CONSUMERS DEMAND FOR TRADITIONALLY PROCESSED CASHEWNUTS: A CASE OF MOROGORO AND COAST REGION -TANZANIA

BY

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A DISSERTATION SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN RURAL DEVELOPMENT OF SOKOINE UNIVERSITY OF AGRICULTURE. MOROGORO, TANZANIA.

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ABSTRACT

This study was carried out in Morogoro and Coast Regions. The study used a cross-sectional research design where data was collected from a sample of 80 consumers and 30 sellers using structured questionnaire. Also survey methods including personal observations and key informants was used to obtained necessary information. Both qualitative and quantitative data were collected and analyzed using descriptive and inferential statistics and linear regression analysis was adopted by using Statistical Package for Social Sciences program (SPSS). The results showed that both price and hygiene of the product had negative impact on demand of the kernel. Also income of the buyer/consumer as well as willingness to buy have some effect on demand of the product. Other variables such as the number of children, norms, age and marital status also had some effects on consumption of processed nuts. Logical conclusion drawn from these results is that, cashew nut processing technology, inadequate working capital, week linkage between sellers and consumers, poor entrepreneur skill of both the processor and the sellers as well as lack of advertisements were the major constraints that affect performance of traditionally processed kernel across the study area. These observations have both economic and social impacts on the status of processors, sellers/buyers and government.

DECLARATION

I, JOSEPH MARCO NJAU, do hereby declare to SENATE of Sokoine University of Agriculture that this dissertation is my own original work and that it has neither been submitted nor been concurrently submitted for a degree award in any other institution.

…….. ……..

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(M.A. Candidate)

The above declaration is confirmed

…….. ……..

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

(Supervisor)

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DEDICATION

To the Almighty God,

My dearest wife Ester Njau

My dearest children Edwin, Judith and Edith

My dearest father and mother Mr and Mrs. Marco Njau

My dearest Brothers Danson, Yesaya and Pastor Rickenson

who have given me physical and moral support through the difficult time in my study and made my dream come true.

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LIST OF ABBREVIATIONS

AFO Agriculture Field Officer

CBT Cashew nut Board of Tanzania

CIP	Cashew nut Improvement Program
CMT	Cashew nut Marketing Tanzania
Kg	Kilogram
LDC	Least Developing Countries
ln	Natural logarithm
MT	Metric Tones
RAA	Regional Agriculture Advisor
SACCOS	Savings and Credit Cooperative Society
TBS	Tanzania Bureau of Standards
Tshs	Tanzanian shillings
URT	United Republic of Tanzania
WAEO	Ward Agriculture Extension Officer

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Agriculture sector will remain central to Tanzanian's economy and overall growth (URT, 2007). The rural areas in most of the least developed countries (LDCs), like Tanzania, are dominated by small scale producers. The rural population constitutes 70 – 80% of the total population and comprises 90% of the poor who rely on small scale agriculture as the main source of income and livelihood (Wangwe and Lwakatare, 2004). As a result poverty is generally regarded as a rural phenomenon (IFAD, 2007).

The rural poor have been facing challenges, which have undermined their development (Temu and Due, 2000). One of the major challenges facing the small scale rural farmers is lack of capital and marketing services for their raw and locally processed crops. Cashew nut is the main cash crop of the South East and Northern coastal belt of Tanzania predominantly grown by smallholders estimated at 300 000 families (Shoo, 1997).

Cashew nut processing in Tanzania started in the period between 1965 and 1982 when the government of Tanzania established a total of 12 large scale mechanical cashew nut processing plants with a total capacity of 113 000 MT of raw nut per year. By then there was enough production to make full use of processing machines. All the processed cashewnuts were sold outside the country due to high demand of the crop. However in 1986 cashewnut production declined from 145 000 to 16 000 MT due to economic mismanagement (Technoserve Tanzania, 2004).

In order to increase production, the government of Tanzania initiated Cashewnut Improvement Program. This programme succeeded to increase production back to 122 000MT by year 2000/2001 (Technoserve Tanzania, 2004).

The Tanzania Agricultural Policy of 1997 stressed the need of having agro-processing through small scale and medium cashew processors so as to add value. By 2003 Tanzanian had 12 new semi-mechanized Indian model factories. Also there were 144 manual village based processing groups- all with processing capacity of 9600 MT per annum representing 10% of the 2002/2003 production providing employment to 4000 people. (Technoserve Tanzania, 2004). By this time external demand started to decrease while local consumption of kernel pegged at 200MT with 50% coming from traditional small scale processors started to increase, (Technoserve Tanzania, 2004).

Traditional small scale cashewnut processors in rural areas are one of the groups that had problems of not only lack of capital but also in most cases lacked markets for their processed cahewnuts and therefore, were trapped in poverty due to lack of ability to sell their products (Kikoka, 1998).

Other challenges facing traditional small scale cashew processors include stiff competition amongst large scale processors and importers of processed cashewnut marketed in super markets (Technoserve Tanzania, 2004).

1.2 Problem Statement and Justification

The growth for Agricultural sector averaged 4.7% for the period 2000-2006 which is not sufficient to meet the MKUKUTA target of 10% by 2010 (URT, 2007).

Despite the importance of the agricultural sector and cashewnut being one of the cash crops in Tanzania's economy, the crop has not yet attained its full potential to contribute to the economic growth (CBT, 2004).

Cashewnut crop like many other cash crops faces a number of constrains including poor crop husbandry practices, insufficient inputs, poor processing as well as marketing facilities of crop and crop by-products (CBT, 2004).

In order to overcome the problem of marketing, traditional local cashewnut processors have decided to process their crops so as to add value. These traditional processors have been increasing yearly (from 43 traditional processing groups in 1992 to 144 groups in 2004) (Technoserve, 2004).

Despite the increasing number of traditional processors, the volume of processed cashew sold is small. This poses a question as to what causes the situation. Mkude (2003) looked at the problems facing raw cashewnut marketing under market liberalization and found that quantity of raw nuts marketed/exported is influenced largely by exchange rate which implies that measures should be taken to eliminate price distortion since increase in output price leads to increase in agricultural output. But how about traditional processed cashewnut? Traditional processor as reported by Coast region Agriculture Advisor sell very little amount per day of their processed cashewnut. Factors contributing to this little selling of traditional processed kernels are not yet apparent. This study therefore aimed at examining the consumption pattern for locally processed cashew nut so as to identify factors that influence the demand for processed cashewnut. The results will consequently contribute to better identification of market opportunities for processed cashew.

The study goes in line with Tanzania Development Vision 2025, the first objective of the Millennium Development goals and the National Strategy for Growth and Reduction of Poverty. All these focus on reduction of poverty through several ways which include creation of self employment in the rural areas. All of them also argue that access to markets of produced crops especially processed one will add value and therefore enable small scale farmers not only to increase income and production but also to solve the problem of crop marketing including cashewnut.

1.3 Objective of the Study

1.3.1 General objective

To determine consumers demand and factors that influences the demand for locally processed cashewnut

1.3.2 Specific objectives

i. To examine the consumption pattern for locally processed cashew nut.

ii. To identify factors that influences the demand for locally processed cashew nut.

iii. To examine characteristics of cashew nut processors and sellers

1.3.3 Research questions

i. What influence the consumption pattern for locally processed cashew nut?

ii. What factors influence demand for locally processed cashew nut?

iii. What are characteristics of cashew nut processors and sellers in relation to marketing of kernels?

1.4 Organization of the Study and Conceptual Frame Work

Scarborough and Kydd (1992) argue that a conceptual framework should help to indicate the areas in which to focus limited research resources and ensure that data collected are relevant to the objective of the research. Kajembe (1994) assert that research performed without the guidance of a conceptual framework is usually sterile in the sense that, the researcher does not know quite well which data to collect, when she/he has them and she/he cannot put them to use. It is from the above argument that a conceptual framework for selecting variables and respondents is developed. With regard to this, the present study assumes that price, income of the buyer, willingness to buy, tastes and preference of the buyer, advertisement, packaging (hygiene) and packaging material as well as entrepreneurship skills of the processor are crucial independent variables. Furthermore, the study assumes that background factors such as age, occupation, marital status, number of children also influence the consumers demand for locally processed cashew nut.

1.4.1 Conceptual framework

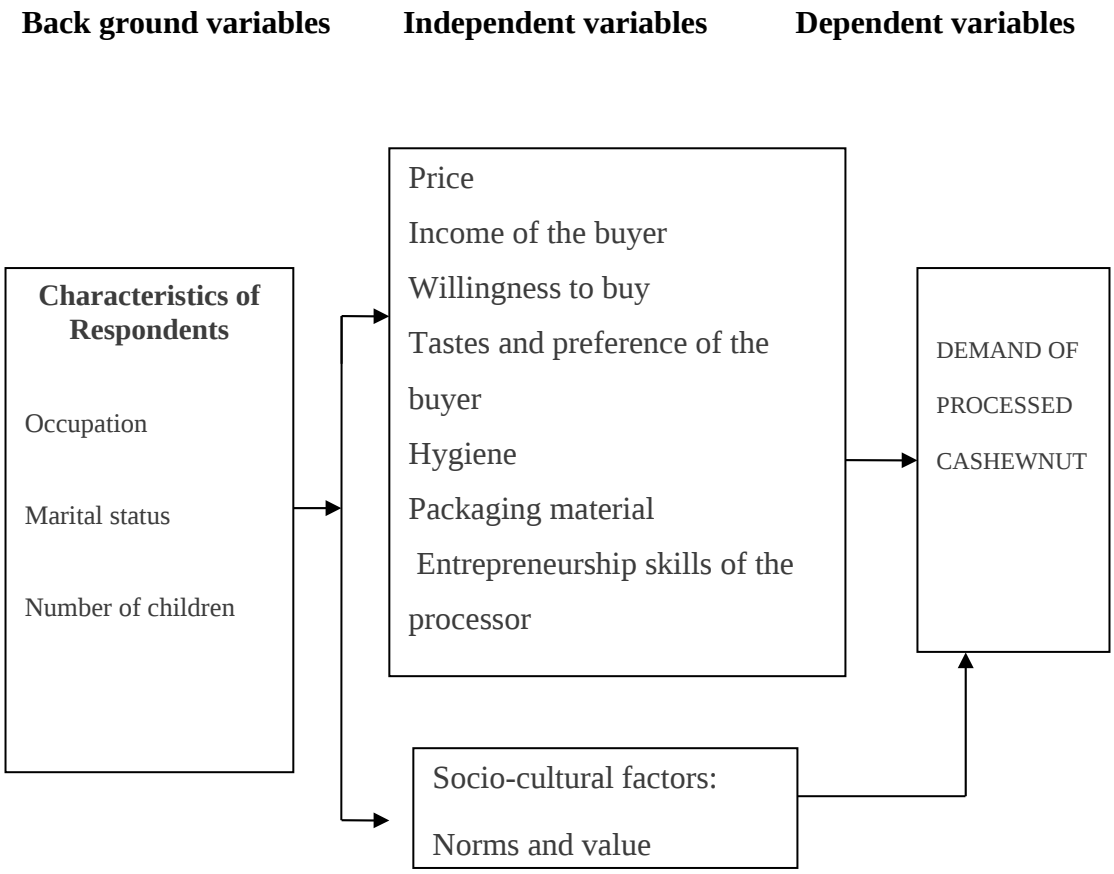

Figure 1: Conceptual framework

1.4.2 Model to be tested

$$Q = b_o + b_1 Y - b_2 P_k + b_3 W + b_4 P_m + b_5 N_v + U_i$$

Where: Q = is the quantity of kernel bought by Consumers,

$b_{o,}$ = a constant

b_1 to b_5 = are coefficients,

Y = is the income of the buyer,

P_k = is the average price of the kernel,

W = percentage of willingness to buy compared to other bites,

P_m = percentage of buyers not comfortable with parking standard,

N_v = percentage of buyers affected by norms and value to consume kernel,

U_i = random error term

1.5 Limitations of the Study

The major constraints of the study are the nature and characteristics of sellers and consumers. Sellers are always moving from one bus/lorry to another looking for consumers which make them difficult to get enough time to respond to the questionnaires. On the other hand, consumers are bus travelers who travel along the road and also have no time to stop and respond to the questionnaires. To overcome the above limitations, interviews were done early in the morning and late in the evening when sellers were either waiting for the customers or resting after daily sale. For the case of consumers, interviews were done inside the buses and others at weighing stations so as to get enough information. However, in order to get secondary information, researcher had to travel to the village to see how the traditional processors behaved and also to the district headquarters such as Kibaha, Kisarawe and Bagamoyo to get the official responses.

Also, primary data used in this study were obtained mainly through interviewing processors, sellers and consumers whose replies were subject to error due to inadequate knowledge, or faulty memory, or because of untruthful replies evolved by consideration of pride or suspicious.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Definition of the Terms

- **Cashewnut processing:** is the process where by the kernels are taken out of the shells, the testa (the thin skin covering the kernel) must be removed, following which the kernels are graded and packaged. The process consists of five main steps:

i. Shelling: removal of the outer shell and Cashew Nut shell liquid (CNSL)

ii. Peeling: removal of the testa

iii. Grading: into different sizes and colours in accordance with standard grading

iv. Drying or humidifying: to a final moisture content of 5 percent

v. Packing: into airtight bags or cans, depending upon the scale of operation

Each of these five steps involves a number of operations. The various processing steps differ in accordance with the scale of operation. In some cases, all steps of the process are manually carried out by small-scale processors, while various pieces of equipment are used in commercial scale processing.

- **Traditionally processed cashewnuts**: These are cashewnut kernels obtained by removal of outer shale by small scale processors, individually or traditionally grouped processors and parked manually without taking into

consideration all the food hygiene regulation. Usually the processing capacity is less than one metric tone per day.

- **The market under study**: the study aimed at market of traditionally processed kernel where by a farmer or small processing group seek for consumer for their product.
- **Consumers demand on traditional processed cashewnut**: quantity of traditionally processed cashewnut a buyer or consumer can purchase from small seller at a given price.

2.2 Concept of Demand

The concept of supply and demand are central to the elementary understanding of how prices, income, taste, demographics, and time constraints can all influence a community from purchases of items like processed cashew nut (Blisard, 2001) According to Robertson (1970), demand refers to the quantity of a good or service customers are willing and able to buy at a given price in a given time period. Also demand is the flow of goods and services required by consumers over a given period of time. The theory on the other hand expresses the inverse relationship between the price of a good and the quantity demanded for a good. It has been noted that consumers are affected differently by price. In general the higher the price the lower the quantity demanded. (Walker, 1994).

According to the theory, there are two categories of demand; “Effective demand” where the customer’s desire to buy something is backed up by willingness and ability to pay for it. There is unlimited number of human needs and wants, but in the

market place these can only be purchased if there is sufficient purchasing power (Kotler, 1994).

Another category is “Latent demand” which exists where there is desire or willingness to purchase a good or service, but the consumer lacks the real purchasing power to be able to afford the product. Latent demand is affected by persuasive advertising where the producer is seeking to influence consumer taste and preferences. Kuehn (1993) stated that on deciding what to buy, consumers will tend to act rationally in their own self-interest. This means that they will choose between different goods and services so as to maximize total satisfaction.

2.2.1 The status of cashew nut production in the world

The world cashewnut production shows an increase from 1961 to 2000. In 1961 the production was 287 535 metric tones, 1980 was 464 215 metric tones, 1990 was 606 681 and production rose to 1 215 210 tones in the year 2000.

Appendices 4 and 5 show the world raw cashewnut production from 1960s to 2000s (FAO, 2001).

2.2.2 The status of cashew nut production in Africa

In Africa raw cashewnut production fluctuates from 1961 when it was 248 360 tones and dropped to 114 795 in 1985. However, it rose to 432 955 tones in 2000. Countries which produce cashewnut include Tanzania, Mozambique, Bukinafaso, Ghana, Angola, Nigeria, Benin, Madagascar, Togo and Senegal. Appendix 4 shows cashewnut production in Africa. (FAO, 2001).

2.2.3 The status of cashew nut production in East Africa

In East Africa, cashewnut is produced mainly in Tanzania and small amount in Kenya along the coastal belt. The average production of cashwenut in Tanzania per year is 100 000 (MT) compared to Kenya which is 11 653 MT (Ashimogo, 2006)

2.2.4 The status of cashew nut production in Tanzania

Cashew nut is the main cash crop of the South East and Northern coastal belt and is predominantly grown by smallholders estimated at 300 000 families (Shoo, 1997)

In Tanzania the number of cashew trees stands at 32 000 000, covering about 400 000 Ha of arable land (Shoo, 1997). In this regard developing, promoting and regulating the cashew industry is about transforming the characteristics of the national economy in general and the socio-economic status of the cashew growing regions in particular, (CBT-Strategic plan, 2004).

Cashew nut production in Tanzania was at peak in 1973/1974 season when the country produced 145 000 MT of which more than 98% was exported (Shoo, 1997). The production dropped to 16 059 MT in 1989/90 due to economic miss management such as problems of diseases especially powdery mildew, old trees and poor marketing of raw nuts (Shoo, 1997).

Shoo (1997) added that, during this season effort to improve production through initiation of Cashew Improvement Program (CIP), and rehabilitation of existing 12 large scales processing factories to reduce the problem of exporting raw nuts was strengthened. These processing factories include Lindi factory, Mtama,

Nachingwea, Tunduru, Likombe, Newala I, Newala II, Masasi, Tanita I, Tanita II, Kibaha and Mtwara. With the exception of Masasi and Newala factory, almost all other factories are not working. The Masasi factory, however, is also facing problem of major rehabilitation. Consequently, around 90% of annual production is exported as raw nut.

Table 1: Tanzania: Cashewnut production trend 2000/01-2006/07(MT)

Season	Production (Mt)	Export (Mt)	Percentage exported	Not exported (Mt)	Percentage not exported
2000/2001	122,284.778	121,379.00	99.2	905.778	0.8
2001/2002	67,369.044	64,441.00	95.6	2,928.044	4.4
2002/2003	92,157.302	82,054.00	89.0	10,099.302	11.0
2003/2004	78,566.927	76,770.88	97.7	1,796.051	2.3
2004/2005	81,600.000	70,677.07	86.6	10,932.929	3.4
2005/2006	77,446.000	66,708.00	86.1	10,738.000	3.9
2006/2007	92,573.188	69,566.30	75.1	23,011.888	24.9

Source: CBT 2007

Due to the problem of poor marketing system of raw nuts, almost ten percent of annual production shown in Table 1 is assumed to be locally processed and marketed by small scale processors. Also the off season crop is believed to be processed locally but little research has been done to analyse this group so as to understand the consumers demand of their products (CBT, 2004).

Ghasia (2003) and Mkude (2003) did research on marketing of raw nuts under market liberalization and found that, the structure of marketing system is not efficient with respect to market transparency. Very few companies deal with processed cashewnut. However, little has been done on factors contributing to

internal marketing of traditionally processed nuts and critically looking at consumers demand for the locally processed cashew nut.

2.3 The Status of Small Scale Cashew Processing in Tanzania

Technoserve Tanzania (2004) reported that there are 144 small scale processing groups in Tanzania of which 103 (72%) groups are located in the Coastal Region. The information from the Coast Regional Agriculture advisor says that; these processors do the processing under local condition and sell their kernel either along the road as *Machingas* while few of them sell their kernels during national festivals such as *Sabasaba* and *Nanenane* days. He added that, around 50% of the kernel sent to the market during these occasions is not sold.

2.4 Grading of Kernel

Grading in Tanzania is based on Indian Cashew kernels notifications and American Food Industries Specification (CBT, 2004). CBT (2004) added that grading is very important and it is the United States which sets world price of the kernel. Cashew nut price depends on the acceptable grades which are W180, W210, W220, W260, W300, W350, W400 and W450. This grading is important to be known by small processors. Researchers at Naliendele (Mtwara region) confirmed that under laboratory observations, the hygiene of smaller producers show presence of ash, sand and other domestic filth.

2.5 Markets and Marketing Channel System

Up to the early 1990 institutional reform for export crops had not diverted from the single channel marketing system (Mkude, 2003). Mkude (2003) added that, this is

because of the structure of the export crops marketing which requires some vertical integrations and offers few opportunities to producers for alternative selling arrangement, for example unlike food crops, export crops require further processing before being exported. However, after the 1992 cashew nut industry liberalization, a total of 40 companies participated in cashew nut export (Mkude, 2003). These companies were reported to be either foreign owned or owned by Tanzanian – Asian business and were exporting mainly raw nuts and not processed nuts. The commercial success of small scale processing depends more on what people are ready to buy and how it will be used as well as how it can be made (Gregory, 1995).

CHAPTER THREE

3.0 STUDY METHODOLOGY

3.1 Geographical Location of the Research Area

The research was conducted along Dar es salaam-Morogoro road in two regions, namely Coast and Morogoro regions. The reason for selecting these regions was that, Coast region comprises more than 70% of small scale processing groups in the nation and Morogoro is the lowest about 1%. (Technoserve Tanzania, 2004) In these study traditional processors, sellers and consumers at stations of Msamvu, Mikese, Chalinze, Mlandizi and Kibaha were interviewed. The questionnaires were divided into two, one for sellers/and or processors and another for consumers.

3.2 Study Design

This study employed a cross-sectional research design. Cross sectional research is based on survey research method that establishes variability between cases and allows examining possible relationships between variables. Moreover, there is common acceptance that factors determining consumers demand, do not change within a short time, hence, cross sectional method is more important compared to other research method (Bryman and Cramer, 1992).

3.3 Sample Size and Sampling Method

A sample size of 80 consumers and 30 small scale sellers were used and not more due to characteristics of consumers who were always found in buses and therefore difficult to capture them to respond to questionnaires. Random sampling design was used for consumers where 80 consumers were interviewed. Referral sampling (snow ball method) was also used to interview small scale sellers. A total of 30 small scale sellers were interviewed at stations of Msamvu bus stand, Mikese mizani, Chalinze, Mlandizi and Kibaha. The collected data were summarized and analysed by using statistical package for social science programme and the obtained data was used to grow conclusion in relation to stated objectives.

3.4 Data Collection Method and Sources

3.4.1 Source of data

Both primary and secondary data was collected in this study to look for factors that can influence demand for traditional processed cashewnut. Primary data was obtained from both consumers/buyers and sellers while Secondary data was collected from various sources that include libraries, ministries, the internet, Regional Agriculture Advisers (RAA), Cashew Marketing Board (CMT), small scale processing factories and other stakeholders. Government publications and policies also utilized. For primary data, three methods of data collection were used. These methods include administration of questionnaire, key informant interview and participant observation

i. Administration of questionnaire; Two types of questionnaire namely open and closed-ended questions formed the questionnaire. Personal in-depth approach /interviewing schedule.

ii. Key informant also was used by employing checklist

iii. Personal observation also helps to collect data.

3.4.2 Instruments of data collection

(i) Questionnaires

Both closed and open ended Questionnaires were prepared for buyers and sellers. The closed ended questions were also administered to respondents in their areas of domicile to search for information on relationships between processors and sellers.

(ii) Unstructured interviews

Unstructured interviews were also used to seek information from district officials such as Cooperative officers, District Agricultural officers, RAA, Factory managers and CBT leaders to beef up information on price, advertisement, grading and packaging.

3.5 Tools of Data Analysis

Data was summarized and entered into a spreadsheet. Statistical Package for Social Science (SPSS) for windows versions 12.0 was used to analyze the data. Data were also cleaned by running frequencies of individual variables and later analyzed. Descriptive and inferential statistical analysis methods were used. According to Kothari (1990), descriptive characteristics refer to qualitative phenomenon which can not be measured quantitatively; only their presence or absence in an individual

item can be noticed. For descriptive statistical analysis, frequency, percentages, means and measures of variations were used. While for inferential statistical analysis, regression models were used. Mdoe and Wiggnins (1996) on findings of demand for milk used regression analysis model and found that both income and price have greater effect on quantity of milk demanded per given time. The model follows the following linear equation:

$$Q = b_o + b_1 Y - b_2 P_k + b_3 W + b_4 P_m + b_5 N_{v+} U_i$$

Where: Q = is the quantity of kernel sold per season by small scale seller or bought by consumers, b_1 to b_5 are coefficients, b_o = a constant, Y = is the income of the buyer, P_k = is the average price of the kernel (kg), W = percentage of willingness to buy compared to other bites, Pm = percentage of buyers not comfortable with packaging standard, Nv = percentage of buyers affected by norms and value to consume kernel, U_i = random error term

This type of equation was also used in order to establish the relative importance of independent variables to the dependent variables. Such importance is deduced from standardized regression coefficient whose magnitude shows the relationship between independent and dependent variables.

3.5.1 Descriptive analysis

Descriptive characteristics refer to qualitative phenomenon which can not be measured quantitatively; only their presence or absence in an individual item can be noticed (Kothari, 1990).

In this research, variables such as willingness to buy, attitude towards packing and hygiene descriptive statistical analysis was used to get frequency, percentages, means and measures of variations.

3.5.2 Quantitative analysis

This is an analysis where by numerical data such as weight, income, number of children is measured (Kothari, 1990). In this research it used to measure the income of the consumer in relation to the quantity of kernel purchased.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents the major findings of the study. It is divided into three broad categories. The first category deals with consumption pattern for traditionally processed cashewnut, the second part presents factors that influence the demand for traditionally processed cashewnut and it includes; demographic particulars such as sex, marital status, number of children, also occupation, monthly average income, attitude towards price and hygiene of kernel. The third part deals with characteristics of both small cashewnut processors and sellers, it includes sex, number of dependants in household, alternative occupation of sellers, entrepreneurship skill of the sellers and amount each selling per day. Finally the chapter winds up with a discussion of other factors influencing demand for traditionally processed cashewnut.

4.2 Characteristics of the Processors and Sellers

4.2.1 Gender of the respondents

Table 2 shows that, most of the sellers were male (83.3% of interviewed group were men) and the remaining 16.7% were female but none of them had a cashewnut plot. This implies that, sellers are not producers and therefore difficult for them to compare their selling price and costs of production.

Table 2: Morogoro and Coast region: Sex of cashewnut sellers

Sex	Frequency	Percentage

Male	25	83.3
Female	5	16.7
Total	**30**	**100**

4.2.2. Participation of processors and sellers on production of cashewnut

Table 3 shows that 93% of the processors and sellers are not farmers and do not own a cashewnut farm. Only 6.7% own less than one acre plot of cashew trees. Processors buy unprocessed nuts during harvesting period (October to December each year) from the farmers and process them traditionally using simple tools ready to sell to the sellers. They act as a middleman between farmers and exporters but they don't export.

Table 3: Morogoro and Coast region: Showing whether processors and sellers own cashewnut farms or not.

Response	Frequency	Percentage
Yes	2	6.7
No	28	93.3
Total	**30**	**100**

This implies that, sellers and processors depend much on farmers and hence a need to improve the chain between farmers and sellers so that the business may be sustainable

4.2.3 Processing of cashewnut

Table 4: Morogoro and Coast regions: To show whether cashew nut sellers also process cashewnut?

Response	Frequency	Percentage
Yes	0	0
No	30	100
Total	**30**	**100**

As shown on Table 4, none of sellers do the processing as they all buy already processed kernels from cottages. This implies that before kernel reaches the consumer it passes through several agents i.e. the farmers, processors and main buyer and finally to the sellers then to consumers. The final consumers has to pay all cost incurred in the marketing chain of the kernel.

4.2.4 Participation on marketing of kernel

Table 5: Morogoro and Coast region: Frequency at which respondents sell kernel along the road

Response	Frequency	Percentage
Seasonal selling	12	40
Selling frequently	18	60
Total	**30**	**100**

Table 5 shows that, 60% of respondents sell kernel everyday as his/her permanent job, while 40% sell as part time. As the age of sellers' ranges from 14 to 35 years, this implies that, any efforts on demand improvement will result in the increase of kernel marketing hence increase of youth employment.

4.2.5 Quantity of kernel each respondent (seller) sell per day

Table 6: Morogoro and Coast region: Average amount of kernel each seller sold per day

Amount	Frequency	Percentage
Between 1kg and 5kg	23	76.7
Between 6kg and 10kg	4	13.3
Above 10 kg	3	10.0
Total	**30**	**100**

Table 6 shows that 76.7% of the respondents sell between 1 and 5 kg of kernel per day while the remaining 23.3% sell more than 5kg per day. This indicates that, for

Kibaha and Chalinze which have more than 200 kernel sellers if properly organized can sell up to 767 kg of processed kernel per day and therefore reducing the problem of lack of cashew marketing facing the nation.

4.3 Cashewnut Processing and the Market

Cashewnut processing in the study area is traditionally performed by local processors using simple tools with no machines while most buyers of traditionally processed cashewnut are travellers including passengers on buses and heavy-duty truck drivers.

However, few town/stand dwellers also buy kernels. Study shows that cashewnut kernels are sold throughout the year around the study area. The analysis shows that, the market for the traditional processed cashewnut has the following characteristics:

4.3.1 Occupation of consumers who frequently buy cashewnut kernel

Table 7 shows that 75.1% of the kernel is purchased by salaried workers and business persons travelling along the roads while 12.5% is consumed by farmers and the remaining 12.5% by others including students. This shows that there are opportunities of improving the kernel market as travelling services improved.

Table 7: Morogoro and Coast region: Occupation of consumers who buy cashewnut kernel frequently

Occupation	Frequency	Percentage
Farmer	10	12.5
Salaried workers	39	48.8
Business man/women	21	26.2
Student and others	10	12.5
Total	**80**	**100**

4.3.2 Consumers' average income versus quantity of kernel purchased

Table 8 shows that, most of the kernels are purchased by low to medium earning salaried people (i.e. those getting below Tsh. 300 000 per month score 80 % while those getting more than 300 000 scores 20%). This implies that despite of the high price of roasted cashewnut, still more people are able to buy and consume it.

Table 8: Morogoro and Coast region: Respondents' average income versus quantity of kernel purchased

Average income	Frequency	Percentage
Below Tshs. 100,000	19	23.8
Between Tshs. 101,000 and 200,000	28	35.0
Between Tshs. 201,000 and 300,000	17	21.2
Between Tshs. 301,000 and 500,000	10	12.5
Above Tshs. 500,000	6	7.5
Total	**80**	**100**

4.4 Factors that Influence Demand for Traditionally Processed Cashewnut

4.4.1 Major customers of processed cashewnut

Interview with selected traditional processors show that 95% of the traditionally processed cashewnut was sold to the sellers as middleman who finally sold them to the passengers and lorry drivers. The remaining 5% is sold during the national feastivals such as *Nanenane* shows, *Sabasaba* grounds during Internal Trade days and partly to Hotels and pubs in Coast, Morogoro and Dar es salaam. This means that with good marketing strategy kernel market can be expanded.

4.4.2 Processing and marketing skills of sellers

Table 9 shows that only 20% of the respondents have an idea of processing skills but none of them possess marketing skill of kernel. Table 10 also shows that 83.3% of sellers use only the criteria of purchasing & packaging cost to set the price of kernel to consumers. This creates a gap on business knowledge which implies a need to improve the existing marketing knowledge.

Table 9: Morogoro and Coast region: To show whether sellers got training on processing /marketing skill.

Response	**Frequency**	Percentage
Yes	6	20.0
No	24	80.0
Total	**30**	**100**

Table 10: Morogoro and Coast region: Criterias which sellers use to set price of kernel to consumers

Costs included in setting price	**Frequency**	**Percent**	**Cumulative percent**
Purchasing cost	20	66.6	66.6
Both purchasing & packaging cost	5	16.7	83.3
Time spent to sale and others.	5	16.7	100
Total	**30**	**100**	

4.4.3 Respondents attitude on existing price

Walker (1994) noted that consumers are affected differently by price. Generally the higher the price the lower the demand. Analysis from Table 11 shows that 60.1% of the respondent said the price is high to very high, while the remaining 39.9% said is medium to low.

Table 11: Morogoro and Coast region: Consumer's option on the existing price level of Tshs. 8000 per kilogram of kernel.

Price level	Frequency	Percent (%)
Very high	21	26.3
High	27	33.8
Medium	18	22.5
Low	14	17.4
Total	**80**	**100**

4.4.4 Effects of packaging and hygiene on cashewnut demand

Packing and hygiene show to have effect on cashewnut demand. Table 12 show that 57.5% of consumers are not comfortable with the hygiene of processed cashewnut. Most of these consumers are salaried workers and belong to the higher education Institutions such as Dodoma University, Mzumbe University, Morogoro Muslim and Sokoine University of Agriculture. They argue that if they can be assured of the hygiene of the kernel including TBS stamp they would buy more. They added that colour, taste and aroma of the kernel are very interesting forces of demand but the contradicting factor is the hygiene and the whole processing stages including packing.

Table 12: Morogoro and Coast region to show whether consumers are comfortable with hygiene of processed kernel?

Response	Frequency	Percent (%)
Yes	34	42.5
No	46	57.5
Total	**80**	**100**

On the other hand, 42.5% of the consumers said they were either not aware of the hygiene or did not mind. This shows that any effort to improve the hygiene of the processed cashew can help to increase the amount sold per day.

Table 13 shows that 75.5 % of respondents bought roasted cashewnut because of its taste, 11.2% packaging standard, 5% for giving to their children, and remaining 8.8% were attracted by other factors such as nutrition status, prestige and bought for friends.

Table 13: Morogoro and Coast region: Reasons why respondent buy roasted kernels?

Attraction	Frequency	Percent (%)
Taste	60	75.0
Packaging material	9	11.2
For children preference	4	5.0
Others	7	8.8
Total	**80**	**100**

4.4.5 Frequency of travelling versus amount of kernel purchased

Table 14 shows that frequency of trips/passenger vehicles along the Dar-Morogoro road increases the number of customers and has impact on the amount of kernel consumed. Those travelling every day consume/buy more kernels compared to those travelling once per week or per month.

Table 14: Morogoro and Coast region: Buyers traveling frequency along the Dar-Moro road and volume of kernel consumed.

Traveling frequency	Frequency	Percent (%)	Volume of kernel consumed (kg)
Every day	52	65.0	13
At list once per week	8	10	4
At list once per month	9	11.2	4.5
Others	11	13.8	2.75
Total	**80**	**100**	

4. 5 Effect of Income on Volume of Cashewnuts Purchased

Bryman and Cramer (1992) correlation coefficient are interpreted as follows:-below 0.19 is very low, 0.2 to 0.39 is low, 0.4 to 0.69 is modest, 0.70 to 0.89 is high and 0.90 to 1.00 is very high.

A regression model was used to determine the contribution of the factors affecting the amount of kernel bought by consumer. Income was regressed against quantity of kernel demanded together with other variables such as price, willingness to buy and hygiene. It was expected that those getting high income will consume more and the higher the price will lower the quantity demanded and vice versa. Table 15, regression analysis shows that income clearly affects quantity demanded.

Table 15: Regression results for demand for traditional processed cashewnut.

	Unstandardized Coefficients		**Standardized Coefficients**	**t**	**Sig.**
	B	**Std. Error**	**Beta**		
(Constant)	-3.926	.018		-219.287	.000
Respondent's sex	.001	.002	.000	.257	.798
log income	.006	.004	.004	1.654	.102
logprice	.998	.002	.999	454.230	.000
Hygiene of kernel	.001	.002	.001	-.469	.640
Test of roasted kernel	.000	.001	.000	.151	.880

The estimated demand function shows that the explanatory power of the estimated demand function model can be regarded to be satisfactory. The multiple correlation coefficients R^2 (adjusted) indicate that 100% of the quantity of processed cashewnut bought by consumers in the study area is explained by variables included in the estimated model.

The F- test for the obtained R^2 was statistically significant (Table 15). This implies that the factors included in the model do affect the quantity of kernel demanded in the study area. The coefficient of respondent attitude towards price is positive as expected because the lower the price the more amounts demanded and vice versa. Lower price increases the purchasing power of consumer. The coefficient of respondent attitude towards income is positive as well because the higher the income the more purchasing power of consumers. The coefficient of respondent sex is positive but not significant because being a man or women in selling of cashewnut has less effect on the quantity consumer can demand.The coefficient of respondent attitude towards hygiene is positive as expected because the more the hygiene product is, the more consumers are tempted to buy.

4.6 Cashewnut Processing Problems

Processors were asked to indicate the problems affecting their performance in kernel processing. Like any other agricultural small scale processed products, kernel processing and marketing are not given the right attention to make sure that the industry improves. The study found that 70% of the processors stated that lack of processing knowledge, followed by lack of working capital, competition from the some product from advanced big processors are the main problems affecting their performance. These findings are similar to those reported by Nyagori (2001) and Frank (2006) who found that small-scale food processors in Dar-es salaam, Tanga, Iringa and Dodoma regions were greatly constrained by lack of finance, proper processing knowledge and marketing skill.

4.7 Other Factors Affecting Marketing of Traditionally Processed Kernel.

Both processors and sellers were asked to give other problems affecting the marketing of traditionally processed kernels. All respondents mentioned inadequate promotion and advertisement as the main factors that affected the marketing system of the traditionally processed cashewnut.

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study provides empirical evidence relating to processing, marketing and demand for traditionally processed cashewnut in Tanzania using Coast and Morogoro as case study. Specifically the study aimed at examining the consumption pattern for locally processed cashew nut, identifying factors that influence the demand for locally processed cashewnut and examining characteristics of cashew nut processors and sellers**.**

Data for the study were collected from 80 consumers and 30 traders (sellers) through interviews using structured questionnaires. Both descriptive statistics and regression models were employed to analyse the data. While a substantial part of the analysis was based on descriptive statistics, regression analysis was used to determine factors that influence demand for processed kernel.

5.2 Findings of the Study

With respect to the objectives of the study, the followings were the major findings of the study;

- **Characteristics of cashew nut processors and sellers**

The analysis of traditional cashewnut processing at individual level shows that processing is done manually at a very low capacity throughout the year including off season crops.

Lack of processing technology, inadequate working capital, week linkage between sellers and consumers as well as lack of advertisement were major constraints that affect performance of traditionally processed kernel across the study area.

- **Identifying factors that influences the demand for locally processed cashewnut**

Factors that have direct impact on demand for traditionally processed cashewnut includes: Price, income, packaging standard and hygiene, frequency of consumer traveling along the Dar and Moro roads (access to market), number of children in household, and marketing knowledge of both processors and sellers. On the other side, lack of proper processing knowledge, poor packing standards, substitute products such as roasted groundnuts and biscuits have negative impact on demand.

- **The consumption pattern for locally processed cashew nut**

The study shows that processed cashewnut are sold along the road throughout the year and that there is no difference in price i.e. price of processed cashewnuts is the same throughout the year. On the other hand, marketing of traditionally processed

cashewnut absorbs the off season demand in Northern cashwenut zone which is estimated to be more than 500MT annually. Findings also show that the chain of processed cashewnut to consumer starts from farmer's row nut, processor- whole buyers – intermediate buyer and packagers, and finally to petty sellers before reaching final consumers.

It is also observed that, both consumers and sellers have no time to negotiate or learn from each other. This is because the situation is controlled by the nature of the transaction existing where consumer is inside the bus or lorry while sellers are outside advertising the product. Despite the nature of the marketing system existing, each seller was able to sell more than 5 kg per day.

5.3 Recommendations

In view of the major findings of the study, the following recommendations are made in order to stimulate and promote the marketing and consumption of traditionally processed cashewnut in study area and other parts of Tanzania.

a) Domestic processed cashewnut marketing

This can be successfully achieved through:

(i) Understanding customers needs and take them into accounts in making decisions about what type of product to process and how to process, handle and pack the product.

(ii) Enabling processors and sellers to advertise their product in order to inform and attract the consumers to buy.

(iii) Providing both processors and sellers of traditional products with business and marketing skills to enable them compute with similar products produced by advanced processors.

(iv) Regional Government through their respective District Councils may help traditional processors and sellers by giving them loans via the Group SACCOS which will help to strengthen their business.

(v) Virtually, Kibaha and Bagamoyo District councils have to find out the need to follow up whether the existing situation such as use of specific centres like shops, processing standard such as hygiene, proper weighing, grading, storage and other hygienic standards are carried out.

b) Policy implications

i. Foster linkages between farmers, processors and sellers to produce sufficient and quality nuts.

ii. Advocate to both processors and sellers best roasting, packaging and handling practices and make them to be aware of effect of selling low quality nuts to consumers.

iii. Train processors on quality processing, safety hygiene and packaging.

iv. Train sellers on marketing and entrepreneurship

v. Foster formation of group associations in order to make processors and sellers graduate at higher levels. This will provide a good check for quality; increase processing capacity and can make them graduate as both processors and sellers of higher level through contractual agreement.

c) Suggestion for future research

As consumer preferences change over time and consumption pattern vary geographically, similar study should be conducted on the second part (Southern zone) of cashewnut production to ascertain the extent to which the findings of this study are applicable in other areas. This will help to generate important information on alternative approaches to be used in order to stimulate processing, marketing and consumption of traditionally processed cashewnut and other agricultural crops.

REFERENCES

Ashimogo, G., Mlozi M. Silayo, V (2006). *Market Analysis and Survey of Small-Scale Cashewnut Processing Firms,* Volume 1. Bureau of Agricultural Consultancy and Advisory Service, Sokoine University of Agriculture, Morogoro, Tanzania. 50pp.

Blisard, N. (2001). *Income and food expenditures decomposed by cohort, age and time effects.* U.S. Department of Agriculture Economics Research Services, TB-1896

Bryman, A. and Cramer D. (1992). *Quantitative data analysis for Social scientists*. London: Routledge. 294pp.

CBT (2004). Corporate Strategic plan for 2005-06 to 2008-09, Cashew nut Board of Tanzania. Commonwealth Secretariat (1997). *Tanzanian Development of Agro-Processing Industry Strategies and Action Plan*. EIDD/I/TAN/49, Industrial Development Department and Export, and

Industrial Development Division, Marlborough House, London SWI. 96pp.

FAO (2001). Small-scale cashewnut processing [http;//www.cashewnut.com/about /processing] site visited on 14.05.2009

Frank, G.H.H. (2006). Analysis of processing, Marketing and demand for processed fruits and vegetable in Tanzania, Un Published Thesis for Award of Degree of Doctorate of Philosophy of Sokoine University of Agriculture, Morogoro,Tanzania. 99-105pp.

Ghasia H. A. (2003). An assessment of institutional factors affecting cashewnut in Mtwara Region. Dissertation for Award of MSc. Degree at Sokoine University of Agriculture, Morogoro, Tanzania. 101pp.

Gregory, J. S. (1995). *Price, Product and People, Analyzing Agricultural Markets in Developing countries*. International Potato Centre, Lima-Peru. 114-135 pp

IFAD (2007). Rural Poverty in Tanzania. Over One Billion People Lack Access to Basic Financial Services. [http://www.ifad.org/media/press/ 2004/38. htm]. Site visited on 3 January 2008.

Kajembe, G. C. (1994). Indigenous management system as a basis for Community forestry in Tanzania: A case of Dodoma Urban and Lushoto Districts. Wageningen Agricutural University. Wageningen. 194pp.

Kikoka, L.P., Msemwa, H. S. (1998) Cashewnut processing in Tanzania: Challenge and options. In: *Proceeding of International Cashew and Coconut conference; Tree for life- The key to Development* (Topper C.P.; Caligari P.D.S, Kulaya A.K., Shomari S. H, Kasuga L.J., Masawe P.A.L and Mpunami A.A, eds) Biohybrids International L.td, Reading UK. 76 pp.

Kotler, P. (1994). *Marketing Management; Analysis, Planning and Control*, 8th edition, Prentice Hall, United States of America. 676pp.

Kothari, C.R. (1990). *Research Methodology: Method and Techniques*. Second edition, New Age International Publishers, New Delhi. 448pp.

Kuehn, B. J. (1993). *U. S. Demand for Food; Household Expenditures, Demographics and Projections for 1990-2010.* Book Company, San Francisco, United States of America Lack Access to Basic Financial Services. [http://www.ifad.org/ media/press/2004/38.htm]. Site visited on 3 June 2008.

Mdoe, N. and Wiggins, S. (1996) *Dairy Products Demand and marketing in Kilimanjaro Region, Tanzania*. Food policy Volume 21, No.3. 319-336pp

Mkude, C.D. (2003). Economic analysis of small holder's cashew nut production and Marketing under liberalization. Dissertation for Award of MSc.

Degree at Sokoine University of Agriculture, Morogoro, Tanzania. 137pp.

Nyagori, E.A. (2001). Evaluation of Small-scale Agro-based food processing enterprises in Dar es salaam. Dissertation for Award of MSc. Degree at Sokoine University of Agriculture, Morogoro, Tanzania. 121pp.

Robertson, B. (1970). *Markets, Prices and International trade*. John Willey and Sons. United States of America. 426pp.

Scarborough, V. and Kddy J. (1992). *Economic Analysis of Agricultural Markets*. Amanual, Chatham, Natural Resource Institute. U.K. 592 pp.

Shoo, J. A. (1997) The cashewnut Industry in Tanzania. Status report. In: *Proceeding of the International Cashew and Coconut conference*, (edited by Topper, C.P, Calgari, P. D. S, Kulaya, A.K, Shomari, S. H, Kusaga, L.J, Massawe, P. L. A and Mpunami A. A.) Biohybrids International Limited, Reading UK. 7pp.

Technoserve Tanzania (2004). *The study on cashew nut processing in Tanzania*. Report submitted to MAFS, Dar es salaam. 33pp.

Temu, A. E. and Due, J. M. (2000). The business environment in Tanzania after socialism: Challenges of performing banks, parastatals, taxation and the civil service. *Journal of Modern African Studies* 38: 683-712. Cambridge University Press.

URT (2007). Poverty and Human Development Report. 92 pp.

Walker, C. J. (1994). *Economics of Marketing*. Mac Donald and Evens Limited, London. 152pp.

Wangwe, S. and Lwakatare, M. (2004), Innovation in Rural Finance in Tanzania. Paper Prepared for The Third Annual Conference on Microfinance held from 15 to 17 March 2004 at the AICC, Arusha. tz.org/MFI/Library/InnovationInRuralMFIinTZ.pdf site visited 3 June 2008.

APPENDICES

Appendix 1: Questionnaire for consumers

CONSUMERS QUESTIONNAIRE FOR TRADITIONALLY PROCESSED CASHEWNUT

1. Region…….Station…….Date……
2. Sex of respondent; 1 = Male 2 = Female
3. Marital status: 1 = Single 2 = Married 3 = Separated 4 = Widowed
4. Number of children under 18 years in your household

   1 = None 2 = 1 child 3 = 2 to 3 children 4 = 4 to 5 children

   5 = 6 children and above
5. Occupation of respondent; 1 = Farmer 2 = Salaried worker,

   3 = Business man/women, 4 = Others(specify)……

   What is your average income per month (Tsh)……
6. How frequent do you travel along Dar – Moro road; 1 = Every day

2 = At list once per week, 3 = At least once per month, 4 = Others (specify)……

7. How frequent do you buy/consume cashew nut kernel and volume of kernel buying

1 = At least every week:…kg, 2 = Once I travel: …kg, 3 = At least once per month: …kg, 4 = others (specify)…… : …kg.

8. Do you know where else to get the processed (roasted) cashew nut other than along the road; 1 = Yes, 2 = No

9. If YES, where……

10. What is your suggestion on the existing price per packet/kg

1 = Very high, 2 = High, 3 = Medium, 4 = Normal

Suggest your price per packet or kg in Tsh ……

11. (a) What forces you to buy roasted kernel?

1 = Tastes, 2 = Packing material

3 = Children at home, 4 = Others (specify)……

(b) Are you comfortable with the hygiene of processed kernel?

1 = Yes, 0 = No

(c) If No, what should be done……..

…….…….

…….

12. Are you aware with the overall processing process of the cashew nut kernel?

1 = YES 0 = NO

13. What is your advice on processing procedure? ……..

……

……

14. Is there any Norms/value which has effect on your cashew nut kernel consumption?

1=YES, 0 = NO

15. If YES which one……

……

…… …….

Thanks for your contribution

Appendix 2: Questionnaire for processors and sellers

SALLERS/PROCESSORS QUESTIONNAIRE FOR TRADITIONALLY PROCESSED/ROASTED CASHEWNUT

1. Region…… Station…… Date……

2. Sex of respondent; 1 = Male, 2 = Female,

3. Marital status: 1 = Single, 2 = Married, 3 = Separated, 4 = Widowed.

4. (a) Do you own a cashew nut farm? 1 = Yes, 2 = No

(b) If yes, How many acres……

What is your average yield in kg? ……..

What is the percentage sold roasted……..

Why decided to sell roasted kernel instead of row nuts:

……

……

5. (a) Where do you get cashew nut for processing?

1 = Own production

2 = Purchasing at Tsh. ……. per kg

(b) Do you usually roast cashew nut yourself?

1 = Yes, 2 = No

(c) If Yes, - What is the average cost for roasting 1kg…….

- What is the revenue attained for each 1kg……

- How many kilograms sold every day ……or per year…

6. How frequent do you sell cashew nut along Dar – Moro road?

1 = Part time, 2 = Full time

7. How much do you process or buy for selling

1 = Between 1 to 5 kgs

2 = 6 to 10 kgs

3 = 11 to 100 kgs

4 = Others (specify)……

8. What is the price of buying 1kg of the processed kernel……

9. What is the expected return from that 1kg ……

10. Do you ever get any knowledge for processing and packing of processed cashew nut?

1 = Yes, 2 = No

11. If YES, where: 1= TANITA 2= At school 3= Processing group

4= Research centre 5= Other centers

12. What is your suggestion for the price per packet/kg in Tsh. ……..

13. What criteria do you fallow to set price of cashew nut kernel

1= Purchasing price 2 = Packaging costs,

3 = Both Purchasing and Parking costs. 4 = Time spent to sale

5 = Others

14. Are you aware of other prices of kernel in other markets (internal / external)

1 = YES 2 = NO

15. What is your advice……

Thanks for your contribution

Appendix 3: Operational meaning of variables and measurement

Variable	Operational definition	Level of measurement	Unit of measurement
Dependent Variable Consumers demand on processed cashew nut	Quantity of processed cashew nut a buyer or consumer can purchase per a given price.	Ratio	Packets/Kg
Independent variables			
INDIVIDUALS CHARACTERISTICS			
Price	Amount charged for a certain amount of kernel which has effect on supply and demand.	Nominal	1=Low 2=Medium 3=High
Income of the buyer	Earnings of the individual	Ratio	Tsh.
Willingness to buy	What characteristics influencing respondent to buy		1= Price 2=Packaging 3= test
Tastes and preference of the buyer	What usually influence the respondent when consuming the kernel	Nominal	1= shape 2= natural test 3=added test
Advertisement	Information about the product provided by the sellers in order to maintain sales		1= no advertisement 2=once per year 3= twice per year

Entrepreneurship skills of the processor	Special sort of respondent skill on cashew processing to meet the consumers demand	Ordinal	1=very low 2= low 3=medium 4=high
Background variables			
Awareness	Understanding on the advantages of consuming kernels and other uses		1=very low 2= low 3=medium 4=high
Occupation of respondent	Primary Occupation of respondent	Nominal	1= farmer 2=Salaried worker, 3=business man/women, 4= others
Sex	Sex of respondent		1= male 2= female
Marital Status	Marital Status of the respondent	Nominal	1 = Married (number of wives) 2= not married 3= others
Number of children	Number of children under 18 years who usually like the kernel	Nominal	Number of children usually request for kernel during traveling

Appendix 4: Africa: Cashew production (tones) in African countries from 1961 to 2000.

Source: FAO, 2001

Country	**2000**	**1998**	**1995**	**1990**	**1985**	**1980**	**1975**	**1970**	**1965**	**1961**
Angola	1 000	800	1 200	900	1 200	1 200	1 200	1 400	1 300	1 000
Benin	50	10 000	10 000	10 000	3 000	1 200	1 086	345	627	50
Burkina Faso		1 000	1 000	1 000	1 074	645	200			
Cote d. Ivoire	400	28 000	28 000	20 000	7 000	3 500	600	450	300	400
Ghana		7 500	7 500	1 000	500					
Guinea-Bissau	2 000	38 000	38 000	37 000	30 000	13 000	3 500	2 500	2 500	2 000
Kenya	3 000	8 000	9 000	5 000	7 000	8 500	15 000	21 600	22 200	9 000
Madagascar	1 600	7 000	6 500	6 000	5 300	4 000	3 400	2 900	2 400	1 900
Mozambique	107000	35 000	51 716	33 423	22 524	25 000	71 100	188 000	184 000	136 000
Nigeria	7 000	176 000	152 000	95 000	30 000	25 000	25 000	25 000	25 000	22 000
Senegal		15 000	7 000	1 500	500					
Tanzania	50 000	106 500	93 200	63 400	17 060	32 750	41 416	115 840	107 445	76 000
Togo		155	155	748	587					
Total Africa	**172 050**	**432 955**	**405 271**	**274 971**	**125 745**	**114 795**	**162 502**	**358 035**	**345 772**	**248 350**

Appendix 5: Leading African producers of cashew. Percentage of African and Global production (1961 to 2000).

Year	2000	1998	1995	1990	1985	1980	1975	1970	1965	1961
World	**1 217 210**	**1 070 774**	**944 070**	**606 681**	**520 973**	**464 215**	**563 795**	**511 939**	**386 303**	**287 535**
Total Africa	**432 955**	**405 271**	**274 971**	**125 745**	**114 795**	**162 502**	**358 035**	**345 772**	**248 350**	**172 050**
Mozambique	35 000	51 716	33 423	22 524	25 000	71 100	188 000	184 000	136 000	107 000
% of Africa	8.1	12.8	12.2	17.9	21.8	43.8	52.5	53.2	54.8	62.2
% total	2.9	4.8	3.5	3.7	4.8	15.3	33.3	35.9	35.2	37.2
Tanzania	106 500	93 200	63 400	17 060	32 750	41 416	115 840	107 445	76 000	50 000
% Africa	24.6	23.0	23.1	13.6	28.5	25.5	32.4	31.1	30.6	29.1
% total	8.7	8.7	6.7	2.8	6.3	8.9	20.5	21.0	19.7	17.4
Nigeria	176 000	152 000	95 000	30 000	25 000	25 000	25 000	25 000	22 000	7 000
% Africa	40.7	37.5	34.5	23.9	21.8	15.4	7.0	7.2	8.9	4.1
% total	14.5	14.2	10.1	4.9	4.8	5.4	4.4	4.9	5.7	2.4

Source: FAO, 2001