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ASSESSING SHEA NUT PROCESSING AND INCOME OF SHEA NUT PRODUCING COMMUNITIES TO HOUSEHOLD FOOD ACCESSIBILITY: A CASE OF NAKOLO IN KASSENA NANKANA WEST DISTRICT IN THE UPPER EAST REGION OF GHANA



A Research Project submitted to Van Hall Larenstein University of Applied Sciences in partial fulfillment of the requirements for the award of Master Degree in Management of Development with specialization: Rural Development and Food Security

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DEDICATION

This work is dedicated to my dearest husband Christopher Akaligang and my parents Mr. and Mrs. Bulmuo. Your love, prayers and support have been the driving force that pushed me through this course of study.

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TABLE OF CONTENTS	
DEDICATION.....	i
ACKNOWLEDGEMENTS	ii
LIST OF TABLES.....	v
LIST OF FIGURES	v
LIST OF ABBREVIATIONS AND ACRONYMS	vi
ABSTRACT.....	vii
CHAPTER ONE: INTRODUCTION	1
1.0 Background	1
1.1 Problem Definition	2
1.2 Research Objective	4
1.3 Research questions.....	4
1.4 Significance of the study.....	4
1.5 Report Structure	4
CHAPTER TWO: LITERATURE REVIEW.....	6
2.0 Introduction.....	6
2.1 Working definition of concepts	6
2.2 Conceptual Framework.....	6
2.3 The Shea nut tree.....	9
2.4 Government of Ghana’s Involvement in the Shea Industry	9
2.5 The Involvement of NGO’s in the Shea Butter Industry in Ghana	10
2.6 Actors and Activities in the Shea Industry	10
2.6.1 Shea Nut Picking.....	10
2.6.2 Shea Processing	11
2.7 Shea Marketing (Local and International)	13
2.7.1 The Local Shea Market	14
2.7.2 The International Shea Market	14
2.8 Shea nut processing and Household Income.....	17
2.9 The use of Income Generated from Shea nut processing	17
2.10 Shea production and household food security	18
2.11 Factors militating against Shea Industry	18
CHAPTER THREE: RESEARCH METHODOLOGY	19
3.0 Research Design	19
3.1 Study Area.....	19
3.2 The Case Study and Sampling process	20
3.3 Data Collection	20

3.4 Data Analysis	21
3.5 Limitations of the Study	21
CHAPTER FOUR: RESEARCH FINDINGS	22
4.0 Introduction.....	22
4.1 Demographic Characteristics of Respondents	22
4.2 Contribution of Shea to Household Food Accessibility	22
4.2.1 Household Food Accessibility.....	23
4.2.2 Significance of Shea to Household Food Accessibility	23
4.3 Household Income Generation and Management.....	24
4.3.1 Sources of Household Income	24
4.3.2 Control and Management of General Household Income	24
4.3.3 Control and Management of Income from Shea Business.....	24
4.4 Focus Group Interviews.....	24
4.5 Cross-Referencing Individual Respondents and Focus Group Responses on Household Food Accessibility and Income	26
4.6 Income Generating Activities in the Shea Industry.....	27
4.6.1 Activities in the Shea Industry	27
4.6.2 Profitability of Shea Activities to Households.....	32
4.7 Factors Militating Against Shea Business	34
4.7.1 Constraints in Shea nut picking, processing and marketing.....	35
4.7.2 Effects of Shea Business Constraints to Household Income and Food Accessibility	35
4.7.3 Possible Solution to Constraints of Shea Business	35
CHAPTER FIVE: ANALYSIS AND DISCUSSION	37
5.1 Contribution of Shea nuts to Household Food Accessibility and Income.....	37
5.2 Income Generating Activities in the Shea Industry.....	38
5.3 Factors militating against Shea Nut Picking, Processing and Marketing	41
CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS	45
6.1 Conclusion.....	45
6.2 Recommendations.....	45
REFERENCES	47
ANNEXES.....	50
Annex 1: UEMOA (Union Economique Monétaire Ouest Africaine) Standards for Unrefined Shea Butter	50
Annex 2: Visualised problem after field work –Causes and Effects of Shea Nut Processing in Nakolo	51
Annex 3: Questionnaire for household interview	52

Annex 4: Checklist for focus group discussion.....	56
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LIST OF TABLES

Table 1: Ghana’s Shea Butter Exports: 2000 to 2011	15
Table 2: Demographic Characteristics of Respondents	22
Table 3: Matrix ranking of household food and income sources (focus group).....	26
Table 4: Estimated Cost involved in processing butter weekly	33
Table 5: Estimated Revenue Generated from sales of Shea butter weekly.....	34

LIST OF FIGURES

Figure 1: Visualised Problem (Causal diagram) – Causes and Effects of Shea Nut Processing	3
Figure 2: Conceptual Framework.....	8
Figure 3: Flow Diagram Showing Traditional Butter Production Process	12
Figure 4: Supply Chain of Shea nut.....	16
Figure 5: Map of Ghana showing the study area (Nakolo)	19
Figure 6: Income and Expenditure Tree of 15 households in Nakolo (focus group)	25

LIST OF ABBREVIATIONS AND ACRONYMS

AEA	Agriculture Extension Agent
AVG	Average
CECI	Centre Canadien d'Étude et de Coopération Internationale
CFC	Common Fund for Commodities
CSIR	Council of Scientific and Industrial Research
FAO	Food and Agriculture Organisation
FRI	Food Research Institute
GCMB	Ghana Cocoa Marketing Board
GEPC	Ghana Export Promotion Council
GH	Ghana
GLSS	Ghana Living Standards Survey
IFAD	International Food and Agriculture Development
KNWD	Kassena Nankana West District
MDG	Millennium Development Goal
MoFA	Ministry of Food and Agriculture
NGO	Non-Governmental Organisation
PRA	Participatory Rural Appraisal
SADA	Savannah Accelerated Development Authority
SARI	Savannah Agricultural Research Institute
SNV	Stichting Nederlandse Vrijwilligers
TNS	Techno-Serve
UER	Upper East Region
UNDP	United Nations Development Program
USAID	United States Agency for International Development
USD	United State Dollar (currency)
WATH	West Africa Trade Hub
WFP	World Food Program

ABSTRACT

Household Food insecurity is a seasonal problem in some parts of Ghana especially the northern sector, occurring every year between February and July. Many households tend to focus on other income generating activities to help them survive through this period of food scarcity. Shea nut picking, processing and marketing are some of the off farm activities that some households depend on as a source of livelihood. The production of Shea kernel and butter is an important income earning activity for many women in northern Ghana and for some; it is their only source of income. However, Shea nut processing is saddled with a myriad of challenges that tend to affect household income and food accessibility in northern Ghana.

It is against this background that this study sought to assess Shea nut processing and income of Shea nut producing communities to household food accessibility with Nakolo in the Kassena Nankana West District in the Upper East Region of Ghana as the case. Specifically, the study sought to: evaluate the contribution of Shea nut picking and processing to household income; assess how income from Shea nut picking and processing is managed by households; identify income generating activities within the Shea nut business; and identify the factors militating against Shea nut picking, processing and marketing in the study area.

The study employed a qualitative approach with a descriptive and narrative posture to the presentation, analysis and discussion of data. Ten women, representing 10 households and a focus group of 15 participants (all women), representing 15 households were randomly selected for the study. Open-ended questionnaire and a checklist were used for data collection through semi-structured interviews and group discussion for the individual respondents and focus group respectively. Personal observation was an additional tool for data collection. Using thematic analysis as a tool, key themes in line with the objectives and main research questions of this study were extracted from the empirical data for analysis and discussion. PRA tools (matrix ranking and income and expenditure tree) were used to generate, rank and analyse the data on the income and expenditure of the households.

Generally, findings of the study show that although Shea picking and processing is considered an important source of food and income for rural households, its contribution to household food accessibility is relatively insufficient. Food security is still a major problem among Shea nut processing communities.

In the rural community, Shea picking and processing is considered a “women’s trade” with the men hardly playing any significant roles in picking and processing. However, income generated from Shea business is jointly managed – by husbands and wives – with the men playing the roles of “head of the family” in managing household resources. The joint management of income shows that women are beginning to have influence in household income and expenditure decisions. Moreover, income from Shea business is spent on food, education, healthcare, funerals, and clothes among other needs.

The study identified three key income generating activities among the households: Shea picking activities, Shea processing activities and Shea marketing activities. Majority of the households are engaged in all three activities simultaneously. However, Shea fruit, kernel and butter are the key sources of food and income among the households in the local market.

Averagely estimates from the study show that households incur an operational cost (labour, kernel and grinding cost) of GH¢ 55.3 weekly to produce 25.4kg of Shea butter using 50.7kg of Shea kernel at an average profit of GH¢10.1 weekly. From a business perspective, Shea business in rural households is not a profitable venture but a source of income to address household needs.

The study also realised that Shea business is saddled with myriad of problems ranging from bushfires, land tenure issues, lack of transportation to sources of Shea nuts, use of primitive equipment and laborious methods for processing Shea kernel and butter, limited access to market information and opportunities, limited access to national and international markets, lower prices and demand for Shea kernel and butter.

It is recommended that, Shea pickers, processors and marketers in the community should work in groups and co-operatives rather as individuals. This will help them have a collective voice to address community problems related to Shea nut and to access external markets beyond the local market as well as ease the laborious time involved in processing.

Also, interventions by government and other stakeholders should be made in areas of skill training in new product development in Shea products, provision of Shea processing equipment, linkages to appropriate and available market channels and strengthening of information systems by the Ministry of Food and Agriculture.

CHAPTER ONE

INTRODUCTION

1.0 Background

Ghana over the last two decades has achieved strong economic growth and halved the national poverty rates and is on track to achieving the Millennium Development Goal (MDG 1). However there is yet food insecurity and poverty in the country with indications of growing inequality between social groups, occupational groups and geographical areas in the country (IFAD, 2010)

Ghana's economy has been largely dependent on the agriculture sector which accounts for about 40% of its economy and employs about 60% of its workforce, mainly small landholders located in rural communities. Its industrial crops include Cocoa, Oil palm, Shea nut, Cotton, Coffee and Tobacco (MoFA, 2010). However the Shea nut industry is given little investment compared to cocoa though it is a potential contributor to its economy and has great potential of reducing rural poverty in the country.

According to Hatskevich, Jenicek and Darkwah (2011) the Northern, Upper East and Upper West Regions of Ghana generally known as northern Ghana are the majority that are faced with poverty. Despite the country's remarkable progress in her poverty reduction drive over the past two decades, northern Ghana still records the highest levels of poverty with rural household finding it difficult to afford three square meals a day. The Ghana living standard survey indicates that poverty is more severe among food crop growing communities as compared to the cash crop growing ones (GLSS 5, 2008) and as a coping strategy, some rural households rely on non-farm activities to cope through the lean season until the next major season begins.

The climatic condition of the Upper East Region (UER) is characterised by one rainy season from May/June to September/October during which rural folks are engaged in major farming activities to improve their household livelihood and living standard. The mean annual rainfall during the period is between 800mm and 1,100mm which is however erratic spatially and in duration. Rural households in the UER also engage in non-farm income generating activities such as "pito" brewing (local drink made from sorghum), Shea nut processing, artisanship, mason and handicraft as coping strategies to survive the period of lean season.

According to the MoFA (2010), nationally, about 30,000 Mt of Shea nuts were collected in 2000 and that increased to 105,000Mt in 2003 but declined to 30,000Mt in 2005 in the country. Shea trees are semi-wild and the nuts are gathered, mainly by women. Currently, the Ghana Cocoa Board oversees the Shea nut industry but the industry has not shown any significant growth or development over the years. This could be attributed to the little attention to the Shea industry as compared to the cocoa industry in the country. Virtually anybody can market and/or process Shea nuts. That means there is hardly any control over standards.

Shea nut processing is an important income earning activity for many women in Northern Ghana and for some; it is their only source of income (WFP, 2009). However the traditional method of processing is an extremely arduous and time consuming activity coupled with other challenges in Shea nut processing (Lovett, 2004). No specific policy interventions are established to ensure that Shea remains important livelihood option for local women. The Shea tree is not protected by national laws like other natural resource thus inviting indiscriminate bush burning of trees by honey tappers and cutting down of trees for local building materials and artisanship (Aboba, 2011).

Most women in the savannah areas particularly in the poorest and most hunger prone areas have identified Shea nut collection as key income source during the lean season which serves as a coping strategy against seasonal food insecurity and about 33% of incomes of smallholder farmers in the savannah come from Shea nuts (WFP, 2009). However, due to lower volumes and prices for Shea nuts as a result of poor quality Shea butter produced, most women in the rural households would save money from other household expenditure like education and clothing to keep up spending on food and health in order not to let the household members especially the children go hungry and this sometimes results in some children being redrawn from school.

Research has indicated that development agencies involved in Shea butter promotion in Ghana, prior interventions have tended to focus more on the production and less in the creation of an effective marketing strategy for sales expansion or only targeted very small markets where the potential for further growth was limited (UNDP, 2006).

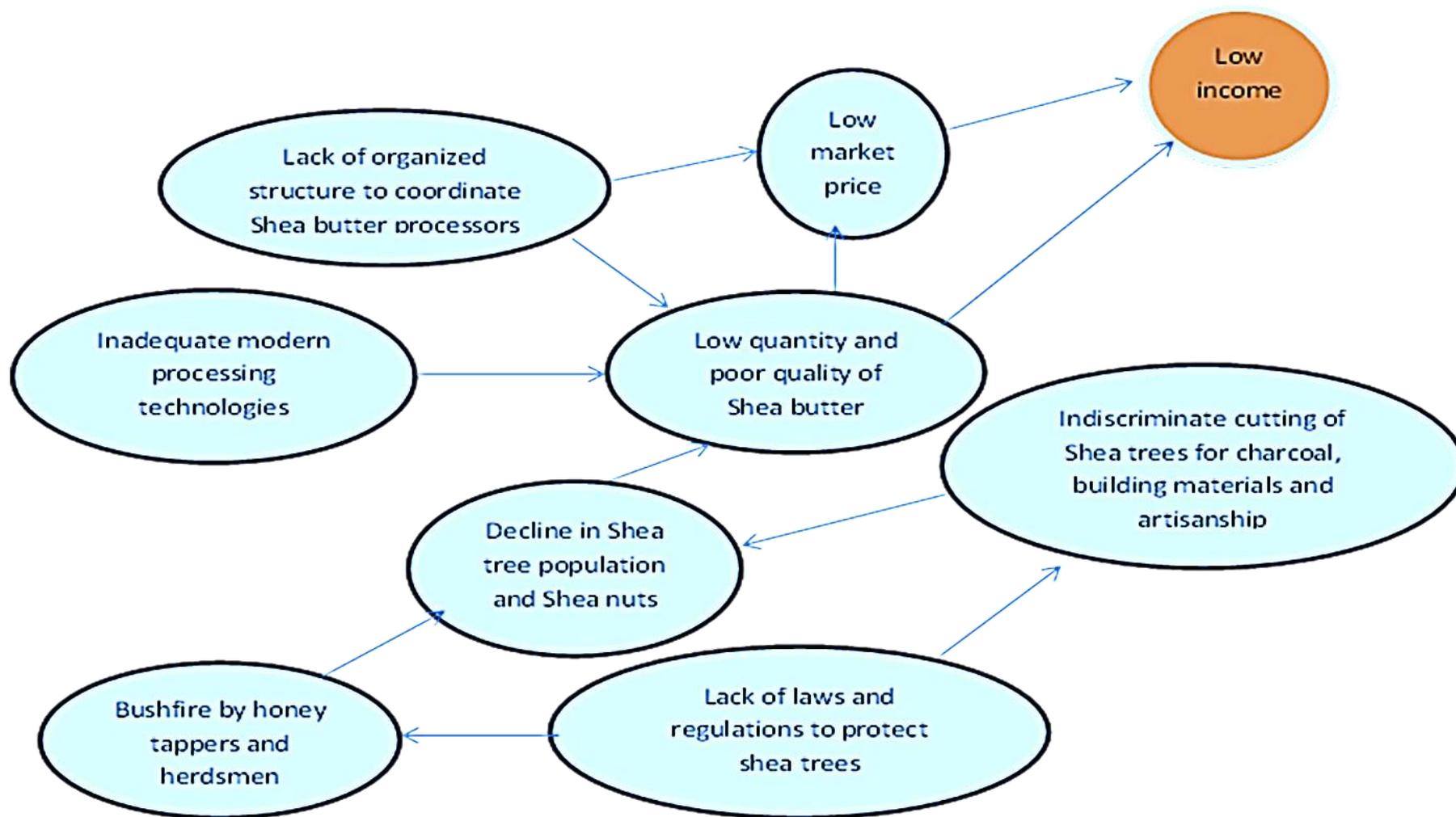
It is in this backdrop that this project seeks to investigate into Shea processing in households and its contribution to household food accessibility.

1.1 Problem Definition

Household Food insecurity is a seasonal problem in some parts of Ghana especially the northern sector, occurring every year between February and July. Many households tend to focus on other income generating activities to help survive through this period of food scarcity. Shea nut picking and processing is one of the off farm activities that some households depend on as a source of livelihood.

Nevertheless, Shea nut processing is saddled a myriad of challenges that tend to affect household income and food accessibility in northern Ghana. It is in light of these challenges that the Ministry of Food and Agriculture (MoFA) seeks to assess the relationship between Shea nut processing and household income and food accessibility in the Kassena Nankana West District of the Upper East Region of Ghana. Figure 1 shows a causal diagram related to Shea nut processing and household income in the Upper East Region of Ghana.

Figure 1: Visualised Problem (Causal diagram) – Causes and Effects of Shea Nut Processing



Source: Author's Construct, 2012

1.2 Research Objective

General Objective:

To assess the contribution of Shea nut processing to household income and food accessibility of shea nut processors in Nakolo.

Specific Objectives:

- a. To evaluate the contribution of Shea nut picking and processing to household income.
- b. To assess how income from Shea nut picking and processing is managed by households.
- c. To identify income generating activities within the Shea nut business.
- d. To identify the factors militating against Shea nut picking, processing and marketing.

1.3 Research questions

1. To what extent does Shea nut picking and processing contribute to household food accessibility?
 - a. Does the household have access to food all year round?
 - b. Is Shea nut picking and processing a significant contributor to household food accessibility?
2. How is the general income of the household generated and managed?
 - a. What are the sources of income to the household?
 - b. How is the income of the household in general managed?
 - c. How is income from Shea nut picking and butter processing managed by the household? (i.e. who maintains control over the income)
3. What are the income generating activities within the Shea business?
 - a. What are the Shea activities engaged to generate income?
 - b. How are Shea nut picking, processing and marketing done to generate income?
 - c. Is the Shea business a profitable venture to the rural households?
4. What are the major factors that militate against Shea business?
 - a. What are the constraints of Shea nut picking, processing and marketing?
 - b. How do these constraints affect household income and food accessibility?
 - c. How should these constraints be addressed?

1.4 Significance of the study

The study will contribute to government policy-making to boost the Shea industry. This will also prepare Shea nut communities in anticipation of the establishment of government's Shea butter processing factory in the Upper East Region to contribute to household food security and alleviate poverty. The study will also help to identify areas of interventions for other stakeholders who are interested in the Shea industry. The results of the study could also contribute to providing some kind of tools or information for Shea pickers, processors and marketers to improve their livelihood.

1.5 Report Structure

The report would be organised into six (6) chapters. Chapter one (1) would be the introduction of the study and this comprises the background information of the study in the selected study area, problem definition, research objectives and research questions and the significance of the study. The chapter would serve as a guide to the research. Chapter two (2) would indicate the literature review and would also discuss the conceptual framework to the study. This would look at the contribution of Shea nut to household income as means to improving household food accessibility in rural Ghana and particularly the northern part of

Ghana where the study would be conducted. The chapter would further explore the study area by looking at the ways of Shea nut picking, the technologies in processing Shea butter and marketing. Chapter three (3) would discuss the methods used in data collection during the field research and the sources of data. This would include sampling techniques, as well as method of data collection and analysis. Chapter four (4) would present the results of findings of the research. The results of the findings would therefore further be discussed in chapter five in relation to the literature review. The final chapter of the report would constitute the conclusion and recommendation of the research based on the objectives and the research questions of the study as well as answers to some research questions that might be answered through desk study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviews relevant literature on this study in line with its objectives. Accordingly, the chapter is organised as follows: the working definitions which have been adopted for the study and conceptual framework of the study. It also includes; a description of the Shea nut tree, government and non-government involvement in the Shea industry, actors and activities in the Shea industry, contribution of Shea to the household, the use of income generated from Shea by households as well as factors militating against the Shea industry. This would guide the researcher into discovering new things in the study and would add to the limited knowledge of information on the Shea industry in Ghana.

2.1 Working definition of concepts

For the purpose of the study the following definitions would be used;

Household: as constituting a group of people, who own the same productive resources, live together and feed from the same pot.

Food Accessibility: Individuals have sufficient access to food when they have “adequate incomes or other resources to purchase or barter to obtain levels of appropriate foods needed to maintain consumption of an adequate diet/nutrition level” (USAID 1992).

Significance is defined in terms of whether households consider Shea business as the main source of income or as a supplementary source.

Household Income: the total income of the household that they generate to give them the purchasing power to afford its essential needs.

Marketing: “all the activities, sets of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large” (www.marketingpower.com). For the purpose of this study marketing would be defined as all the activities, sets of institutions and processes involved in creating, communicating and delivering of Shea nuts and butter that have value for customers, clients, partners and society.

Shea Nut and Shea Kernel: Nuts with shells and processed nuts without shells respectively

2.2 Conceptual Framework

The definition of food security over the years has gone through series of reformulation until the current definition by the FAO which has been widely accepted and it is being used. The following are the dimensions of food security and its definitions:

Food Security is defined as “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”. (World Food Summit, 1996)

Food security has four dimensions of which when all is attained a country or an individual is said to be food secure.

Food availability: The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports. This addresses the supply side of food security and is determined by the level of food production, stock levels and net trade.

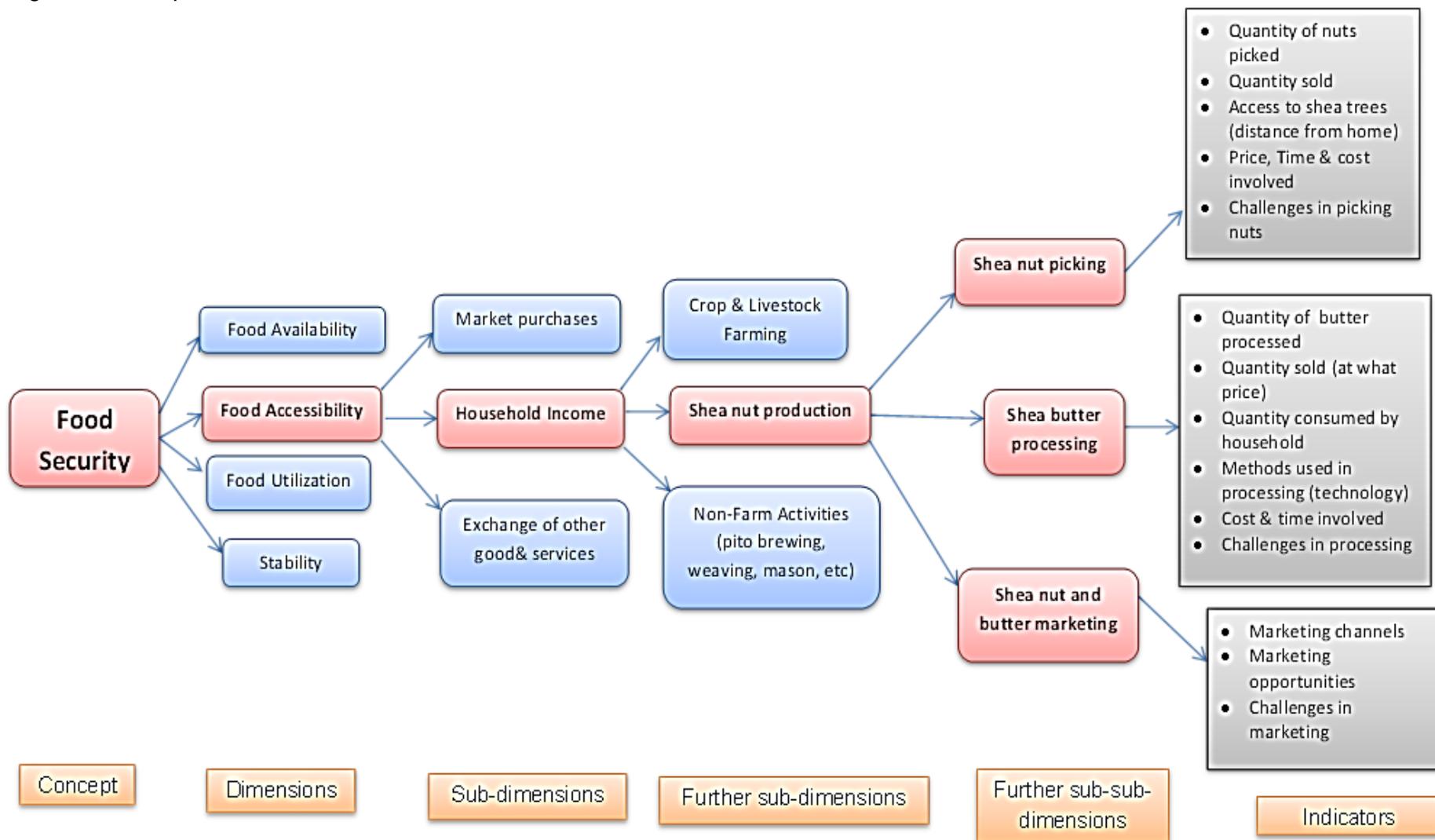
Food access: Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet. An adequate supply of food at the national or international level does not in itself guarantee household level food security. Concerns about insufficient food access have resulted in a greater policy focus on incomes, expenditure, markets and prices in achieving food security objectives.

Utilization: Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs in food security.

Stability: To be food secure, a population, household or individual must have access to adequate food at all times. They should not risk losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity). A person is still considered to be food insecure if he/she has inadequate access to food on a periodic basis, risking a deterioration of his/her nutritional status even if an individual's food intake is adequate for a day. The concept of stability can therefore refer to both the availability and access dimensions of food security.

From these four dimensions the focus and objectives of this study are more related to food accessibility. Figure 2 depicts a conceptual framework of the study which would guide the researcher to gather information on the study and to answer the research questions during desk study and field work.

Figure 2: Conceptual Framework



(Source: Author's construct, 2012)

2.3 The Shea nut tree

The Shea nut is noted to have two main varieties, *Vitellaria paradoxa* which is produced in West Africa and *Vitellaria nilotica* which grows in Northern Uganda and Southern Sudan according to Ferris, et al. (2001) as cited in Hatskevich, Jenicek and Darkwah (2011). Generally, Shea trees occur naturally in a 5000 km long and 500 km wide zone stretching from Sudan to Guinea, and can be found in twenty different countries including Ghana.

In Ghana, the Shea tree grows only in the northern regions (Northern, Upper East and Upper West) where the climate is dryer with one cropping season compared to the southern part of the country with a wet climate with two cropping seasons. The Shea tree grows wild and covers over 77 670 km² land covering almost half of Ghana's land size in the northern sector (Fobil, 2007 cited in Hatskevich, Jenicek and Darkwah, 2011).

Usually the mature trees start flowering by early November and yielding fruits from April to August every year for over a period of five months. Shea fruits, when ripe, fall under their own weight and are picked up by the local inhabitants. It is estimated that about 9.4 million Shea trees grow in Ghana, and these can potentially yield averagely about 100,000tons of Shea nuts per year (Dogbevi, 2009).

In light of the significance of the Shea tree, diverse stakeholders including government and non-government organisations have made several attempts to support the Shea industry in Ghana.



A woman trying to harvest shea



Shea tree bearing

2.4 Government of Ghana's Involvement in the Shea Industry

Ghana Government's involvement in the Shea industry predates to the colonial era especially in the 1920s beginning with research in Shea. Further efforts were made to improve the industry when the activities of Shea nuts were brought under the Ghana Cocoa Marketing Board (GCMB) as a major policy breakthrough for the industry in 1973 (Yidana, 2009).

Nonetheless, observations made suggest that the Shea sector has been slow under the GCMB. Although the GCMB has made many efforts in terms of research in creating strategies and creating linkages over the years, much improvement is yet to be seen in the Shea industry (Yidana, 2009). Moreover, other institutions involved in research on Shea

include the Food Research Institute (FRI), Savannah Agricultural Research Institute (SARI) of CSIR and the University for Development Studies (Asante-Dartey, et al., 2009). Nevertheless, the Shea industry is perceived to have a weak link with the MoFA which is a major key stakeholder in the industry (Yidana, 2009).

However, recently, the Government of Ghana through its Savannah Accelerated Development Authority (SADA) has established a Shea processing factory at Buipe in the northern region to produce about 12, 000 tons of Shea butter annually. This factory will buy Shea nut from pickers in the Northern, Upper East, Upper West, and part of Volta, Ashanti and Volta Regions to produce quality butter (www.ghana.gov.gh).

2.5 The Involvement of NGO's in the Shea Butter Industry in Ghana

Several attempts have been made by non-governmental organisations to promote entrepreneurial activities within the Shea industry. Some of their policies and programmes have focused on technology, training in business skills and creating market linkages (Asante-Dartey et al, 2009). Some of these organisations and NGO's include the USAID, Techno-Serve (TNS)-Ghana, Centre Canadien d'Étude et de Coopération Internationale (CECI), OXFAM, Christian Mothers Association and SNV Netherlands development Africa (Lovett, 2004).

The literature review now takes a look at actors and activities within the Shea industry:

2.6 Actors and Activities in the Shea Industry

Generally, actors involved in a typical Shea nut value chain include: fruit pickers or collectors, middlemen who buy from the collectors, kernel or butter producers, small and medium scale entrepreneurs who buy Shea nuts for edible and personal care products, small or large scale exporters of Shea butter or kernel and external large scale buyers and processors (Kletter, 2000; Lovett, 2004). These actors are generally involved in picking or production activities, processing activities and marketing activities (Kletter, 2000; Lovett, 2004).

For the purposes of this study, relevant literature is reviewed along three main activities within the industry: Shea nut picking, processing and marketing:

2.6.1 Shea Nut Picking

Shea fruit picking and collection is generally done by women and children. Mostly, the Shea fruit is either harvested when the fruits ripe and fall to the ground on their own or shaken to fall from their trees by climbers (Lovett, 2004; Peace Corps, 2008). The fresh fruit are then eaten by the family or sold in small quantities within the local market. The nuts are either thrown away or stored in bins and small quantities for processing.

However, pickers or collectors who harvest the fruit for domestic and petty commercial use, do much of the picking and collection, more deliberate and planned. These collectors usually wake up early in the mornings of the day and walk long distances to their farmlands or the bush to pick the Shea nuts from tree to tree, sometimes climbing and shaking down the trees for collection (Lovett, 2004; Kent, R., and Bakaweri, C., 2010). Some of the good fruits are usually eaten by their families and the rotten ones are heaped to further decay before they are washed, boiled and the nuts cracked to extract the kernel which is further dried for later processing (Peace Corps, 2008).



Women picking shea fruits & nuts from the ground

Although picking and collection activities are still dominated by women and children at the domestic level, commercial and industrially, large scale commercial and industrial picking is beginning to emerge in rural settings by local small and medium scale entrepreneurs engaged in processing and marketing activities of Shea product (Peace Corps, 2008).

However, bushfires has been cited as one of the key problems of Shea nut collection in that many farmers and hunters indiscriminately set fire on their farms and in the bush destroying Shea trees in the process (Kadiri, 2000). Also, arguments have been made that land ownership is one of the key problems affecting the quantity of Shea nuts picked on farmlands and community lands in rural areas (Kent, R., and Bakaweri, C., 2010). Nevertheless, it has been observed that the full potential in Shea collection could be maximised if pickers are supported with means of transport to their farmlands, bushfires controlled and pickers work in groups and co-operatives to address their collective problems (Kadiri, 2000; Kent, R., and Bakaweri, C., 2010).

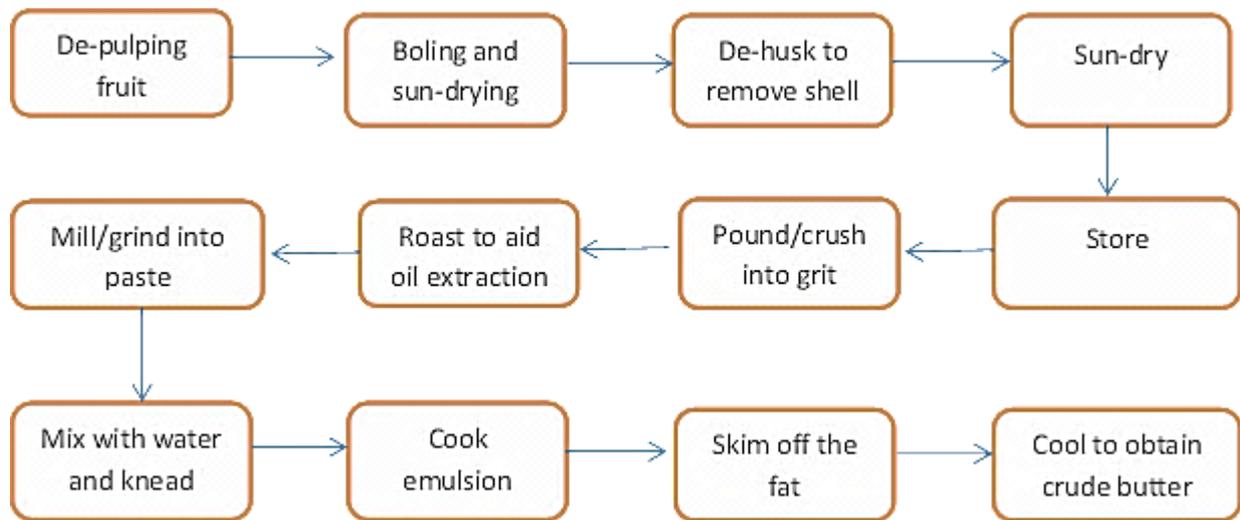
2.6.2 Shea Processing

Three main methods have been identified with Shea nut processing for the extraction of Shea butter in Ghana as well as West Africa at large: traditional, semi-mechanised and fully mechanised systems respectively (Addaquay, 2004). Detailed descriptions of these methods follow below:

2.6.2.1 Manual Traditional Production System

Generally, women are associated with the local processing of Shea butter in rural areas in Ghana (Addaquay, 2004; Peace Corps, 2008). Although this is the common method of processing in rural Ghana, the activities involved with this method are laborious, slow-paced and time consuming (Lovett, 2004). There have been various descriptions of the traditional method of processing Shea butter but generally this system includes the following stages as diagrammatised in figure 3 by Addaquay (2004):

Figure 3: Flow Diagram Showing Traditional Butter Production Process.



Source: Addaquay (2004)

As the diagram shows, in the traditional system of production, when Shea fruits are picked fresh, they are heaped for about 1-2 weeks to rot or decay before they are boiled with water for about 90 minutes at temperatures of 95°C after which the nuts are spread in the sun on a hardened mud or concrete surface to dry. These nuts are further de-husked and hand pounded to remove husks. The dry kernels are spread in the sun for storage, sale or further processing (Addaquay, 2004; Lovett, 2004; Peace Corps, 2008)

However, if they are stored for further processing the nuts are usually ground or pounded into rough grits, using mortars or grinding stones before roasting. In most cases the nuts are roasted before grinding. After roasting the grits are ground into paste. The paste is then mixed with some amount of water and boiled. After which the oil is skimmed off into a separate container. To remove particles and mucilage from the first stage boiling, the oil is often rewashed and boiled. The oil is then left to cool to obtain the crude butter (Addaquay, 2004; Lovett, 2004; Peace Corps, 2008).

Although, this method of processing is peculiar to the rural population of northern Ghana, many of the stages involved are practised across Africa including Mali and Uganda. This method of processing is saddled with its own challenges although it appears to be less capital intensive with an estimated quantity of 8.5-10.5kg of firewood for the production of 1kg of butter (Hall, et al., 1996)



Kinds of traditionally processed shea butter

The traditional system of production has been associated with low productivity in Shea butter extraction. It has been noted generally it usually takes about 4-6 women a day to produce 4-5 litres of oil from 20 litres of nuts although there are regional variations to these quantities across West Africa (Addaquay, 2004). Also, the system is cumbersome, laborious and time consuming demanding a lot of physical energy from the processors. Compared to other systems of processing, the traditional method produces low quality, unhygienic products with lower yields resulting in lower prices and profits though there has been an increase demand for Shea nuts worldwide (Fluery, 1981 cited in Ferris, et al., 2001; Aculey, 2007).

Further, estimates show that the production of Shea 1kg of butter often takes about 20-30 hours throughout all the stages from collection to butter production with extraction rates of about 25% (Hall, et al., 1996; Addaquay, 2004).

2.6.2.2 Semi-Mechanised Production System

Stakeholders seeking to address operational and processing inefficiency in the traditional system of processing Shea butter have made attempts to introduce new and appropriate technologies for gathering, storage and processing of Shea nuts and butter (Wallace, 1995). Statistics available show that the semi-mechanised system has improved extraction rates of share butter from 20 to 40% (Addaquay, 2004). This presupposes that twenty (20) litres of nut should produce 4-8 or more litres with the semi-mechanised production system.

The semi-mechanised system of butter production has introduced dryers to replace sun drying, roasters to replace roasting with firewood, nut crushers to replace manual crushing and kneaders to replace manual kneading. Although these technologies are still being improved, they have partly eliminated manual labour in some of the stages of the traditional system of operation and increased processing efficiency and quality of the manual system to some extent (Addaquay, 2004).

2.6.2.3 Fully Mechanised Production System

Ghana is gradually building its base on fully mechanised system of processing and producing Shea butter by the establishment of the Shea butter factory at Buipe in the northern region (www.ghana.gov.gh). Although, this factory is targeted to reduce poverty and to create a ready market for Shea pickers, certain developmental experts doubt if this would serve as a panacea for the myriad of economic problems surrounding rural Shea pickers and collectors.

Accordingly, a fully efficient mechanised system of processing Shea butter yields close to 42% and 50% extraction capacity as against the 25% associated with other systems (Addaquay, 2004). However, due to storage problems it has been observed that many of the fully mechanised system of processing operate below their full functioning capacity, usually 25% of their operational capacity. Therefore, operating all year round and three shifts in a day, 8 hours apiece, some of these plants usually operate one shift between 5-6 months in a year (Addaquay, 2004).

2.7 Shea Marketing (Local and International)

Two major markets exist for Shea products: local and international. Research has shown that trade liberalisation creates opportunities for competition in terms of product quality and market accessibility (Lovett, 2004). However, it has also been observed that while the international market has strict specifications (see annex 1) as to the standard of Shea nuts or butter it wants for its cosmetics and personal care products industry, the local market is loosely structured and mostly demands Shea products for household and traditional use (Peace Corps, 2008). Moreover, it has been argued by Lovett (2004) that the high demand of Shea kernel and butter on the international market is one of the reasons for rise in prices of Shea products in the local market however currently the low market price for Shea butter could be attributed to the poor quality butter produced.

A study conducted by Al-Hassan (2012) on 413 household women micro entrepreneurs engaged in Shea nut processing for poverty alleviation purposes further showed that there is a relationship between an entrepreneur's level of education and entrepreneurial skills, and market access in the Shea butter market. Related to lower levels of education and entrepreneurial skills, many rural households in Ghana engaged in Shea nut processing have inadequate access to information on quality standards on Shea kernel and butter both local and international markets resulting in low market pricing for Ghana's unrefined Shea butter.

2.7.1 The Local Shea Market

Peace Corp (2008) further stated that the local Shea market exists because of the women of Ghana who sell Shea kernel and butter to other local butter processors or households for domestic use in simple packages like jute bags for Shea kernel and calabashes and plastic containers and bags for Shea butter (Kent, R., and Bakaweri, C., 2010; Al-Hassan, 2012). The quality standards for Shea kernel and butter in the local market are usually not complex although required by local consumers. Shea kernel are usually required to be mature, properly dried and light brown while Shea butter are required to be free of impurities and whitish by nature (Bekure, et al., 1997; Kent, R., and Bakaweri, C., 2010).

However there are a few men who trade in nuts and work in processing but women are the primary pickers, processors and sellers of the Shea butter in the local market place. Shea butter in Ghana is mostly consumed in the raw form. Most rural households use the butter for cooking and skin care. Sometimes the butter is further processed into soaps that are sold in the market as well or used for the household. However, the observation by some authors is that the main product lines for Shea nut are the Shea kernel and Shea butter in many rural markets (Bekure, et al., 1997).

In the supply chain of Shea production, the Shea butter in most cases are sold directly to end consumers in the local market and in very few occasions that market agents buy from the local processors and sell them in larger quantities to some cosmetic and confectionery companies. Very little of this Shea butter is packaged, labelled or certified before sale and it is sold in small balls or bowls in major markets throughout the country.

Apart from packaging problems, many of the rural Shea markets are yet to be linked to national and international markets. Due to lack of market access and information access by many of these rural markets, Shea kernel and butter are still "locked" up within the rural economy saddled with low demand, prices, profitability and eclipsed by other agricultural products (Bekure, et al., 1997; Addaquay, 2004; Lovett, 2004; Kent, R., and Bakaweri, C., 2010). Bekure, et al. (1997), and Collinson and Zewdie-Bosuener, (1999) have observed that if local Shea processors are trained in new product development, production quality standards, and basic management and marketing skills, these could go a long way to open new markets as well as improve productivity of rural Shea markets.

However, within the West African sub-region, domestic market for Shea butter includes Accra, Abidjan, Abuja, Dakar, Bamako, Ouagadougou, Lomé, Cotonou, Lagos, Ibadan, Onitsha, Kano, Nouakchott, Banjul, Niamey and Conakry and inter-regional trade for Shea butter and kernel includes cities such as Kumasi, Tamale, Bouaké, Maradi, Kaolack, Ségou and Bobo-Dioulasso (Holtzman, 2004).

2.7.2 The International Shea Market

The increasing demand for Shea products as a close substitute for cocoa products on the international market especially the European Union chocolate manufacturing industry has increased the importance of Shea across the world (Peace Corps, 2008). Demand for Shea butter by upscale cosmetics and personal care products like manufacturers like Body shop has increased the value and use of Shea in the cosmetic industry (Stathacos, 2004). However a counter argument is that the export prices of Shea nuts and Shea butter are

dependent on the output of cocoa in a particular year which means if the cocoa harvest in a particular year is low, better prices will be offered for that year (Hall, et al., 1996). However in case of fluctuating cocoa output the demand on Shea would be either higher or lower since it is a substitute for some cocoa products. Nevertheless, some experts argue that the irregular nature of cocoa output should be the reason for government investment more in the Shea industry.

Considered as the leading producer of Shea kernels (Lovett, 2004), estimates show that Ghana has the potential to produce 200, 000 metric tons of Shea nuts per year more than its current production rate of 130, 000 metric tons per annum (Lovett, 2004). Statistically, of even the 130, 000 metric tons, only 60, 000 is exported of which 45, 000 metric tons as Shea kernel and 15, 000 metric tons processed into Shea butter approximating 7,500 metric tons (Lovett, 2004). The general argument has been that, if Ghana aspires to increase the fortunes of Shea and its products internationally, government and private sector need to increase their level of investment in the Shea industry.

Nevertheless, in light of these concerns, on the export front, Shea has shown consistent increases in price/ton over the year which makes it a reliable earner of foreign exchange. The difference in Shea output figures mentioned by Lovett (2004) and the Ghana Export Promotion Council (GEPC) could be attributed to the fact that not all exported Shea butter could have been recorded by the GEPC. Table 1 indicates the export data of Shea butter on the international market from 2000 to 2011 according to reports by GEPC:

Table 1: Ghana's Shea Butter Exports: 2000 to 2011

Year	Quantity (kgs)	Value (US\$)	Average Price (US\$)
2000	1,041,500	829,743.02	796.68
2001	1,679,740	1,131,346.61	673.52
2002	2,539,890	2,584,281.55	1,017.48
2003	155,970	156,742.96	1,004.96
2004	5,548,440	2,463,114.00	443.93
2005	648,090	940,514.29	1,451.21
2006	579,850	896,317.00	1,545.77
2007	10,295,530	7,659,888.00	744.00
2008	4,013,120	6,487,683.00	1,616.62
2009	12,561,367	19,010,304.00	1,513.39
2010	32,782,748	24,764,995.00	755.43
2011	29,707,748	27,611,980.00	929.45
Total	101,553,993	94,536,909.43	1,041.38

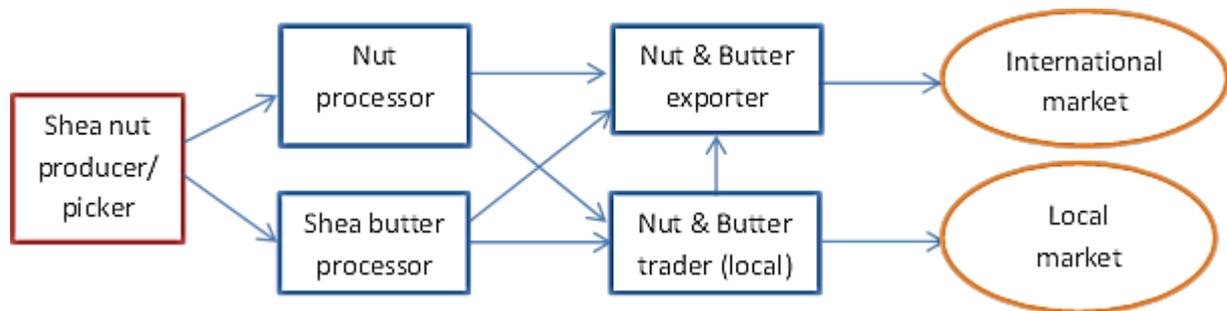
Source: GEPC, 2012

As a source of foreign exchange for Ghana, the table shows increase in price/ton of Shea butter yearly on the international market with insignificant fluctuations except for 2003, 2005 and 2006. Moreover, the same period (2000-2011) accounted for US\$117,679,825.00 over 615,393,729kgs total export in Shea kernel (GEPC, 2012).

The world's biggest international markets for Shea butter according to Peace Corps (2008) are in Europe and North America. Shea is used primarily for skin care cosmetics, medicinal and cooking products. The industry is extremely competitive and is dominated by about six (6) large international companies. The companies rely on supplier companies in Ghana who buy the nuts, process them into butter based on the quality specifications of these major buyers and export them (Peace Corps, 2008). A number of these exporting companies in the

country have been identified by the Ghana Export Promotion Council and these companies include Bosbel, Antrak Freight Ghana Limited, Olam Ghana, Good Tech Ghana Limited and Kassardjian (Al-Hassan, 2012). However Bosbel Vegetable Oil Limited is known to be Ghana's largest Shea butter production and export company and it processes a 2,400 metric tonnes of Shea nuts annually for export but with a maximum capacity of 3,600 metric tonnes of Shea nut (Al-Hassan, 2012). Figure 4, is a construct on a simple supply chain of Shea nut within the local and international markets:

Figure 4: Supply Chain of Shea nut



Source: Author's Construct, 2012

The export season is from April to August each year. It is estimated that 150,000-200,000 tonnes of nuts are exported each year from West African and 50,000 tonnes (approximately 33%) from Ghana alone (Peace Corp, 2008). However, export price for Shea butter in Ghana have risen steadily from 2000 (Al-Hassan, 2012). The Shea butter price per metric ton was US\$797 in 2000 which dropped to US\$673.4 in 2001, but rose to US\$1,018 in 2002 and dropped again to US\$ 1,005.4 in 2003 (Lovett 2004 cited in Al-Hassan, 2012).

Assuah, Kumi, Lower and Aculey (2012) affirm that, the butter from Ghana attracts very low market price because of its poor physicochemical qualities despite the popularity of the Shea butter and the fact that it is in great demand among chocolate, cosmetic and pharmaceutical companies. Al-Hassan (2012) corroborates that apart from the quality of butter, factors such as inadequate access to market information, weak management skills and lack of coordination among producers also contributes to the low quantity of Shea export. European companies, such as l'Occitane, the Body Shop and other upscale personal care product manufacturers, have highlighted the beneficial qualities of Shea butter as an ingredient in a range of personal care products (Al-Hassan, 2012). USAID/WATH 2004 cited in Al-Hassan (2012) further mentioned that the demand for Shea continues to grow although it is often used in low proportions in products such as lip balms, facial and skin creams, soaps and shampoos.

Al-Hassan (2012) stated that there is an existing growing network of NGOs and other organisations that have joined with rural producer groups, through "The Shea Network" supported under the FAO/CFC funded ProKarité project (SNV, 2006). However this network of organisations currently supports pilot activities in Burkina Faso, Senegal, Mali and Niger (Al-Hassan, 2012). He further added that these initiatives aim to develop appropriate measures for provenance definitions, processing procedures, quality standards and agricultural practice, so that through the flow of information, Shea kernels or butter can be easily commoditized and internationally traded with confidence.

2.8 Shea nut processing and Household Income

Shea nut processing is dominated by women in Ghana as mentioned earlier. Most of these women either work near their homes individually or are organized into small business cooperatives (Mensah, 2001). Research by Al-Hassan (2012) on Shea processing estimated that over 90% of Shea processors are women with men playing minor role of assistants to their spouses and majority within the average age of 42 years. Also, majority (86%) of these women processors are without formal education. Nevertheless, women Shea processors, however, have long business experience (average of 15 years) with a low capital set up of an average of GH¢ 89.00 (Al-Hassan, 2012). **Currency Conversion GH¢ 1.00 = US\$ 0.53**

The research further found that 84% of these Shea nut processors regard the activity as their main livelihood with an average monthly income of GH¢ 290.00 (Al-Hassan, 2012). However, in other parts of northern Ghana the annual income from Shea nuts ranges from GH¢14.00-GH¢121.00 with a mean income of GH¢75.00 (US\$53) (Kent, R., and Bakaweri, C., 2010). Moreover, the general view by the literature available is that much of the income generated by rural women are controlled by their husbands, nevertheless, findings by some authors show that this trend is changing and women are beginning to have a say in how household income is used (Kent, R., and Bakaweri, C., 2010).

Also, within an organised processing setting, each woman processor employs about 4 people, mostly family members or friends. Of these employees, over 90% are females. It was also found that most processors (91%) have a good knowledge of the amounts that they process per week (Al-Hassan, 2012).

According to Al-Hassan (2012), 36% of women processors, process Shea nut between 2 bowls to 4 bags, while 64% process between 15 bowls and 2 bags of Shea nuts in a week and on the average 35 bowls of Shea nuts would produce 19 bowls of Shea butter as output. However, his research also found that the price of butter varies from region to region and from district to district as the normal trend of costing would be taking into consideration the varying cost of production.

Generally, the findings of Al-Hassan (2012) corroborate the views of other authors on Shea processing being a vehicle for poverty alleviation at the household level. Unlike the southern part of Ghana which has favourable conditions for the production of cash trees like palm and cocoa, the annual rainfall of the northern parts of Ghana is about 1 000 mm per year which makes the area not conducive for the cultivation of palm and cocoa, however, the climate is suitable for Shea tree to grow (DFSC, 2000 cited in Carette, et al., 2009). Therefore, the Shea tree and also the products associated with it is a major source of income for the household especially for women (Elias and Carney, 2007 cited in Carette et al., 2009).

Moreover, Shea oil is observed to be a major source of income to the household as compared to other trades like brewing and farming (TechnoServe Ghana, 2004). Also, Shea nut processing is a source of employment for rural women. About 3,000 households in northern Ghana are engaged in the Shea industry producing 4 Million USD worth of Shea butter annually (TechnoServe Ghana, 2004).

Shea products further serve as body oil, hair cream and for its “magical” healing effects on burns, stretch marks, skin conditions, ulcerated skin, and dryness offsetting expenses on cosmetic and medicine (Dogbevi, 2009).

2.9 The use of Income Generated from Shea nut processing

Shea fruits are mostly gathered, processed and retailed exclusively by women and children. It is therefore a source of income for women and this income is used to provide the needs of their families (Techno Serve, 2004). Children often generate income from Shea fruits by

gathering the fruits to sell at the market. Techno Serve (2004) discovered that these children use the funds made through sales of Shea to buy their clothes and also support in family purchases. Men who have sufficient capital usually are involved in wholesaling of the nut thus they purchase bulk loads of the commodity and also rent stores in the local markets in the main towns to store and then either retail or wholesale the nuts back to the village markets”.

2.10 Shea production and household food security

Domestically, the economic importance of Shea as a key contributor to the livelihood of the rural northern population of Ghana cannot be overlooked. Almost every part of the tree has been observed to be of economic and environmental use, for example: about 70,000mt fresh fruit of Shea is eaten in Ghana annually (Lovett, 2004) and the leaves are used as fodder and also as ingredient for making alkaline and paint (Hall, et al., 1996).

Also, as a major source of income to the household, Shea production is a source of poverty alleviation in rural populations in Ghana (TechnoServe Ghana, 2004). Although Shea fruit and butter is a source of food for household especially during the hunger season, income generated from the sale of Shea products are used for other food expenses in the household.

Shea nut products serve as an important position in the diet of the rural. Generally the fruit is eaten by households while it is ripe while the processed crude oil is used as a food accompaniment (Hall, et al., 1996). In most northern villages refined cooking oil is not available so they resort to Shea butter as cooking oil for all the traditional foods.

2.11 Factors militating against Shea Industry

The Shea industry has been faced with some challenges over the years. The effect of slash and burn clearing method as a result of increased arable pressure which has led to a measurable loss of younger fruit bearing trees. Increased population pressure resulting in higher levels of trees felled for charcoal production despite local bylaws, which ban the use of Shea for charcoal burning. Ferris, et al. (2001) argued that these laws are not well enforced and it is common knowledge that Shea is both a good wood for charcoal production and also an ideal wood for house construction due to its termite resistance. Its labour-intensive method of processing which sometimes generates little profit due to its poor quality, many women simply sold the nuts whole for a very low price in addition to that women had no control over how the processed product was actually marketed externally; they were limited to selling internally the small quantities collected individually or as part of a small group of individuals. Men control the transportation and inter- regional marketing while women dominate in the local marketing of Shea butter.

Also, it has been observed that more than half of Shea fruits grown in the wild are uncollected annually partly due to weak trade networks and inadequate information among actors in the value chain of Shea (Lovett, 2004). Further, information on quality standards, market demand and quality-price structures serve as barriers to profitable Shea trading (Lovett, 2004; Peace Corps, 2008).

Issues of inadequate capital, high cost of transportation, cumbersome custom procedures for exports, poor road networks, lack of business skills etc. are some of the factors militating against the Shea industry (Lovett, 2004). Nevertheless, it has been argued that for significant improvements at the local, national and international markets, interventions from government and NGOs in terms of investment are needed (Lovett, 2004). Shea nut pickers and processors could mobilize themselves to seek for further training to improve on the quality of butter and also contribute to reducing their plights by forming groups which could help them to have better price negotiation position as well.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Research Design

The research used a qualitative approach and employed a case study method using semi-structured interview technique and focus group discussion to collect data and thematic analysis to analyse, discuss and synthesise the empirical data with the extant literature.

3.1 Study Area

The UER has nine administrative districts and Kassena Nankana West District (KNWD) is one of the newly constituted districts in the country. The KNWD lies within the guinea savannah woodland. It has a total land area of 1,004sq km. The District recorded a population density of 92 persons per sq. km with a population of 120,729 people. The gender grouping of the population is 58,433 people being male representing 48.4% and a female population of 62,296 representing 51.6%. . The district consists of 119 communities, majority of which are rural and shares common boundaries with Burkina Faso as indicated in the map in figure 5. At least 90% of the people living in the District reside in the rural areas (MoFA KNW District Profile, 2010).

Figure 5: Map of Ghana showing the study area (Nakolo)



Source: World Map.com

The Ministry of Food and Agriculture being the main Ministry responsible for Agricultural performance in the region has divided the districts into zones and operational areas for easy coordination and supervision by the Agricultural Extension Agents (AEA). The KNWD has three (3) zones (central, East and West) and Nakolo the study area is located in the central zone. The Nakolo operational area is one of the areas where Shea butter processing is done. Rain-fed farming is the major occupation of the people. However the rural folk engage in other non-farm activities including Shea nut picking and processing, pito brewing, and charcoal burning.

3.2 The Case Study and Sampling process

The pre-testing of the checklist in the Nakolo community showed that Shea nut picking and processing was a women's business.

Therefore, women were randomly selected to participate in this study. However, women with households – married women or widows – were selected in order to allow for the study to meet its objectives in assessing household food accessibility and income. Another criterion for selection was that the women had to be engaged in Shea nut business for five years and above to allow for trend analysis of related issues in the questionnaire.

Ten women, representing 10 households were randomly selected to participate in the study as individual respondents while 15 other women, representing 15 households were also randomly selected to participate in the focus group discussion.

However, a contact person in the community and the Agriculture Extension Agent (AEA) for the Nakolo provided a list of names for the random selection of both groups of respondents by the researcher. The researcher had no personal knowledge of respondents before the selection therefore issues of bias were minimal.

For community entry reasons, a visit was paid to the community Chief in the company of the contact person and the AEA to discuss the purpose of the study. A period of 18 days was used for the data collection.

3.3 Data Collection

Primary data and desk study were the sources of data. The desk study was done through reviewing of extant literature on the study subject and relevant information from articles and journals from the internet as well as reports from related organisations. Primary data was collected from household Shea pickers, processors and marketers within Nakolo Community through semi-structured interviews and focus group discussions.



Two different checklists with topics in line with the objectives and research questions were used to collect data both at the individual household level and focus group discussion (see annex 3 & 4) to generate data from individual household respondents and also to generate a collective data at the focus group on the income and expenditure of the households as well as the gender roles in household income generation and decision making with regards to expenditure. The participants in the focus group discussion did not partake in the individual household interviews. PRA tools (matrix ranking and income and expenditure tree) were used to generate and rank data on the income and expenditure of the households.

However, data collected from both groups were triangulated. The checklists were pre-tested both at the University with a colleague who has knowledge in the subject area and on the field at the community level before administering. After pretesting, some of the questions were modified and new and relevant ones added to suit the context and objectives of the study.

3.4 Data Analysis

Data analysis was done through thematic analysis. Since the empirical data was in a descriptive and narrative form, key themes relevant to the objectives of this research were extracted from the raw data. The information derived from the raw data was compared with the extant literature for pattern matching and/or variation. Personal observation was an additional tool for the analysis.

3.5 Limitations of the Study

Some limitations were encountered during the study. Language barrier was one limitation. Eight out of the individual respondents spoke “*Kasim*”, the spoken dialect in Nakolo. Only two of the respondents could speak English. Therefore, the researcher had to rely on an interpreter for the collection of the data. Also, the study was conducted within the farming season which in a way made it difficult to have the full attention of respondents as they were mostly engaged with their farming activities.

In addition, since the study was focused on Nakolo as a case study, the findings of this research cannot be generalised for Shea nut processing communities. Nevertheless, this research could be used as a guide to understand other communities with similar characteristics for any Shea nut intervention programme.

CHAPTER FOUR

RESEARCH FINDINGS

4.0 Introduction

This chapter presents the findings of this study in relation to its objectives and research questions as discussed in chapter 1 subsection 1.2 and 1.3 respectively. With the research approach of this investigation being qualitative, the empirical data collected from the study is presented in a descriptive and narrative form.

Specifically, the collected data is structured in line with the key themes of the questionnaire of the study as follows: demographic status of respondents, contribution of Shea to household food accessibility, management of household income generation, activities in the Shea business and factors militating against the Shea industry.

4.1 Demographic Characteristics of Respondents

Table 2: Demographic Characteristics of Respondents

Res pon dent	Age	Educational Status	Marital Status	Category (Picker, Processo r, Marketer)	No. of years in picking & marketin g nuts	No. of years in processing & marketing butter	House hold Size
1	50	Non- Formal	Married	All	40	40	13
2	40	Non- Formal	Married	All	34	34	13
3	65	No Education	Widow	All	45	45	7
4	57	Non- Formal	Married	*	20	40	15
5	45	Non- Formal	Married	All	40	40	15
6	45	Middle School	Widow	All	30	30	15
7	55	Non- Formal	Married	All	20	32	15
8	55	Middle School	Married	*	38	38	9
9	63	No Education	Married	All	50	50	15
10	44	Middle School	Married	All	22	22	15
Avg.	52				34	37	13

(*those involved in Shea nut picking and butter processing and marketing but not Shea kernel marketing)

The data from Table 2 indicates that 10 women, representing 10 households, were randomly selected to participate in the interview for the study. All the 10 women were all coincidentally engaged in the three key areas of Shea nuts business: picking, processing and marketing with the exception of 2. The age range of the respondents was between 40 and 65 with an overall average age of 52. Educationally, two had no formal education meaning, they could not read and write or did not have any adult education classes, five had non-formal education which means they had some adult education or attended night schools and three had middle school level education (Senior High School). Only those with the middle school level of education that could read and write. Eight of the women were married while two were widowed. The respondents have been engaged in Shea nuts business over 20 years and they had an average household of 13 people. The trade has been passed on to them by their parents and grandparents.

4.2 Contribution of Shea to Household Food Accessibility

This subsection presents data on the contribution of Shea to household food accessibility of the respondents in general regardless of the season in the year. Specifically, household

food accessibility and significance of Shea to household food accessibility are the subsections considered.

4.2.1 Household Food Accessibility

Responding to the research questions in relation to the above objective, respondents had the following to say:

On whether their households had access to food all year round, eight respondents said no, one respondent said yes while another said sometimes. The reason the one who said yes was that she is engaged in other businesses. Further, when asked to mention the key sources of food for their households, all 10 respondents mentioned farming, dry season gardening and Shea nut processing as their main sources of food. Although they all indicated that dry season gardening and Shea nuts are significant contributors to household food needs, these are supplementary sources and therefore not sufficient to meet their household food needs all year round.

Responding to which period of the year they often experience hunger in their households, the responses given ranged from February to August. In terms of how long the hunger period lasts in their households, six said between six and seven months, two said between four and five months while one said three months. However, six of the respondents added that there are variations in the level of hunger within this period with April through to July being the peak of the hunger season.

The respondents were also asked to discuss the coping strategies the households usually adopt during the hunger period. All the respondents said they relied on dry season gardening (vegetables) and Shea nuts business. In addition, four respondents said they were engaged in livestock and poultry rearing, four respondents said they sold firewood, engaged in petty trading and “dawadawa” (local spice) processing while two respondents said they engaged in “pito” (local drink) brewing.

When asked to rank these coping strategies according to their significance and contribution to household food accessibility, they were ranked as follows in order of importance: farming, dry season gardening, Shea nut picking and processing, livestock and poultry rearing, and sale of fire wood, petty trading and dawadawa processing.

4.2.2 Significance of Shea to Household Food Accessibility

Responding to whether they would consider Shea nut (fruits and butter) as an important source of food for their households, all respondents said yes. Eight of them indicated that the Shea tree is an important source of food to the household in that its fruiting usually coincides with the peak of the hunger season. This is what one of them had to say:

“The Shea tree is like a ‘saviour’ to our household during the hunger season. This is because during the peak of the hunger, many of us hardly get a three-square meal a day. But when the Shea tree starts fruiting, we usually rely on the fruits for our breakfast and lunch.”

However, on the quantity of butter consumed by their households weekly, six said between $\frac{1}{2}$ and a $\frac{1}{4}$ bowl (a bowl of butter is about 2.5kg), three said between $\frac{1}{4}$ and $\frac{3}{4}$ bowl while one said $\frac{1}{4}$ bowl. Nevertheless, four of the respondents observed that their consumption of butter as cooking oil over the years has decreased because of alternative, tastier and affordable cooking oils available in the market.

4.3 Household Income Generation and Management

This section presents responses on how household income is generated and managed by the households of respondents especially with regards to the involvement of gender control in general household income and specific income generated from Shea business.

4.3.1 Sources of Household Income

For their sources of household income, all ten respondents ranked farming, dry season gardening and Shea kernel and butter business as their key sources of income. However, four respondents said they also generated it from the sale of livestock and poultry, four respondents said they also generated it from the sale of firewood and petty trading of various kinds while two respondents said they also generated it from the sale of "pito" (local drink). These responses were similar to their responses given for the coping strategies they engage in to mitigate hunger as in subsection 4.2.1 of this chapter.

Focusing on Shea kernel and butter, the study wanted to know the percentage of income Shea business contributes to household income. Although it was difficult to establish the exact percentages of contribution because of the level of education of the respondents and their poor record keeping, the study deduced estimated percentages from the responses given. Seven of the respondents said it contributed between 50% and 70% of cash income, two said it contributed between 30% and 40% while one said it contributed below 20%.

In relation to which household members are engaged in these activities, all ten respondents said their entire households (husbands and children with other relatives) were all engaged in the farming and dry season gardening activities except for the widows who had no husbands. However, all ten respondents said for Shea picking and processing, it was their children and friends who supported them with their husbands sometimes playing minor supportive roles. However, four respondents said they had their entire households engaged in the livestock and poultry rearing. Six respondents also said it was their children and sometimes friends that helped in the petty trading, cutting and sale of fire wood and pito brewing with their husbands playing minor supportive roles respectively.

4.3.2 Control and Management of General Household Income

The respondents also narrated how the income generated from these activities was managed in their various households. All ten said they spent their income on food, education, health care, funerals and investing in other small scale businesses. In terms of ranking, all ten said food is their top most concern, after food, nine said the education of their children and grandchildren was their next concern, seven said the performance of funerals is their third concern, all ten said health care and clothes are their fourth and fifth concerns respectively.

In terms of who controls the household income and why, seven of the respondents said they jointly controlled it with their husbands but their husbands have much say because they are the "heads of the family" and hence make the major decisions on household resources. Two of the respondents controlled the income themselves because they are widowed and one said her husband controlled the income because that is the agreement between him and her.

4.3.3 Control and Management of Income from Shea Business

Responding as to who controls the income specifically generated from Shea business in the household, the responses given are the same as the ones given in subsection 4.3.2 on general household income.

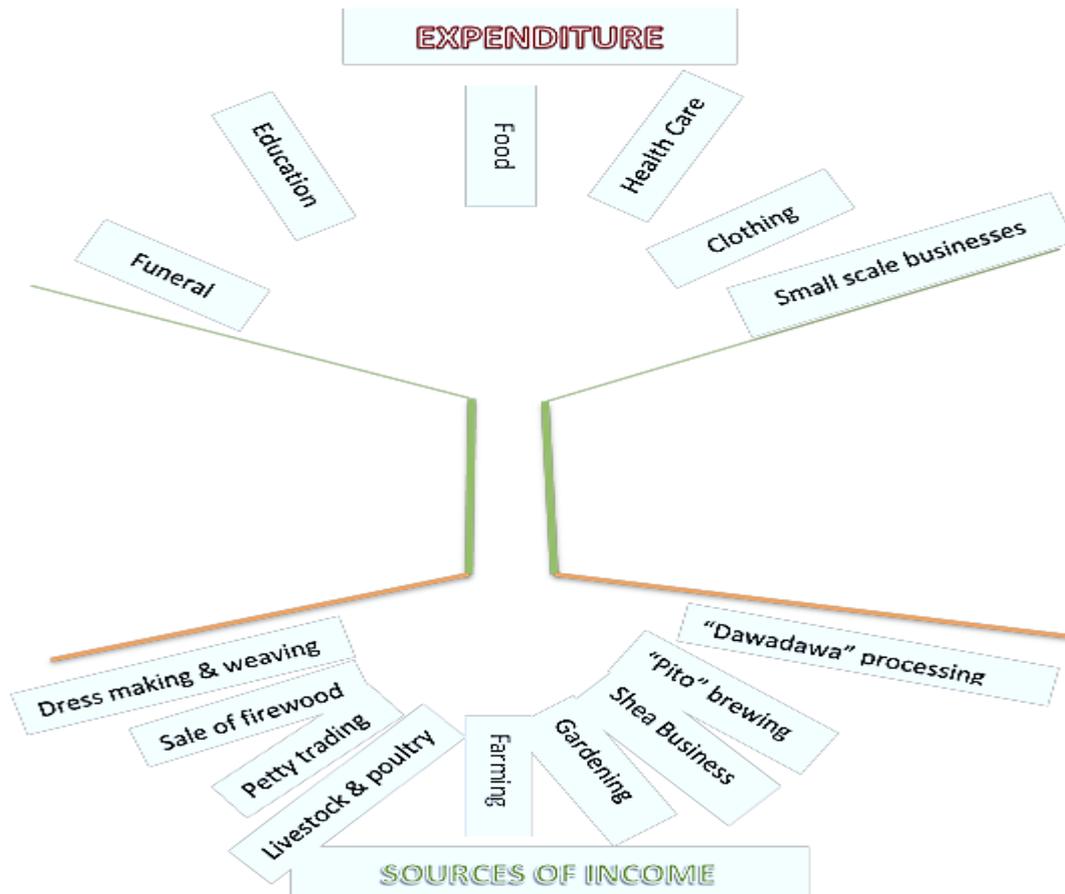
4.4 Focus Group Interviews

A focus group of 15 participants (women) was selected to participate in the study. The reason for choosing this technique was to extract the collective views of the group members

on the contribution of Shea nut to household food accessibility and income and corroborate these views with that of the individual respondents on the same issues.

When the group was asked to mention their sources of income to the household in their community, the collective responses given were as follows: farming, dry season gardening, Shea nut picking and processing, livestock and poultry rearing, and dress-making, sale of firewood, dawadawa processing, petty trading, and weaving. This is shown in a form of an income and expenditure tree in figure 6 below:

Figure 6: Income and Expenditure Tree of 15 households in Nakolo (focus group)



Source: Author's Construct, 2012

However, in terms of percentage contribution to household income, though it was difficult to determine exact percentages, the respondents ranked the level of contributions as follows: farming, dry season gardening, Shea nut picking and processing, livestock and poultry rearing, and petty trading, dawadawa processing, sale of fire wood, dress-making, and weaving as indicated in table 3 (page 26). Nevertheless, relying on the ranking given, farming, dry season gardening and Shea nut picking and processing were perceived as the large contributors of household income.

Responding to the gender roles in each of these income generating activities, apart from farming, dry season gardening, livestock and poultry rearing that included everyone in the household (husbands, children, wives and other relatives), all the other activities were described as "women's" trade. With regards to control of their household income, the responses were divided, nevertheless, majority of the participants said they jointly control the income with their husbands. However, the widows among them said they solely controlled their own income.

The study also wanted to find out the major needs that the households spent their income on. The discussion generated the following list of needs: food, education, health care, funerals, clothes and investment on petty businesses. When asked to rank these needs in order of importance, after deliberations, they were ranked as follows: food, education, healthcare, funerals, clothes and investment in petty businesses. Below are pictures indicating cross-sections of the focus group discussions



Cross-sections of focus group discussions

4.5 Cross-Referencing Individual Respondents and Focus Group Responses on Household Food Accessibility and Income

This section corroborates the views of individual respondents and focus group responses on issues related to sources of household income. Corroborating the views in section 4.3 and 4.4 of this chapter respectively, the responses given on sources of household income are similar by both categories: farming, dry season gardening, Shea nut picking and processing, livestock and poultry rearing, petty trading, dawadawa processing, pito brewing and sale of firewood. The only variations in the focus group discussion were dress-making and weaving. Further, the ranking that were given on these sources of food and income are similar as shown in Table 3 below:

Table 3: Matrix ranking of household food and income sources (focus group)

SR #	Sources of Food / Income	Score	Ranking
1	Farming	42	1 st
2	Livestock & poultry rearing	15	4 th
3	Petty Trading	13	5 th
4	Shea nut picking and processing	16	3 rd
5	Dry Season Gardening	20	2 nd
6	Dawadawa processing / pito brewing	10	6 th
7	Dress-making	6	8 th
8	Weaving	5	9 th
9	Sale of firewood	8	7 th
Total Score		135	

However, in terms of percentage contribution of Shea business to household food and income, although the individual respondents gave a range of 50% and 70%, 30% and 40%, and 20% of cash income respectively, the focus group could not determine any percentage

figures, the ranking given to Shea picking and processing by the focus group shows that it plays a key role in household food accessibility and income to both groups.

In relation to gender roles in the income generating activities of the households in both groups, the responses given were similar. Moreover, it is clear from both groups that Shea nut picking and processing is classified as “women’s trade” with less involvement by men. Also, the two groups shared the same view that they and their husbands control their household incomes.

Similarly, the household needs and their respective ranking by both groups are similar, with food and education of their children and grandchildren being their topmost concerns, and health care, funerals, clothes and investment in petty trading taking different positions in both responses.

4.6 Income Generating Activities in the Shea Industry

This part of the interview focused on extracting data on the income generating activities within the Shea industry. It is organised under the following sub-headings:

4.6.1 Activities in the Shea Industry

Although the Shea industry has diverse income generating activities such as Shea nut picking, butter processing, soap making, pomade and cosmetics as indicated in literature, the responses given showed that community members within Nakolo involved in the Shea business only focus on three main income generating activities: picking, processing and marketing of Shea kernel and butter.

4.6.1.1 Shea Nut Picking Income Generating Activities

In relation to their source of Shea nuts, all the respondents said they often pick the nuts from their own farmlands and community land in the bush (‘no man’s land) but seven said they sometimes pick from other people’s farmlands with the permission of the farm owners. However, all the respondents indicated that as a general rule in the community, Shea nuts pickers are often not allowed to pick from other people’s farmlands without the permission of the owners. Moreover, all of them said that there was no financial cost for picking Shea nuts on community lands or other people’s farms.

Probing on the distance between their homes and their farmlands for Shea nut picking, five of the respondents estimated 9km from their homes to their farmland, two estimated 8km, while three of them estimated 6km. However, five of them estimated that they often spend between 1½ to 2 hours to walk to their farmlands while five indicated that they spend between 2½ to 3 hours to walk there. The responses also showed that none of the respondents had any means of transport to their farms: they often walked.

All the respondents indicated that they usually pick Shea nuts on daily basis during the Shea season (April-August) till the time the season is over. Moreover, all the respondents said that they often spend between 1-3 hours daily in picking the Shea nuts. Besides, five of them said they often pick between 1 - 2 basins while five said they often pick between 1.5 – 2 basins daily depending on the season. However respondents could not tell the exact quantity of kernel generated from processing these quantities of Shea nuts.

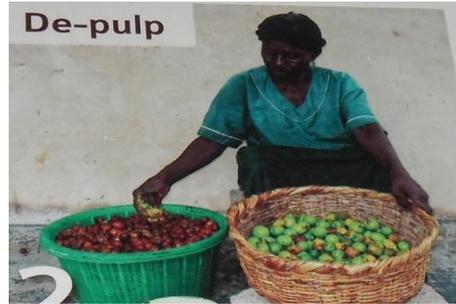
When asked to describe the procedures involved in picking the Shea nuts till the point they are ready for processing or sale, all respondents gave similar procedures with little variations. More specifically, in sequence, the following procedures were extracted from the data given by the respondents:

First, the process starts with picking the Shea nuts on the farmland or in the bush (“no man’s land). However, eight of the respondents observed that for mature and good quality Shea nuts, it is often advisable to pick Shea fruits that have fallen from the Shea trees on their own

than those plucked or shaken to fall from the tree. They also added that, since there is usually competition for the Shea nuts on community lands, many of them are usually forced to pluck or shake down the Shea fruits from the trees rather than allowing them to fall on their own.

Second, they all indicated that, the good and edible Shea fruit are often sorted out for consumption while the bad ones are heaped for about 1-2 weeks to ferment. Accordingly, this fermentation allows for easy removal or de-pulping of the fruits.

Third, the fermented Shea nuts are then de-pulped. This is often done by peeling off the Shea fruits. Three respondents however said that, they often mix the fermented fruits with sand to reduce the slippery nature of the pulp for easy de-pulping. Moreover, seven of the respondents said that another alternative they also use is to boil the Shea nuts together with the pulp before de-pulping. Accordingly, this method weakens the attachment of the pulp to the Shea nut which allows for easy peeling of the pulp.



Fourth, the respondents indicated that after de-pulping; the Shea nuts (if done without first boiling) are washed and boiled for about 1 to 2 hours. They are then sun-dried after boiling for about 6 to 7 days depending on the weather conditions.

Fifth, once the Shea nuts are properly dried, the respondents indicated that the next process is the de-husking stage. Accordingly, at this stage, the dried shelled Shea nuts are de-husked by hand-pounding using stones and pieces of wood to crush them on the floor.

Sixth, the kernels are then sun-dried again to further reduce the moisture content in them. All the respondents mentioned that this is critical to determining the quality of the kernel. According to them, if the kernels are not properly dried at this stage, it might affect their market value in terms of demand and price. They further argued that if the kernels are not properly dried, it will affect the quality of butter (taste and appearance) produced. This was what one respondent had to say about the importance of this stage:

“If you do not dry the kernels properly, it can affect whether they will buy it in the market or not. Many of the buyers know the difference between properly dried kernels and those that are not by merely feeling them in their hands. If they realise your kernels are not properly dried, they will offer you a very lower price or buy from another seller with good quality kernel.”



Respondent & researcher crushing nuts to check moisture content

Seventh, which is the final stage, respondents indicated that, the kernels are further sorted to remove black kernels, rotten kernels and very small-sized kernels. Accordingly, kernels with these “bad” features usually have low demands and prices in the market. After the sorting process, the kernels are bagged in jute bags or kept in dry pots for storage or sale.

4.6.1.2 Shea Butter Processing Income Generating Activities

The respondents interviewed for the Shea nut picking, are the same interviewed for Shea butter processing and therefore hold the same demographic profile as shown in Table 2.

In terms of their sources of Shea kernel for Shea butter processing, all the ten respondents said their main sources are their own farmlands, community lands and other people's farmlands (with permission) as indicated earlier in subsection 4.5.1.1 of this chapter. However, all of them also indicated that they sometimes buy Shea kernel from the local market (Nakolo market) to supplement their own stock.

When asked how Shea butter processing is done, all the responses given showed that the methods used by these women are more related to the traditional method of processing. From the data given, much of the process is manual with little variations among them. However, generally, in sequence, these were the processes extracted from their responses:

First, according to the respondents, after kernels are sun-dried, they are crushed on a floor with pieces of wood or hand-pounded in mortars into grits.

Second, the grits are then roasted in pots or basins. Stirring sticks or pieces of calabashes are often used to turn the grits in the pots or basins to the point they are properly roasted for oil extraction.

Third, once the grits are properly roasted, they are either hand-ground on stone or milled with a commercial mechanised grinding mill into paste. Six of the respondents said that they usually mill their kernel into paste using grinding stones although they sometimes use the mechanised grinding mill for the same process. However, four of them said they always use the traditional grinding stones to grind the kernel into paste.

Fourth, the respondents indicated that after milling grits into paste, the paste is then mixed with water for kneading. This is to separate the butter from the residue. All respondents indicated that they usually hand-knead the paste. They all also said that the key indication of a well-kneaded paste is when the paste turns into white, separated from the residue.

Fifth, the kneaded butter is then boiled in a pot or basin to extract the liquid oil. When the boiling is done, the liquid oil is drained or collected from the residue with a ladle. The drained oil is often kept in an enamel to solidify into pure butter and ready for consumption or sale. The solid butter is then transferred to calabashes, plastic containers, plastic bags or other enamel bowls.



From the left to middle shows the researcher helping in draining liquid oil & right, oil allowed to cool into butter

4.6.1.3 Shea Marketing Income Generating Activities

This section gathered data on how Shea products – kernel and butter – are marketed by the households with specific focus on: product source, product packaging, product quality, distribution channels and promotion.

Shea kernel Marketing

Sources of Shea kernel – When asked of their sources of Shea kernel for sale, eight of the Shea kernels sellers said they picked them on the farms. Although two of the respondents were Shea nut pickers, they were not Shea kernel marketers: they focused on Shea butter processing and marketing.

Packaging of Shea kernel – The research revealed that Shea kernels are still packed in traditional ways by the respondents. All eight respondents indicated that they often package their Shea kernel in jute sacks (GH¢80.00 – GH¢90.00 selling price per 90kg bag) for sale while the two respondents who are not involved in sale of Shea kernel package them in other sacks for storage or further processing.

Quality of Shea kernel – Responding to the quality standards for Shea kernel in the local market, all the eight respondents revealed that, buyers of Shea kernel usually require mature, relatively big-sized and properly dried kernels. When asked if their Shea kernel usually meet these quality standards, six said yes while two said sometimes due to reasons that they could not explain.

The general argument however was that good quality kernels were more demanded than poor quality ones. According to five of the respondents, no matter how good the quality of the kernel, the price in the local market hardly rises above GH¢2.00 a bowl (3kg) in the bumper season, but demand for quality nuts is often high. Therefore, in Nakolo market, quality kernel hardly significantly affects price as it does with demand.

Prices of Shea kernel – On the price of kernel in the local market, all eight respondents indicated GH¢2.00 per bowl (3kg) as the even selling price for the kernels during the bumper season at the local market and between GH¢2.50-GH¢3.00 a bowl (3kg) variation during the scarce season (between February and April). However when asked of price variations of kernels in the market, all the respondents indicated that price variations in the local market were very insignificant.

When asked to give price trends over the past 5years, all of them could not account for the trends but seven of them provided estimated price trends for three years as: GH¢1.50, GH¢1.80 and GH¢2.00 respectively. However, the seven respondents further indicated that rise in price over the past three years could be attributed to increase in demand for the kernels and low yields of Shea nuts by Shea trees in meeting market demands.

Distribution of Shea kernel – The research also wanted to establish the market channels through which the kernels are sold. All eight respondents said they usually sell part of their kernels in the local market (Nakolo market) while they keep some for processing. Accordingly, kernels are usually sold directly to other consumers and petty traders (middlemen are not usually involved).

Promotion of Shea kernel – In terms of promoting or advertising their Shea kernel, all respondents said they had no specific strategies in marketing their products except sending them to the market to sell directly to customers or sometimes spread a word around the community about their products.

Shea Butter Marketing

Sources of Shea butter – For their sources of Shea butter for sale, all respondents said they processed their own Shea butter for sale. None of them bought butter from other processors for retailing. The respondents all indicated that December to April (the dry season) is the period for good sales of their butter. As to whether they have regular market for their butter all year round, seven of them said yes, three said they had variations in terms of their capacity to supply.

Quality of Shea butter – Responding to what determines good quality of Shea butter; all respondents indicated that the butter must look “whitish” after processing. Accordingly, if the butter is in any other colour apart from “white”, customers usually perceive it to be of low quality. Nevertheless, seven of the respondents argued that proper drying and roasting of the kernels are pre-conditions to producing whitish butter. All the respondents also indicated that their butter usually meets the quality standards of the local market except on few occasions especially if they use premature Shea nuts to process into butter. In response to whether they had any information on the national and international standard for good quality butter, all respondents said no.

Packaging of Shea butter – All the ten respondents said they often package their Shea butter in calabashes, plastic containers, plastic bags and enamel bowls for sale. Also, they all indicated that these packages come in different sizes at different prices.



Shea butter displayed for sale in the market

Researcher interviewing a respondent

Prices of Shea butter – Responding to prices of Shea butter in the market, all the respondents indicated that 1 paint container of Shea butter (4.5kg) was sold for GH¢10.00 and 1 bowl of Shea butter (2.5kg) was sold at GH¢5.00 while half bowl (0.9kg) was sold for GH¢2.5. However, it was also observed that butter comes in different containers with different prices in the market. When asked what trends have been on a price of a bowl of butter over the past five years, all the respondents could not properly account for the trends however seven of them gave the following trends for the past three years: GH¢3.00, GH¢4.00 and GH¢4.50.

Moreover, all the respondents also revealed that the various prices of Shea butter in the market were same across the local market. Therefore, their sales revenue and profit were more determined by sales volume rather than increase in prices.

Distribution of Shea butter – All the respondents said that their sale of butter was limited only to the local market in Nakolo. They also indicated that their regular customers were households and petty traders within the community: no external middlemen.

Promotion of Shea butter – In terms of promoting or advertising their butter, all respondents said they had no specific strategies in marketing their products except sending them to the market to sell directly to customers or sometimes spread a word around the community about their products.

4.6.2 Profitability of Shea Activities to Households

The data collected in this section relates to the profitability of kernel and butter collectively and not as individual businesses. This is because most of the respondents were both pickers and processors at the same time.

When asked how much they buy kernels for their processing, all the respondents confirmed GH¢ 2.00 a bowl (3kg) as the even selling price of Shea kernel in the local market during the bumper season and GH¢ 2.50–GH¢ 3.00 a bowl (3kg) during off seasons. All respondents also said that April to July is the best period to buy Shea kernel at good prices for their butter processing. However, when asked whether they get Shea kernel to buy all year round to supplement their stock, all said yes but four said due to financial constraints they are not usually able to buy during the off seasons.

For the quantity of kernel each of them processes in a week, four said they often use between 20-22 bowls (60-66kg), three said between 15-16 bowls (45-48kg), while three said they use between 13 -14 bowls (39-42kg). When asked how many bowls of nuts are processed to generate 1 bowl (2.5kg) of butter, the responses were varied depending on the quality of the kernel used. Six of the respondents said between 2-3 bowls (6-9kg) of kernel, four said between 3-4 bowls (9-12kg) of kernel.

In relation to the number and kind of labour often used to process the Shea kernel, nine respondents said they often employ family labour and friends mostly between 1-2 people to help them to process their kernels. However, one indicated that she sometimes employs a casual worker to help her to process her kernel at GH¢1.50 for all three days or weekly and sometimes provides food for the person during the working period to process one basin of kernel (6 bowls).

The study also asked respondents to estimate the cost of labour used for the processing if they are to pay for the labour. Respondents were not too sure of how much to pay. However, deductions from six respondents show they will pay each worker between GH¢1.00 and GH¢1.50 for all the three days' work of processing 1 basin of kernel, three estimated they will pay between GH¢1.50 and GH¢2.00 for the three days while one said she sometimes pays GH¢1.50 for the three days in addition to 1 litre of butter. These estimates were shaky. Due to the shaky and unreliable labour cost estimates given, the daily minimum wage in Ghana (GH¢4.48 per 8 working hours) was used to estimate the labour cost per kilogram of kernel processed. Deductions from responses show that averagely one person usually uses 3 days of 4 working hours per day to process 18kg of kernel. Table 4 below is an estimated cost of weekly production of Shea butter. This includes the cost of buying kernel on the open market, cost of grinding in the village mill and cost of labour.

Table 4: Estimated Cost involved in processing butter weekly

Respondents	Estimated Shea Kernel processed (kg)	Estimated cost of nut (GH¢0.7/kg)	Estimated cost of grinding (GH¢ 0.02/kg)	Labour cost per worker (GH¢0.37/kg)	Cost of kernel, grinding & labour (GH¢)
1	48	33.6	1.0	17.76	52.3
2	66	46.2	1.3	24.42	71.9
3	42	29.4	0.8	15.54	45.8
4	60	42.0	1.2	22.20	65.4
5	60	42.0	1.2	22.20	65.4
6	42	29.4	0.8	15.54	45.8
7	45	31.5	0.9	16.65	49.1
8	45	31.5	0.9	16.65	49.1
9	60	42.0	1.2	22.20	65.4
10	39	27.3	0.8	14.43	42.5
Average	50.7	35.5	1.0	18.76	55.3

*The official minimum wage of Ghana has been used as the basis to calculate the labour cost for the processors since it was difficult to determine the exact cost of labour from respondents. The current minimum wage per hour in Ghana is GH ¢0.56 (GH ¢0.56 x 8hour = GH ¢4.48 per working day).

The processors are estimated to work for 4 hours per day, therefore, minimum wage per day for 1 worker is GH¢2.24 (GH ¢0.56 x 4hours = GH ¢2.24). The study found that averagely, processors use 12 hours in 3 days to process 18kg of kernel. Therefore, labour cost per worker for 12hours/3days is GH¢6.72 (GH ¢0.56 x 12hours = GH¢6.72). The number of hours for processing 1kg of kernel is estimated to be 1hour, 7 seconds (12hours/18kg of kernel = 0.67hours or 1hour 7seconds). Therefore the estimated labour cost per worker per hour to processing 1kg of kernel is GH¢0.37 (GH¢6.72/18kg of kernel = GH¢0.37).

In terms of sales revenue generated from the butter on weekly basis, table 5 shows the estimated kilograms of kernel used for processing; the estimated kilograms of butter produced and sold; the estimated revenue generated; the estimated quantity of butter consumed by household; and the estimated profit made:

Table 5: Estimated Revenue Generated from sales of Shea butter weekly

Respondent	Household Size	Shea kernel processed / week (kg)	Quantity of butter produced (kg)	Quantity of Shea butter consumed (kg)	Quantity of butter Sold (kg)	Sales Revenue Generated (GH¢2.70/kg)	Cost (kernel, grinding & labour) GH¢	Profit margin (GH¢)
1	13	48	24.0	1.3	22.8	61.4	52.3	9.1
2	13	66	33.0	0.6	32.4	87.4	71.9	15.5
3	7	42	21.0	0.6	20.4	55.0	45.8	9.2
4	15	60	30.0	1.3	28.8	77.6	65.4	12.2
5	15	60	30.0	1.3	28.8	77.6	65.4	12.2
6	15	42	21.0	1.3	19.8	53.3	45.8	7.5
7	15	45	22.5	1.9	20.6	55.7	49.1	6.6
8	9	45	22.5	0.6	21.9	59.1	49.1	10.0
9	15	60	30.0	1.3	28.8	77.6	65.4	12.2
10	15	39	19.5	1.3	18.3	49.3	42.5	6.8
Average	13.2	50.7	25.4	1.1	24.2	65.4	55.3	10.1

These estimates are made on two key assumptions. First, the estimates are made without reference to fixed cost because it was quite difficult to determine and quantify these due to the high level of illiteracy among the households and the lack of accurate records. Second, the sales estimates are made on the assumption that households usually sell all the butter they produce within the week.

Table 5 shows that averagely households are estimated to incur an operational cost (kernel, grinding mill and labour) of GH¢ 55.3 weekly to produce 25.4kg of Shea butter using 50.7kg of Shea kernel (at an estimated extraction rate of 50%) and making a profit of GH¢ 10.1 weekly.

Responding to whether they consider Shea butter processing venture as a profitable business to the household, five of them said yes, three of them could not clearly determine whether it is profitable or not while two said they don't consider it profitable. One of the respondents who said no added that, she considers Shea butter processing as a "hand to mouth" business.

Respondents were also asked whether they produced any other product from their kernel apart from Shea butter. All of them said no except that they use the residue from the Shea shell for fuel and the paste as paint for their buildings.

They also indicated that revenue generated from the sale of Shea butter is often spent on the following: education, food, health care, funerals, clothing, investment in livestock rearing and petty trading. These responses are the same as the ones given in subsections 4.3.2 and 4.4 of this chapter.

4.7 Factors Militating Against Shea Business

Although considered as important to household food accessibility and income, there are factors militating against Shea picking, processing and marketing. This section presents data on the factors militating against Shea business in the study area. A causal diagram in annex 2 visualises these factors.

4.7.1 Constraints in Shea nut picking, processing and marketing

Shea Nut Pickers

As to the challenges related to picking Shea nuts from the farms, all respondent said they are often exposed to rains and snakes. Also, all the respondents said that the process of picking and processing the Shea nuts to kernel is often energy demanding and time consuming.

However, five of the respondents cited lack of protective clothes and booths as a challenge. Two of them said they lacked enough space to sun-dry their nuts. Six complained of infighting among the pickers especially on community lands because of land tenure issues. Two respondents complained of theft of their nuts on their farmlands.

Also, all the respondents said their Shea trees are at the risk of bush fires during the dry season resulting in low yields of the Shea trees during the fruiting season. Moreover, all respondents bemoaned that the seasonal nature of the Shea tree makes Shea business a one season business.

Shea Butter Processors

In terms of the challenges associated with processing, all the respondents said their key challenges were that the activities of Shea butter processing were labour intensive, time consuming and they are often exposed to fire during boiling and roasting of the kernel. However, three respondents indicated that the process of sorting bad Shea nuts from the good ones is one of the key challenges.

In response to whether they had received any form of training or assistance in terms of funding or equipment from government or any related organisation to help them process good quality butter, all the respondents said no although they wished they had such support.

Marketers

In relation to challenges affecting Shea kernel and butter marketers, all the respondents said that they did not have additional skills to produce any other products apart from Shea kernel and butter. Also, eight of the respondents wished that they could sell their products beyond Nakolo market. The interview also showed that all respondents lacked market access and information related to opportunities within the Shea industry nationally and internationally resulting in low demand, prices and profit for their Shea products.

4.7.2 Effects of Shea Business Constraints to Household Income and Food

Accessibility

The respondents indicated that the constraints within the Shea business affect household income in that these effects mentioned by all the respondents: low demand of kernel and butter, low price of kernel and butter, and low profit result in low household income as well as access to food. However, five of them also complained that due to the tiredness from the tedious nature of Shea picking and processing, they are also not able to operate in their full capacity and potential.

4.7.3 Possible Solution to Constraints of Shea Business

Pickers

When asked what they could do to change these problems, six respondents suggested acquisition of donkey cart, motorbike or a bicycle to address the transportation problem. In addition, four respondents suggested the acquisition of protective clothes such as wellington boots; three respondents suggested the acquisition of machines for the de-pulping, boiling

and drying process. However, one respondent wanted to diversify from Shea nuts picking into a different business while one respondent had no clue as to what to do.

Seven of the respondents also suggested funding from the government or any related organisation to help them acquire means of transport, drying machines and protective clothes to help them pick and process more Shea nuts. Five of the respondents wished for a ready market for their kernels and another argued that a credit scheme from financial institutions will help them do better.

Processors

Responding to whether there have been improvements in their activities over the years, seven respondents said no, one respondent said she has increased knowledge in speed and ease of processing from doing the processing over and over while two of them said the use of the commercial grinding mill has improved their work by reducing the time spent in grinding grits into paste.

The study also asked respondents to suggest possible improvements in methods and technology to the processing of Shea nuts into butter. Eight of them suggested that they will prefer to use machines at each stage of the processing including: cracking, roasting, grinding, kneading and boiling machines. Two of them had no clues as to the alternative methods or technology available to them. Nevertheless, all respondents indicated that commercial grinding machines are available in the community, however, the processing involved in using these machines are cumbersome in that they usually have to wait in queues for other cereals to be ground before they are attended to. Further, they argued that using the grinding mill was relatively costly.

Responding to how these challenges could be addressed, nine of the respondents said they would prefer to use mechanised equipment in each of the stages of processing. Specifically, all the nine said they will prefer to use gas instead of firewood, eight said they will prefer to use drying, roasting and kneading machines instead of the manual process while one said in addition she will need a credit scheme to increase the quantity of Shea kernels she buys. However, out of the ten respondents, one of them preferred to use her current traditional method of processing because she is more comfortable with it.

Marketers

The respondents were also asked to suggest possible ways they think would address their marketing challenges. All the respondents said they will require training in new product development. The responses also showed that they will prefer to sell their products beyond their local market. However, seven of them said they will prefer to work as a co-operative to sell their kernel and butter to major buyers as done by other groups who are supported by some other projects in other communities while three said they will need a credit scheme to expand to other markets. When asked about their suggestions on packaging, the responses given did not consider the current packing of Shea kernel and butter as a problem in the local market.

CHAPTER FIVE

ANALYSIS AND DISCUSSION

The focus of this chapter is to analyse, discuss and synthesise the empirical data presented in chapter four with the extant literature. This is done by extracting key themes from chapter four in line with the objectives of the study and discussed as follows:

5.1 Contribution of Shea nuts to Household Food Accessibility and Income

This section focuses on analysing and discussing the findings of the study on the contribution of Shea nuts to household food accessibility and income.

Shea nut and Household Food Accessibility

The study showed that food security is still a major problem among households engaged in Shea nut picking, processing and marketing in the Nakolo community since they do not have access to food all year round. April to July is considered the most critical period of hunger among these households.

Farming is the primary source of food and income for the households. Although dry season gardening and Shea nut picking and processing are considered as major and significant coping strategies for the hunger period within the year for these households, the general view was that these strategies are supplementary by nature.

Specifically, Shea fruits and butter are the main food products derived from households engaged in Shea activities within the community. While Shea fruits are considered a meal for most of the households during the hunger season, Shea butter is used for various things including cooking. However, a contrasting view among the households is that the consumption of Shea butter as cooking oil over the years had dwindled since they have access to other tastier and affordable cooking oil in the market.

These findings agree with Hall, et al. (1996) and Lovett (2004) who observed that the Shea fruit and butter are part of the sources of food and diet in many rural households in Ghana. The literature available observes that the Shea fruit is partly eaten as breakfast and lunch during the fruiting season while the butter is used as cooking oil in many households (Peace Corp, 2008).

Shea nut and Household Income

The study further showed that although farming, dry season gardening, Shea nut business, livestock and poultry rearing, sale of firewood, petty trading and dawadawa processing were the various sources of income for the household, farming, dry season gardening and Shea nut picking and processing were considered the key sources of income.

Shea nut picking, processing and marketing contributes averagely 45% of household cash income making it one of the major sources of household income. Majority of the households consider Shea nut activities as a business and therefore consider it an important source of their income. The finding however shows that estimated average monthly income generated from butter in Nakolo is GH¢40.4.

This estimated average monthly income is a variation from the average monthly income of GH¢290.00 earned by butter processors in the study of Al-Hassan (2012). However, it should be noted that the respondents of Al-Hassan (2012) were in an organised working group while the respondents of this study operated as individual processors. Also, while the respondents in his study had access to external markets, the respondents in this study were

limited to the local market. This could loosely be part of the reason for the variation in average monthly income.

Generally, the study found that Shea nut picking and processing is considered a woman's trade. Although considered as an important trade to the household, majority of the women relied on their children and friends as sources of labour for Shea picking and processing.

These findings corroborate with the views of Al-Hassan (2012) who observed that about 90% of those in Shea business are women with the men only playing supporting roles. He further observed that many of the women rely on other family labour especially their children and friends to help them in picking and processing Shea nuts.

The research also found that more than half of the respondents jointly controlled the income they generated for the household with their husbands. In relation to this, trends are beginning to show that unlike previously where men controlled all the income generated by women, women are beginning to have a strong voice but shared voice in family income decision making (Kent, R., and Bakaweri, C., 2010).

Income generated by households was generally spent on food, education, health care, and funerals and investing in other small scale businesses which are in line with the observations of TechnoServe (2004). However, principally, food and education were top priorities for households in Nakolo.

5.2 Income Generating Activities in the Shea Industry

Shea kernel Income Generating Activities

The first income generating activity in the Shea nut business is the picking of Shea nuts for Shea kernel. The households have been in this business for over 20years with the trade generally handed over to them from previous generations. This correlates the observation of Al-Hassan (2012) that most women engaged in Shea business have been in the trade for over 15years.

Also, the Shea pickers in Nakolo are similar to Lovett's (2004) category of "village pickers". Nevertheless, while in some cases these village pickers sell their kernel to middlemen for further processing, in Nakolo community, the village pickers either sell the kernel to other local Shea butter producers or produce Shea butter from the kernel themselves.

The primary sources of Shea nuts for these village pickers are wildly grown Shea trees on their farmlands, community land in the bush and the farmlands of other people when the fruits ripe and fall on the ground under their own weight or shaken by the pickers to fall as observed by Lovett (2004) and Peace Corps (2008).

Nevertheless, the study observed that an unwritten community rule forbids Shea pickers to pick Shea nuts from other people's farmlands without their permission. Moreover, the research established that irrespective of where the Shea nuts are picked, generally, there is no monetary cost for the Shea nuts: it is for free.

However, most of the Shea pickers spend an average of 2 hours, covering an average walking distance of 7km from their homes to the sources of Shea nuts for Shea nut picking. Most of them also usually walk on foot to their farmlands without any means of transport and often spend an average of 2 hours picking an estimated average of 1 basin per day.

Although portions of the literature available have reported similar number of hours invested in walking to farmlands and picking Shea nuts, the argument partly is that aging Shea

pickers are slower and therefore spend more time walking to their farmlands as well as picking Shea nuts (Kent, R., and Bakaweri, C., 2010). However, averagely about 1 and half basins of Shea nuts were observed to be picked daily by the pickers depending on the season.

The study also found that the processes involved from the point of picking the Shea nuts to the point they are ready as Shea kernel for processing or sale are similar to the traditional methods described by Addaquay (2004) in figure 4 of chapter two. However, Addaquay (2004) and Lovett (2004) have reported slight variations in the stages of processing Shea nuts to kernel among rural households.

Shea Butter Income Generating Activities

Generally, most of the households involved in processing Shea kernel to butter are also Shea nut pickers. Therefore, like the Shea nut pickers their key sources of Shea kernel for butter processing is their farmlands and community lands. With more than 20 years experience in Shea butter processing, the trade was handed over to them by their parents and grandparents.

Again, the Shea butter income generating activities and stages of processing shea kernel to shea butter described by the households in this study are also similar to the traditional stages described by Addaquay (2004) with the following stages in focus: sun-drying of kernel, hand-pounding of kernel grits, roasting of kernel grits, milling of grits into paste, kneading of paste into butter and boiling of butter for oil extraction.

However, although many rural households in Ghana often hand-mill their roasted kernel grits as observed by Addaquay (2004), some of the households also sometimes use commercial milling machines to mill their kernel into paste at a cost. However, the view was that this often increases their cost of production (Kent, R., and Bakaweri, C., 2010).

Shea Marketing Income Generating Activities

Findings of the study show that most of the women engaged in Shea business are three-in-one: pickers, processors and marketers. Shea kernel and butter are the common products of Shea sold in the local market.

Shea kernel and butter marketing

Shea nuts are mostly sold in the kernel form in Nakolo market. The market is dominated by women pickers who usually process Shea nuts into kernel to sell. Households that buy Shea kernel in the market often buy it to process into butter rather than retailing it. Also, most of the women often pick or buy kernel to process their own butter for sale rather buying butter in the market to retail.

In relation to this, the literature has highlighted that in local domestic markets, nuts are mainly picked and processed by women and sold in the local market to a range of actors including local butter processors and local kernel traders (Kent, R., and Bakaweri, C., 2010; Al-Hassan, 2012).

The kernels are often bagged in jute bags for sale or measured in enamel bowls for sale. Shea butter is often packaged in calabashes, plastic containers, poly bags and enamel bowls and sold at various prices.

However, in relation to the quality standards in the local market, buyers in the market prefer mature, big-sized and properly dried kernel without black spots. Kernels with black spots are considered as poor quality ones. Also the key quality standard in the local market for butter is that it must appear "whitish" without signs of impurities.

Generally, the extant literature on quality standards of rural consumers are not as complex as urban and commercial consumers like factories and therefore with an “experienced eye” in the local market one can tell the difference between good quality butter from bad quality ones. Moreover, kernels and butter usually come in simple packages in calabashes, plastic containers and bags (Bekure, et al., 1997; Kent, R., and Bakaweri, C., 2010). It has also been observed that properly dried kernels increase quality of Shea butter.

It was also realised apart from the quality standards required in the local market, the households had no knowledge of the quality standards of kernel and butter required at the national and international markets. Their quality standards are dictated by the standards in the local market. Al-Hassan (2012) has observed that due to the high levels of illiteracy among rural Shea pickers and processors, they mostly do not have access to market opportunities and market information.

The average selling price of a bowl of kernel was GH¢2.00 a bowl (3kg) during the bumper season and up to GH¢2.50 a bowl (3kg) during the lean season. The average price trends over the past three years have been GH¢1.50, GH¢1.80 and GH¢2.00 respectively. However, the study found that, although buyers required good quality kernel in the market, sellers with good quality kernel could only sell their kernels as high as GH¢2.00 a bowl which is the even selling price across the market. Nevertheless, sellers with good quality kernel enjoyed higher sales volume than higher price. Therefore there is a stronger relationship between good quality kernel and increase in sales volume than increase in selling price. With this, deductions can loosely be made that profit on quality kernel was based more on increase in sales volume than increase in price. The average selling price of butter in the local market was GH¢5.00 (2.5kg) during the bumper season and GH¢6.00- GH¢7.00 during the lean season. The average price trend over the past three years was as follows: GH¢3.00, GH¢4.00 and GH¢4.50 respectively. December to April is observed to be the regular period for better prices for Shea butter.

In relation to market and distribution channels, the households are limited to only the local market. Few of them who made attempts to sell outside Nakolo market complained about increase in production cost (transportation) and competition in those markets. Middlemen were not generally involved in the sale of the kernels of the households under the study. Also, the study established that apart from “on-the-floor” and word-of-mouth ways of promoting the awareness of their kernels and butter in the local market, the households did not engage in other marketing or promotional tools for their products.

There is a consensus among several authors that one of the key characteristics of the local market for Shea nuts is its inaccessibility to market opportunities with Shea kernel and butter sellers being more of price takers rather than price determiners (Bekure, et al., 1997; Addaquay, 2004; Lovett, 2004; Peace Corps, 2008).

Profitability of the Shea Industry to Households

In Table 5, averagely, households are estimated to incur an operational cost (kernel, grinding mill and labour) of GH¢ 55.3 weekly to produce 25.4kg of Shea butter using 50.7kg of Shea kernel (at an estimated extraction rate of 50%) at a profit of GH¢ 10.1 weekly.

In terms of profitability of shea business among rural households, the study shows that shea business is more of a source of income for coping rather than a profitable business venture. If the households are to pay for all the cost components of the business such as labour (using the official minimum wage) and fuel, they will be earning less in returns. However since labour, fuel and other cost are almost not paid for, income generated from Shea business is able to address some of the needs of the household such as food, education, health care, funerals, clothes, and sometimes as a source of capital to start other petty businesses.

Although claims have been made by the extant literature that demand and prices for kernel and butter have increased profits in rural Shea business because of increase in international demand for Shea products, rural Shea entrepreneurs are yet to feel this impact because of limited market access (Bekure, et al., 1997; Addaquay, 2004; Lovett, 2004; Peace Corps, 2008).

5.3 Factors militating against Shea Nut Picking, Processing and Marketing

The study extracted a number of key factors militating against Shea picking, processing and marketing from the households and discussed as follows:

Shea Nut Picking Challenges

Available literature shows there are many factors affecting the performance of Shea pickers in many ways including bushfires, lack of faster and safer means of transport to farmlands, land control and tenure problems in Shea nut collection, traditional methods of processing Shea nuts to kernel and seasonality of the Shea tree and business (Bekure, et al., 1997; Addaquay, 2004; Lovett, 2004; Peace Corps, 2008; Yidana, 2009).

Indiscriminate bushfires is considered one of the key problems among Shea pickers in the Nakolo community. The study noted that indiscriminate bushfire on farmlands and in the bush especially during the dry season affects fruiting and productivity of the Shea tree.

Transportation to the source of Shea nut is another factor. Averagely, the distance from the homes of the pickers to their farmlands is 7km. Moreover, most of the pickers do not have means of transport and have to walk for about 2-4 hours to their farmlands. Also, most of them spend about 2-4 hours picking the nuts on their farms.

Collectively, the long distance to the sources of Shea nuts, lack of transportation and the time spent picking the Shea nuts on the farmlands make the entire process time consuming and labour intensive. Also, even if they have appropriate means of transport like the donkey cart and motorbike with trailers, the road and footpaths to the farmlands are not accessible by motorists.

Commenting on this problem, one of the respondents said: "Though we are near the source of the Shea nuts, we are far from it because of the distance and lack of transportation."

Land tenure issues are also a key challenge for Shea pickers. Analyses from the responses show that although Shea nuts grow wild and pickers do not often need to pay for collecting the nuts, generally they are restricted to only Shea trees on their own farmland or "no man's land." It is against community rules to pick Shea nuts on other people's farmlands except with the permission of the person which is hardly offered.

This restriction poses a challenge among the Shea nuts pickers in terms of access to quantity and quality Shea nuts in that since the Shea tree grows wild, Shea pickers who have small farmlands or farmlands that do not yield large quantities of Shea fruit are often forced to search deeper into the bush to competitively pick Shea nuts on "no man's land" with other pickers with similar challenges therefore expending more energy and time (Kent, R., and Bakaweri, C., 2010).

On the other hand, farm owners with large number of Shea trees might not be able to pick all the Shea nuts on their land during the season before they get rotten. Moreover, pickers who stubbornly encroach on other people's farmlands usually end up with quarrels with the farm owners (Kent, R., and Bakaweri, C., 2010).

The fourth problem is the seasonality of the Shea tree. The Shea tree often fruits between April and August. This makes it a seasonal tree and the Shea picking business, a seasonal one. Majority of Shea nuts pickers are usually out of business whenever the Shea tree is off season except for those who store their nuts against the off season period.

However, many of them complained that, because of their inability to collect large quantities of nuts during the Shea nuts season, the quantity they often store does not keep them in business throughout the off season period.

The fifth problem is a joint one: exposure to bad weather and predators and lack of protective clothes. The study showed that majority of the respondents did not have and cannot afford protective clothes like rain coats and wellington boots to protect themselves from rains and snakes during the picking process. By this, they are exposed to health problems and snake bites.

The sixth problem is the traditional methods employed from the point of picking to the point the kernel are ready for sale or use. Majority of pickers in the Nakolo community still rely on traditional methods to de-pulp, boil, de-husk and dry the nuts to meet their local commercial standards. Right from the point of picking through to the point of drying, each stage of the process is solely physically energy demanding and time-consuming. These collectively affect the level of production and quality of the kernel.

Shea Butter Processing Challenges

The key processing challenge uncovered by the study is the labour intensive and time consuming nature of Shea butter processing. Majority of the processors still rely on traditional methods of processing using sunlight to dry their kernel, wooden mortars and pestles to pound their kernel to grits, mill stones to grind the grits to paste, firewood to roast their grits and boil the butter, and head-portage to transport their products to the market.

Generally, the processors complained that these stages were manual, energy and time consuming, affecting their health and the level of productivity and profit of the Shea butter business.

Addaquay (2004) has confirmed these challenges associated with the traditional method of production. He further argued that this method is associated with low productivity in Shea butter production.

Shea kernel and butter Marketing Challenges

Limited product lines and quality issues have emerged as challenges in the local market. Unlike other related processors who produce different products from Shea kernel and butter such as soap, pomade and cosmetics, most of the processors in Nakolo were limited to mainly one product item – Shea butter. Although the residue from the husk and paste are used as fuel and paint in building respectively, these were purely for domestic purposes.

Peace Corps (2008) and Al-Hassan (2012) have observed that most of the Shea kernel and butter sold in rural markets are usually sold to households for domestic use or other petty traders for petty commercial use and therefore mostly limited to these traditional products.

Bekure, et al. (1997) has argued that the limited product line and quality issues in rural areas are partly due to lack of skills in new product development and quality standards by Shea pickers and processors in the local market.

Also another challenge is limited market access and market information. The study realised that apart from the local market, most of the Shea marketers were unaware of the opportunities of Shea business at the national and international levels. And if they were

unaware of these opportunities how will they know the product quality standards linked to these opportunities?

Further, Al-Hassan (2012) has argued that, partly, inadequate market access and information is due to the low educational level of Shea nut pickers and processors. This study found that majority of the respondents are not formally literate (they cannot read and write).

Low demand and low prices of Shea kernel and butter in the local market is also a major concern among the households. The general view was that supply of kernel and butter is higher than demand in the local market. This is partly contributed by the fact that almost every household in the community engages in one way or the other in Shea business.

Although Lovett (2004) indicated that rise in prices in Shea kernel is partly driven by the high demand by the international market, in Nakolo market, the trend shows that there has been an insignificant rise in price over the last three years. This could be partly attributed to the fact that most of the kernel produced for the local market in Nakolo is for domestic and local use.

Effects of Shea Business Constraints to Household Income and Food Accessibility

The challenges within the Shea business boil down to one key issue: lower household incomes impacted by lower demands and profits of Shea kernel and butter in the Shea business households are engaged. Also, the manual nature of the Shea business affects the capacity and production rates of the households.

Several authors have argued that the tedious, time-consuming and traditional methods of picking and processing Shea nuts result in lower productivity affecting household income (Addaquay, 2004; Lovett, 2004; Peace Corps 2008).

Possible Solutions

Pickers

For Shea picking, the study showed that support in the areas of means of transport, protective clothes and drying and de-husking machines will go a long way to ease the energy and time consuming nature of the picking process among the Shea pickers. Generally, the households look up to government and other related non-governmental organisations to make some interventions in these areas.

The literature has argued that collection of Shea nuts may be enhanced through increased access to transport and controlled burning of bush by farmers early in the season of the Shea tree prior to flowering (Kadiri, 2000).

Processors

For Shea processing, for ease of processing, support in the form of acquiring appropriate equipment and technology for each stage of the Shea processing including dryers, crushers, roasters, grinding mills and kneaders to replace the manual method of sun-drying, hand crushing and pounding, stone milling and hand kneading respectively will go a long way to reduce demand on labour energy and time and increase production.

Arguments in the literature suggest that if the traditional system of processing is semi-mechanised, extraction rates of Shea butter could rise as high as 20-40% in quantity as against the current production rate and capacity as well as address processing inefficiencies (Wallace, 1995; Addaquay, 2004).

Although some of the households indicated that they will prefer to work in groups to collectively acquire some of these kinds of equipment and machines, they are also looking

up to government and non-governmental organisations to support them with these machines as well as equip them with skills through training.

Marketers

A number of challenges have emerged from the study about market conditions in the local market including: limited product lines (kernel and butter) and quality issues, lack of skill training in new product development and general management, limited market access and information on market opportunities and low demand and low prices of kernel and butter all related to the local market.

For Shea kernel and butter marketing, the study showed possible solutions to addressing marketing problems were new product development for kernel and butter, access to external markets beyond the local market and organising Shea pickers and processors into groups or co-operatives.

Moreover, the literature has argued that simple products of value can be developed and new markets accessed in rural areas if Shea pickers and processors are given solid training in new product development, production quality standards, basic skills in literacy and numeracy and access to basic inputs for product formulation, packaging and labelling (Bekure, et al., 1997; Collinson and Zewdie-Bosuener, 1999).

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

This chapter highlights the conclusion of the study and some recommendation to help improve the Shea industry in the rural areas and as a result also improve the living standard of these rural households as well as their food security level and the sustainability of the Shea industry.

6.1 Conclusion

This study set out to assess Shea nut processing and income of Shea nut producing communities to household food accessibility with Nakolo in the Kassena Nankana West District in the Upper East Region of Ghana as the case.

Generally, the findings of this study suggest that although Shea nut – picking, processing and marketing – is considered one of the major sources of income to rural households like other income generating activities like farming, dry season gardening and livestock and poultry rearing, the income generated from Shea business in rural communities is insufficient to meet their household food accessibility and income. Food security is still a major problem.

Specifically, although Shea business is “women’s trade”, the income generated by women engaged in Shea business is still influenced by men (husbands) because of their cultural status as the “heads” of the family meanwhile these men hardly play any significant roles in the Shea business. However, women are beginning to have more say in household income and expenditure decisions.

The major Shea income generating activities among the households are picking, processing and marketing of Shea kernel and butter in the local market. However, the research found that the rural households are still saddled with traditional, labour intensive, time consuming and manually operated methods of picking and processing Shea nuts into Shea kernel and butter which stifle the profitability of the Shea business. Moreover, majority of the women entrepreneur are limited to only the local market, selling Shea kernel and butter to other households and petty commercial traders. Although majority of the respondents consider shea processing a business, it would not be considered a profitable one in rural setting if all cost components are paid for. Shea business is a “hand-to-mouth” business venture among rural households.

The study also realised that the Shea business is saddled with myriad of problems ranging from bushfires, land tenure issues, lack of transportation to sources of Shea nuts, use of primitive equipment and laborious methods for processing Shea kernel and butter, limited access to market information and opportunities, limited access to national and international markets, lower prices and demand for Shea kernel and butter.

6.2 Recommendations

Drawing from the views of the households and the findings of this study, if rural Shea business is to become profitable and sustainable and increase household income, the following recommendation should be observed:

Households: Instead of working as individual entrepreneurs, the households should come together to work in groups as co-operatives. This approach will help them to have a collective voice to address bushfire issues, the cutting down of Shea trees for firewood, land tenure issues and other related challenges in the community.

A well organised and viable group formation will improve coordination and also help these women to put their resources together to improve the quantity of Shea nut picked and butter processed as well as ease the laborious time involved in the whole process.

These women processors in a group could also on their own responsibility or with the support from other stakeholders, make occasional study tours to other processing groups to learn and build their skills in processing quality shea products to meet both the national and international market standard.

Government and Non-governmental organisations (NGOs): The Government of Ghana through Ministry of Food and Agriculture together with other stakeholders in the Shea industry could embark on the following to boost the Shea sector in the district:

- Skill Training: Government and NGOs should provide skill training in new product development to the Shea processors to expand their product line from Shea butter to other products like soaps and pomade. Also, basic management, book and record keeping skills should be incorporated in the skill training.
- Processing equipment: Interventions should also be made by government and NGOs through provision of protective clothes, equipment like gas stoves, dryers, crushers, grinding mills, kneading and boiling machines to improve or replace the traditional methods of processing through a credit scheme.
- The households collectively should also be linked to appropriate and available market channels especially on the national and international scales especially Shea nut processing factories to increase the demand, prices and profitability of Shea kernel.
- The Ministry of Food and Agriculture should strengthen its extension network to make periodic and up-to-date market information available on Shea nuts to the rural households and also in collaboration with interested stakeholders facilitate the group formation.

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ANNEXES

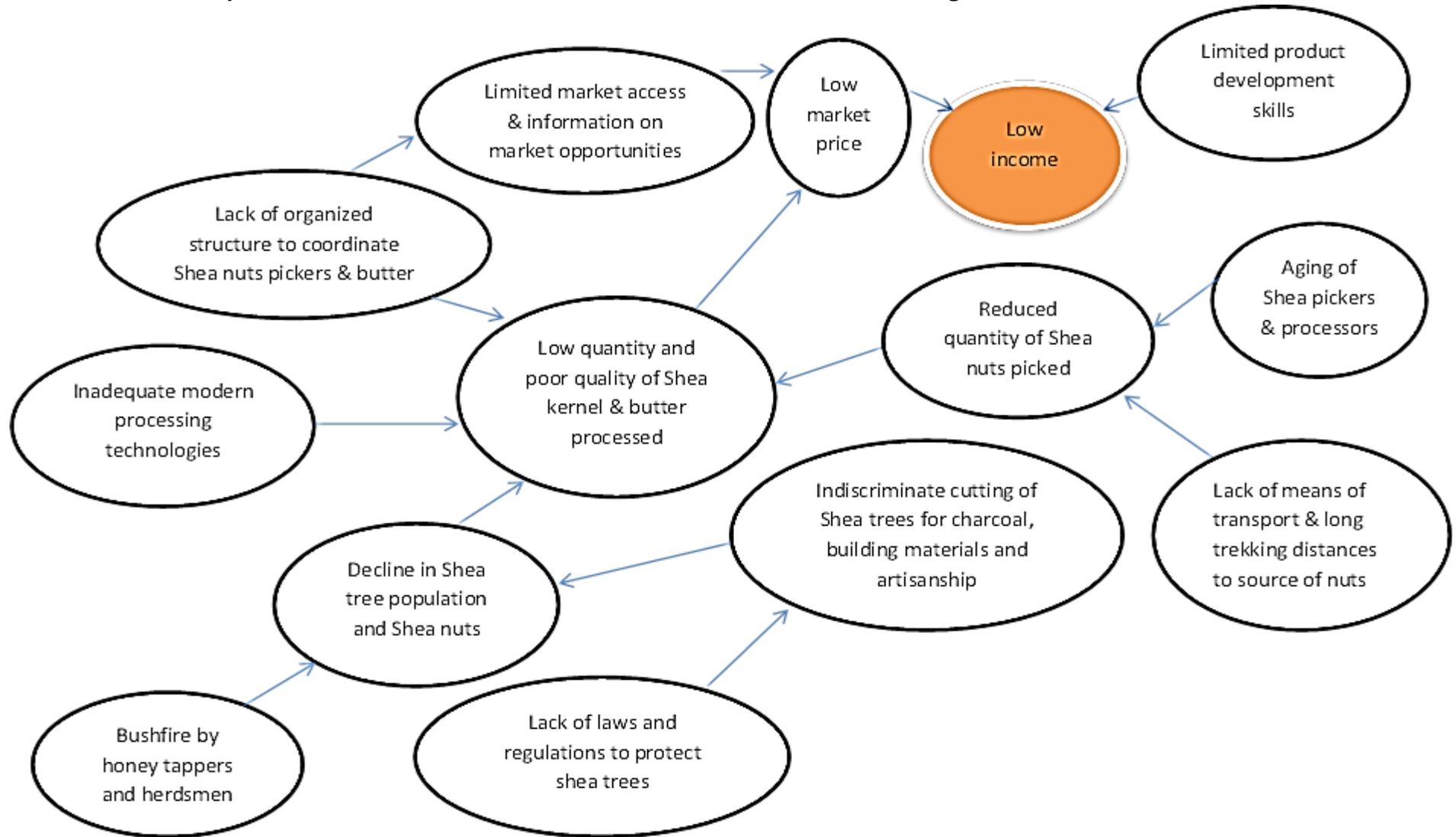
Annex 1: UEMOA (Union Economique Monétaire Ouest Africaine) Standards for Unrefined Shea Butter

Parameter	1st Grade	2nd Grade	3rd Grade
Free fatty acid (%)	- to 1	1.1- 3	3.1 – 8
Peroxide value (mEq)	- to 10	11 – 15	15.1 – 50
Moisture content (%)	- to 0.05	0.06 - 0.2	0.3 – 2
Insoluble impurities (%)	- to 0.09	0.1 - 0.2	0.3 – 2

Source: Shea Butter Export Guide (2005). WATH.

Unrefined Shea butter of **First grade** can serve the needs of the cosmetic and pharmaceutical industries, and for direct consumption. Unrefined Shea butter designated as **Second grade** can serve the needs of the food industry (confectionery, chocolate, edible oil, or as a basis for margarines), while unrefined Shea butter considered **Third grade** can serve the needs of the soap-making industries, or can be refined for direct consumption.

Annex 2: Visualised problem after field work –Causes and Effects of Shea Nut Processing in Nakolo



Annex 3: Checklist for individual household interview

INTRODUCTION

The researcher is a graduate student at the Van Hall Larenstein University of Applied Sciences, Wageningen in the Netherlands. This study is conducted as part of the requirement for the award of Master of Management in Rural Development and Food Security. The information will be treated as highly confidential. The result from the study will be used strictly for academic purposes and for future developmental interventions that would benefit the Nakolo community.

BACKGROUND INFORMATION

Name of respondent..... Age ()

Location.....

Marital status.....

Educational Level.....

Which category? a. picker b. processor c. Marketer

Does your household consider shea nut picking and butter processing as a business?

Yes / No.....

How many members are in the household?

A. HOUSEHOLD FOOD ACCESSIBILITY

1. Does the household have access to food all year round? Yes / No
2. If yes, what are the sources of food to the household?
3. If no, what are the alternative sources of food to the household?
4. Which period of the year do you experience hunger in the household?
5. How long does the household food last?
6. What are some of the coping strategies used by the household during the hunger periods?
7. Would you classify shea butter processing as an important venture to your household food access? If yes or no why
8. What shea products do you consider food to the household and what quantity do you consume?

B. HOUSEHOLD INCOME GENERATION & MANAGEMENT

9. What activities are the sources of income to the household?
10. Which household members are involved in these activities?
11. How is the income managed?
12. List the most important things that you spend the money on and prioritize them

13. Who has control over the general household income? Why
14. What percentage of the household income does shea nut or butter contribute to?
15. Who controls the income generated from shea nut or butter? why

C. INCOME GENERATING ACTIVITIES IN THE SHEA INDUSTRY

Shea Nut Picking

16. How long have you been into shea nut picking?
17. Where do you pick your nuts? From your own land or community owned?
18. If you pick from a community owned land, do you pay anything or are there any rules to abide? If any what are the rules
19. If you pay, how much
20. What is the distance from your house to where you pick the nuts?
21. How long does it take you to walk to the place?
22. How often do you go for nut picking? In a day..... Week..... month.....
23. Which periods are the nuts in abundance and which periods are they less?
24. What quantity of shea nut do you pick in a day, week & month/ year?
Day.....Week.....Month.....
25. Are the shea trees owned by the community or they are located on your farm?
26. Describe the procedures involved from picking the shea fruits till the nuts are ready to be sold.
27. What determines the quality of the nuts?
28. Do your nuts meet this quality? Yes / No. If no, why?
29. Is higher quality fetching higher price? Yes / No
30. Where do you sell the nuts? Is it in the local market or to middleman or outside the region?
31. Which of the answers in 30 gives better prices? And why?
32. At what price for what quantity (kg) of nuts?
33. Have there been changes in price over the years? Yes or No. if yes, why
34. What are the price trends over the last five years?
35. What period in the year do you get very good price for your nuts? (Reasons)

Shea Butter Processing

36. How long have you been processing shea butter?
37. Where do you get the shea nuts from? Buy or you pick from your own land or community owned?
38. If you pick from community owned land, do you pay anything or are there any rules to abide? What are the rules?

39. If you pay, how much
40. If you buy, where do you buy the nuts from?
41. How much do you buy for what quantity?
42. At what period do you get better price of the nuts to buy?
43. Do you normally buy at the period? Yes / No
44. If no, what are some of the reasons that prevent you from buying your nuts at the period?
45. Do you get the shea nuts all year round? During what period are you in business?
46. How is shea butter processing done?
47. What method do you use in processing the nut? Traditional, semi-mechanised or fully mechanised?
48. What equipment do you use in process if any? Hired machines or Own machine (estimate cost)
49. What determines the quality of your butter?
50. Do you have access to information on the quality standards required? If yes, what is the source?
51. Have you received any training from any organisation on how to process quality butter? If yes, which organisations
52. Have you been assisted by any organisation with some equipment? If yes, which organisation and what are the equipment
53. Are there any conditions attached?
54. Have there been any improvements in the way you process butter over the years? If yes, what are the improvements
55. What improvements in methods/technology are possible?
56. Are there alternative ways you can use?

Marketing of Shea kernel and butter

57. How do you package each of the products for sale? Kernel or Butter
58. Are there any quality standards for the kernel or butter at the local and international market? If yes, what are the standards? For kernel and butter
59. Do your kernels or butter meet such standards? If no, why?
60. Which organisation certifies the quality standard of your shea kernel or butter?
61. What price do you get for each quality standard classification?
62. What are some of the reasons why the shea kernel and butter processors do not meet these standards?
63. How do you get shea kernel or butter to sell? On contract basis or individual small scale pickers or processors respectively?

64. At what price do you buy the kernels or butter? Kernel..... or butter.....
65. Which period of the year do you get good sales?
66. At what level do you sell the kernel or butter? Local, national or export market
67. What are the prices at each level of your marketing channel for shea kernel?
Intra-regional (GH¢.....), Inter-regional (GH¢.....), Export market (GH¢.....)
68. What are the prices at each level of your marketing channel for shea butter?
Intra-regional (GH¢.....), Inter-regional (GH¢.....), Export market (GH¢.....)
69. Are there price variations for the shea product? Why?
70. How do your customers get to know about your shea product? Any advertisement or marketing methods?
71. What has been the price trend over 5 years? Reasons
72. Do you get regular market for your kernel and butter? Yes or No
73. If yes, is it at the local market or on contract basis or sell to a middle man or outside the region?
74. If no, what can you do to improve your business?

Profitability of Shea activities to households

75. How much time is involved in picking the nuts?
76. How much shea nut do you process within a day, week, month/ year?
77. What quantity of nuts is processed to produce 1 bowl (kg) of butter?
78. How long does it take to process 1 bowl (kg) of butter?
79. What quantity of shea butter is processed within a day, week or month?
Day.....Week.....Month.....
80. How long does it take you to process? (Labour hours)
81. How many people are involved in the process?
82. Do you hire labour or its family labour?
83. If hired labour, how much do you pay per person per day or month?
84. Do you consider shea business profitable?
85. How much do you generate from the sale of butter in a day, week or month?
Day.....Week.....Month.....
86. What quantity of butter is consumed by the household?
87. What quantity of butter is sold in a week or month?
88. What other products do you make from shea butter? Describe the process involved
89. Comparing the shea butter with these products which of them generates more income and why?

D. MAJOR FACTORS THAT MILITATE AGAINST SHEA NUT PICKING, PROCESSING OR MARKETING

90. What are the constraints in shea nut picking, processing and marketing?
91. How do these constraints affect household income and food accessibility?
92. How should these constraints be addressed?

Annex 4: Checklist for focus group discussion

1. What are the major sources of income in the community?
2. Rank the activities according to their priorities
3. What are the gender roles in these income generating activities?
4. What percentage proportions of the incomes generated contribute to the household income?
5. What are the major needs of the household that these incomes are spent on?
6. Rank these activities in the order of priority