes indicate amount, source, duration, Repayment frequency, Amount per instalment and type of financial source, if it is formal, semi-formal or informal

Source	Amount of loan	Interest rate	Types of source

- 35. What is most important condition you were required to meet for obtaining the loan?
1=farm record 2=collateral 3=witness 4=others.....
- 36. If collateral in what form; 1=permanent structure e.g. House, movable assets e.g. Car, machinery, land, animals, any other valuable assets-mention
- 37. How do you access information on credit and availability? 1=media-specify, 2=village authority, 3=Micro finance institutions, 4=private Cashewnuts companies, 5=primary societies, 6=NGOs
- 38. Do you receive any advice on credit use in Cashewnuts production? (Yes=1, no=0)
- 39. If yes from 1=extension agent, 2=NGOs, 3=Micro finance institutions, 4=Neighbour, 5=others.

Module E: Farmers organization and support availability

- 40. Are you a member of one of the following organizations? Yes=1 no=0 (if no go 43)
1=SACCOs 2= farmer group 3=primary cooperative 4=others
- 41. If yes, what benefits are delivered from these associations? 1=easy to acquire inputs 2= easy to market produces 3= easy to negotiate better price 4= others.....
- 42. How can assess these organizations in facilitating marketing of your cashew?
1=helpful 2=not helpful
- 43. If no, what is preventing you from joining or forming an organization 1=few producers 2=no knowledge on dynamic of organization 3=others.....
- 44. Have you been visited by extension officers? Yes=1 /N=0 (if no go 47)
- 45. What major kind of extension services did you receive? 1=growing of Cashewnuts 2=Cashewnuts marketing 3=pests and diseases control 4=others.....
- 46. Where do normally extension workers come from? 1=NGOs 2=government staff 3=others.....

F. miscellaneous questions

- 47. In your opinion has Cashewnuts production increased or decreased in the past two years: 1= Increased 2= decreased 3=remained the same
- 48. If increased give reasons for your answer above; 1=Increased extension services 2=more readily available of inputs 3= reliable market outlets 4=other reason.....
- 49. Besides income received from crop production, do you have any other sources of income? Yes=1 /N=0 ,
- 50. If yes, specify the sources and estimate amount earned.

Source	Amount earned

PART TWO: TRADERS QUESTIONS

G. Traders’ basic information and trading practices

- 51. Name of organization/trader.....

- 52. Nature /type of organization 1= cooperative 2= private company 3=small/large trader 4=village agent 5=collector 6=others.....
- 53. Gender of the trader 1=male 2=female
- 54. Date of establishment.....Formal registration.....No years in business..... Years
- 55. Type of trader 1= wholesaler 2=retailer 3=collector 4=processor 6=others.....
- 56. Type of crops trading 1=Cashew 2=others (specify).....
- 57. At what price did you purchase Cashewnuts from farmers in 2007/08 season?.....Tshs/kg
- 58. At what price did you sell purchased Cashewnuts to next market in 2007/08? ... Tshs/kg
- 59. What quantity of Cashewnuts did you purchase in 2007/08 season?.....kg
- 60. Who buy Cashewnuts for you? 1=family member 2=agent 3=self
- 61. How did you get price information? 1=from other traders 2=farmers 3=visit market place 4=others.....
- 62. Please estimate the volume of Cashewnuts purchased in 2007/08.....kg
- 63. Where and to whom do you sell your products?
- 64. What buying/selling practices were in place? 1=auCTION sale 2=contract sale 3=first come/first serve 4=others (Specify).....
- 65. How did you get the initial capital for Cashewnut trading? 1=own saving 2=Bank 3 =family 4=others (specify).....
- 66. What means did you use to transport your products? 1=Lorry 2=public3=pickups 4=bicycle 4=head load
- 67. Where did you store your products?

H. Marketing costs

68. Provide Cashewnuts price/cost per bag (80Kg) in alternative market channels

Cost item	Market channels				
	1..... ...	2..... ...	3..... .	4.....	5.....
Selling price					
Buying price					
Marketing margin					

- 69. Do you own your own transport facility? Yes=1 N=0
- 70. If no, how do you transport your Cashewnuts? please fill the table below

Means of transport	Cost involved

I. traders credit/loans availability and uses

- 71. Did you take credit for Cashewnuts marketing last season? Yes=1 0= No if no go 76
- 72. If yes what was the source of credit that you received? 1=Bank, 2=other traders 3=family 4=own saving 5=others.....
- 73. Please provide the amount of loan/credit received..... Tshs.
- 74. At what interest rate were you required to pay for that credit you received?
- 75. What was the collateral for that credit?
- 76. If no why.....

J. Traders' problems

77. What are the most serious problems you face in carrying out activities as a trader?

Problems	Causes	Possible solutions

THANK YOU, FOR YOUR COOPERATION

Appendix 2: Correlation between prices and marketing margin

Correlation	Market margin	Selling price	Producer price
Market margin	0.000	0.665** (P=0.003)	0.267 (P=0.467)
Selling price		0.000	0.146 (P=0.565)
Producer price			0.000

** Means that selling price is positively correlated with market margin (P < 0.05).