

**COLLEGE OF HUMANITIES**

**UNIVERSITY OF GHANA**

**THE SHEA INDUSTRY: A TOOL FOR POVERTY REDUCTION AMONG RURAL  
WOMEN IN NORTHERN GHANA**

**BY**

**FRANCIS ANAFO  
(10507227)**

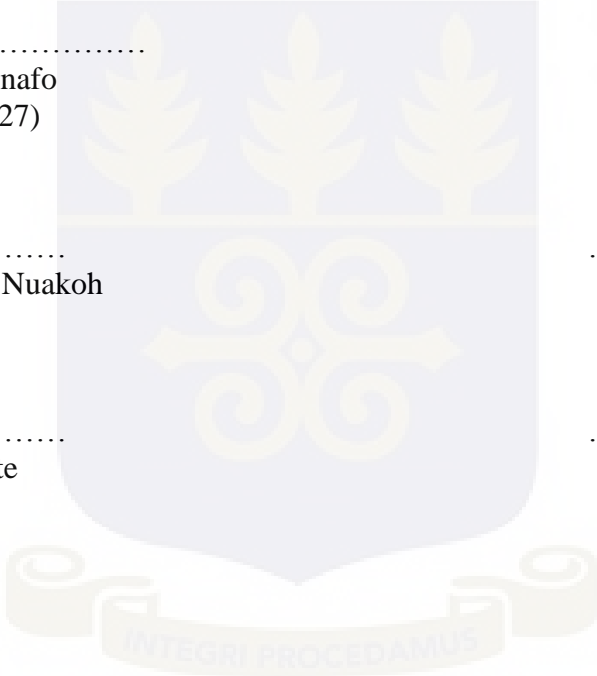
**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN  
PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF  
MPHIL ECONOMICS DEGREE.**

**JULY 2016**

## DECLARATION

I, Francis Anafo hereby declare that this work was carried out by me under the supervision of Professor A. Baah Nuakoh and Dr. Yaw Asante and that no previous submission on this topic has been made to the University of Ghana or any institution. However, related research works that aided me in my study are duly acknowledged accordingly by reference to the Author(s).

..... Francis Anafo (10507227)	..... Date
..... Prof. Amoah Baah Nuakoh (Supervisor)	..... Date
..... Dr. Yaw Asante (Supervisor)	..... Date



## ABSTRACT

Over the last three decades Agriculture has gained enormous success in reducing poverty on a global scale. In Africa, much of the impetus behind the large and increasing support from governments, NGOs and benevolent agencies for the Agricultural sector including the Shea industry, hinge on the assumption that its economic and social impact are momentous and influential in alleviating poverty among the unskilled labour force most especially among the rural folks and its contribution to food security. This study empirically examined the role of the Shea industry as a tool for reducing poverty among rural women in thirty-five (35) selected rural Shea communities in the three regions of Northern Ghana. The study sought to find out the sources and types of funding arrangements, ascertain whether women have access to logistical support and the influencing factors, determine Shea butter processing techniques in the communities, identify production constraints as well as peculiarities of women engage in the Shea industry. The study employed descriptive and inferential analysis coupled with the probit and multiple linear regressions for further analysis of the data. Primary data were collected by administering questionnaires to a sample size of 210 Shea farmers using multi-stage random sampling techniques. The statistical package STATA was used to analyze the ordinary least squares parameters at 1% and 10% levels of significance. The study revealed that labour, technology, education and logistical support were found to be positively and significantly related to output whereas the Probit regression results indicated that the probability that a shea picker or butter processor would receive some logistical support is significantly determined by one's level of output, processing technique and capacity training. Again, the study showed that 60.48% of the women are energetic and have the potential of increasing their productivity when given the needed support, 58.7% of respondents largely depended on the shea industry as a

source of their livelihood, 67.14% were married and 30% widows, 68.1% had no formal education while 31.9% of respondents had some form of formal education. Moreover, the study found that 43.3% of respondents relied on personal savings as a source of funding their shea business whereas about 39.1% of the women benefited from benevolent NGOs. However, contract financing, leasing credit, and micro credit schemes were found to be the funding arrangements in the industry. Furthermore, the study showed that majority 56.7% of respondents adopted the semi- mechanized processing technique while 43.3% relied heavily on the traditional method to process their nuts into butter. Major production constraints in the Shea industry include; inadequate support in terms of credit and logistics, inadequate processing equipment, limited supply of labour, high illiteracy rate, exploitation by Agents (middlemen and women) and unfavourable weather conditions. The study concluded that the Shea industry in its current state might not help in a substantial increase in the incomes of rural women unless stakeholders (government and NGOs) intervene with the needed logistical support coupled with building the entrepreneurial skills of women engaged in the Shea industry. The study recommends; the decoupling of the Shea unit from COCOBOD, PBCs should buy directly from the farmers, GRATIS foundation should design equipment for the industry at a subsidized cost, organize the women into cooperative groups and assist them access extension services, credit and logistics support as well as ready market for their produce and more research should be conducted by the CSIR, SARI and CRIG to reduce the maturation period of the shea tree.

## DEDICATION

This project is dedicated to my family for their love, care and support given me during my study.



## ACKNOWLEDGEMENT

This report would not have been effective and successful without the enormous contributions and support given to me. It is in the light of this that I wish to express my heartfelt gratitude to some conscientious and dedicated people behind the scenes.

First and foremost, my thanks goes to the Almighty God, the giver and sustainer of life for his love, guidance and protection.

I am indebted to my supervisors, Professor Amoah Baah Nuakoh and Dr. Yaw Asante, for their enormous inputs, supervision, and incalculable moral support and being part and parcel towards the success of this study. I am grateful to the lecturers of the Department of Economics most especially Professor Peter Quartey, Professor A. K. Fosu, Dr. Louis Boakye Yiadom, Dr. Daniel Twerefou, Dr. Barimah Alfred, Dr. Ebo Turskon, Dr. Eric Osei Assibey, Dr. Micheal Danquah, Dr. Baah Boateng, Dr. Fritz Gockel and to all staff of the department for their unflinching support and advice during my two years stay in the University.

I wish to acknowledge and appreciate the efforts of Mr. Apana Thomas, Madam Agatha Awiah and Staff of Abilba N<sup>o</sup> 1 J.H.S, Madam Ernestina Apaasinaba, Mrs. Atule Beatrice, Mr. Atinge Francis, Mr. Ismeal Akolbila, Mr. Desmond Mohammed, Mr. Dongyeru Ignatius, Mr. Issah Fred, Mr. Abdul Kairi Mashud, Mr. Tienaah Edward, Mr. Ekow of PBC Shea limited, and Mr. Koffi of Ghana Specialty fats for their selfless support in diverse ways.

I also wish to acknowledge the department seminar/project coordinator, Dr. Louis Boakye Yiadom and the hardworking team for working diligently in their exercise of academic competence in making theses a reality and also giving the program the necessary recognition. I Say Bravo!

## TABLE OF CONTENTS

CONTENT	PAGE
DECLARATION.....	i
ABSTRACT.....	ii
DEDICATION.....	iv
ACKNOWLEDGEMENT.....	v
TABLE OF CONTENTS.....	vi
LIST OF FIGURES.....	xi
LIST OF TABLES.....	xiii
LIST OF ACRONYMS.....	xiv
CHAPTER ONE: INTRODUCTION.....	1
1.0 Background to the Study.....	1
1.2 Statement of the Problem.....	4
1.3 Objective of the Study.....	7
1.3.1 Specific objectives.....	7
1.4 Relevance of the Study.....	8
1.5 Organization of the Study.....	8
CHAPTER TWO: AN OVERVIEW OF THE SHEA INDUSTRY IN GHANA.....	10
2.0 Introduction.....	10
2.1 Structure of the Shea Industry.....	10

2.1.1 The Shea Tree .....	11
2.1.2 Economic Significance of the Shea Tree .....	13
2.1.3 Factors affecting the yield of the Shea Fruits .....	14
2.1.4 The Shea industry in Ghana .....	15
2.1.5 The Shea Value Chain in Ghana .....	18
2.2 Production of Shea nut / butter in Ghana.....	20
2.2.1 Processing Stages of the Shea Nuts .....	20
2.2.2 Butter Extraction Process .....	21
2.2.3 Shea Butter Processing Techniques .....	23
2.2.4 Some production challenges .....	27
2.3 Financing of the Shea Industry .....	28
2.4 Marketing of Shea Nuts and Butter .....	30
2.4.1 Some Marketing Challenges .....	33
CHAPTER THREE: LITERATURE REVIEW.....	34
3.0 Introduction.....	34
3.1 Theoretical Review .....	34
3.1.1 Concepts and Measurements of poverty .....	34
3.1.2 Measurement and Poverty lines in Ghana.....	37
3.1.3 Causes of Poverty.....	38
3.1.4 The Concepts of Value Chain .....	39

3.1.5 Value Chain Development .....	41
3.2 Empirical Review.. .....	43
3.2.1 Agriculture Growth and Poverty Reduction .....	43
3.2.2 Empirical studies on poverty reduction on Shea Industry .....	50
3.2.3 Interventions by Non-Governmental Organisations (NGOs) in the Shea Industry....	53
<b>CHAPTER FOUR: METHODOLOGY OF THE STUDY .....</b>	<b>56</b>
4.0 Introduction.....	56
4.1 Scope of the Research.....	57
4.2 Study Area .....	58
4.2.1 Profile of Nadowli – Kaleo District.....	58
4.2.2 Profile of Wa East District .....	60
4.2.3 Profile of Central Gonja District.....	62
4.2.4 Profile of the West Mamprusi District.....	64
4.2.5 Profile of the Talensi District.....	66
4.2.6 Profile of Nabdam District.....	69
4.3 Sources of Data.....	71
4.4 Sample Size and Sampling Techniques .....	71
4.4.1 Population of the Study.....	71
4.4.2 Sample Size.....	72
4.4.3 Sampling technique.....	72

4.4.4 Sample Size Distribution .....	74
4.5 The Probit Regression Model Specification .....	76
4.6 The Multiple Linear Regression Model Specification.....	79
4.6.1 Hypotheses of the study .....	80
4.7 Research Design .....	80
4.8 Ethical Consideration.....	81
<b>CHAPTER FIVE: DATA PRESENTATION AND ANALYSIS.....</b>	<b>82</b>
5.0 Introduction.....	82
5.1 Descriptive Analysis .....	82
5.2 Sources and types of funding available to women in the shea industry .....	84
5.2.1 Sources of Funding .....	84
5.2.2 Funding Arrangements.....	86
5.3 Shea Butter Processing Techniques Utilized in the Study Areas .....	89
5.4 Results from the Probit and Multiple Linear Regression Models .....	93
5.5 Income Analyses for Pickers and Shea Butter Producers.....	18
5.6 Challenges in the Shea Industry .....	101
5.7 Major Findings of the Research.....	102
<b>CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>105</b>
6.0 Introduction.....	105
6.1 Conclusions.....	105

6.2 Recommendations.....	108
6.3 Limitations of the Study .....	111
REFERENCES.....	112
APPENDIX .....	120



## LIST OF FIGURES

FIGURE	PAGE
Figure 2.1: Estimated Range and Main Shea Kernel Production Areas .....	11
Figure 2.2: The shea Tree.....	12
Figure 2.3: Shea Value Chain.....	19
Figure 2.4: Quality Shea nuts; best practices for production.....	21
Figure 2.5: crushing of nuts into grits at the mill .....	22
Figure 2.6: Roasting of grits using a roaster.....	22
Figure 2.7: Milled paste.....	22
Figure 2.8: Kneading process start.....	22
Figure 2.9: Crude butter starts to float.....	23
Figure 2.10: Separating butter from dirty water fraction.....	23
Figure 2.11: Emulsion on fire Figure.....	23
Figure 2.12: Semi solid shea butter.....	23
Figure 2.13: Flow diagram showing Traditional Production Process.....	24
Figure 2.14: A flow chart which includes the use of appropriate equipment for processing.....	26
Figure 2.15: Flow diagram showing a fully mechanized Production Process.....	27
Figure 4.1: Location of Nadowli – Kaleo District.....	58
Figure 4.2: Location of Wa East District .....	60
Figure 4.3: Location of Central Gonja District .....	62
Figure 4.4: Location of the West Mamprusi District .....	64

Figure 4.5: Location of the Talensi-Nabdam Districts..... 66

Figure 5.1: A pie Chart Showing Sheabutter Processing Technologies among Respondents.....91

Figure 5.2: A Bar Graph Ranking Women Activities in Order of Difficulty.....91

Figure 5.3: A Bar Graph Showing Marketing of Nuts Based on Quality.....91



## LIST OF TABLES

TABLE	PAGE
Table 2.1: Estimated Annual Shea Kernel Production and Utilization in tones.....	32
Table 4.1: Estimated Shea population in selected communities of the Upper East Region.....	74
Table 4.2: Estimated Shea population in selected communities of the Upper West Region.....	75
Table 4.3: Estimated Shea population in selected communities of the Northern Region.....	76
Table 5.1: Socio - Economic Characteristics of Respondents.....	84
Table 5.2: Sources and types of funding available to women in the shea industry.....	88
Table 5.3: Livelihood Activities and Effects of the Shea Business on the rural woman.....	89
Table 5.4: Awareness of Quality of nut/butter and sources of information.....	93
Table 5.5: Probit analysis of Determinants of support accessibility.....	94
Table 5.6: The ANOVA table.....	94
Table 5.7: Ordinary Least Squares Results of the Multiple Linear Regression Model.....	96
Table 5.8: A Pairwise Correlation Matrix showing the correlation coefficients of the explanatory variables.....	98
Table 5.9: Income of shea pickers.....	99
Table 5.10: Income of shea butter processors.....	100

## LIST OF ACRONYMS

IFAD	International Fund for Agriculture Development
FAO	Food and Agricultural Organization
GLSS	Ghana living standard survey
WATHs	West African Trade Hubs
UN	United Nation
CRIG	Cocoa Research Institute of Ghana
NGOs	Non- Governmental Organisation
SADA	Savanna Accelerated Development Authority
MOFA	Ministry of Food and Agriculture
PBC	Produce Buying Company
NBSSI	National Board for Small Scale Industries
ACDEP	Association of Church Development Projects
YES	Youth Enterprise Support
AfDB	Africa Development Bank
ROSCA	Rotation Credit and Saving Association
CBE	Cocoa Butter Equivalent
US	United States

OLS	Ordinary Least Square
UNDP	United Nation Development Program
SPL	Subjective Poverty Line
LPL	Leyden Poverty Line
GCC	Global Commodity Chain
GVC	Global Value Chain
SME	Small and Medium Scale Enterprise
SHGs	Self Help Groups
AFE	Action for Enterprise
ECM	Error Correction Mechanism
MDG	Millennium Development Goals
MPI	Multidimensional Poverty Index
WHS	World Health Survey
DHS	Demographic and Health Survey
CGE	Computable general equilibrium
OECD	Organisation for Economic Corporation and Development
EMM	Economy Wide Multimarket
GDP	Gross Domestic Product
ISSER	Institute for Statistical, Social and Economic and Research

ISBPT	Improved Shea Butter Processing Technology
BP	Bridge Press
NPV	Net Present Value
BC	Benefit Cost
PDA	Preliminary Data Analysis
LPM	Linear Probability Model
FGM	Foster, Greer and Thorbecke
SNV	Stichting Nederlandse Vrijwilligers
CSIR	Centre for Scientific and Industrial Research
SARI	Savannah Agricultural Research Institute
GRATIS	Ghana Regional Appropriate Technology Industrial Service
MMDs	Metropolitan, Municipal and Districts Assemblies
ASV	Anti Snake Vernon
LPG	liquefied petroleum gas

# CHAPTER ONE

## INTRODUCTION

### 1.0 Background to the Study

The contribution of the Agricultural sector towards poverty reduction over the years has been very tremendous. According to the World Bank (2014), about 70% of the rural poor in the world are engaged in agricultural activities as the mainstay of livelihood. Again, many countries experienced a substantial reduction in rural poverty largely due to high rates of growth recorded in agriculture. For instance China's rural poverty declined to 8% in 2001 from 53% in 1981, (Ravallion and Chen, 2007). In Sub-Saharan Africa, agricultural activities have the prospects and propensity of boosting economic growth. A study by the IFAD et al, (International Fund for Agriculture Development, 2001), argued that Africa has the arable, fertile and favourable climatic conditions to produce enough to feed itself and the rest of the world. This dream could have been achieved if African governments had invested adequately in the agricultural sector and created right policies and conducive atmosphere for smallholder farmers to thrive.

It is therefore not surprising that Africa today depends largely on other continents to feed its growing urban population largely due to low use of technology, poor access to extension services, unreliable and unpredictable markets, poor infrastructure, inability to access microcredit, expensive farm inputs such as fertilizer and limited land security. These have made it difficult for the farmer in Africa to produce in commercial quantities for the markets and thereby earn some income.

According to the Food and Agricultural Organization (FAO, (2002), investing in the agricultural sector in sub-Saharan Africa, is an effective means of reducing poverty by eleven times compared to investing in other sectors of the economy. It is intriguing to note that in developing countries, women play a key role in providing labour for post-harvest activities, and dominate in the rearing of birds and animals and the production of legumes and vegetables, (United Nations report, 2006). In recent times, the success chalked in Ghana's agricultural sector over the last 15 years translated into a twenty-four percentage point reduction in rural poverty. (World Development Report, 2009).

Akudugu, *et al.*, (2012) contended that inadequate financial support in developing countries, thwarted the adoption and use of improved inputs and modern technologies of farming. In a similar study, Karlan and Zinman (2006) espoused that in South Africa, recipients of financial support were shown to be better off than non-beneficiaries. Credit facilities improved the livelihoods of beneficiaries and moved them out of poverty, (Khan and Rahaman, 2007). In the view of Garba *et al.*, (2012), supporting women in the shea industry with microcredit would soar up production of quality shea nuts/ butter to meet both domestic and international demand while earning good income for their produce. This would entice others women as well as the male counterpart into the Shea business. According to Pufaa (2010), financing shea butter production is fairly satisfactory but the major gap is the absence of marketing support which makes butter producers unable to access the marketing opportunities of their products. Al-hassan (2015), concluded that access to market is crucial in stimulating entrepreneurial growth in Northern Ghana.

Shea production in West Africa is a good tool for poverty reduction in the fact that it is an activity exclusively engaged in by women. Since women control the collection of shea fruits

across the vast expanses of the shea belt, they control the sale of shea kernels to local traders, or if they decide to convert some shea kernels into butter, women perform the arduous task of processing nuts into butter for their own use, or for sale to exporters. Thus the Shea produces some income for women, (Elias and Carney, 2007). The shea tree bears a green- pulp fruits which fall under its own weight when it ripened. Women and children engage in the collection of the fruits spanning from April to August each year. The fleshy pulp is very nutritious and a source of food for the rural folks and other animals such as bats, cattle, and birds. Some domestic and industrial uses of the shea tree include; roots, leaves, trunk, bark, and cortex for the preparation of herbal medicines and; the trunk makes excellent charcoal and is also useful as a building material. Again the shea tree serves as a natural canopy to the environment and helps to slowdown both erosion and desertification. In addition to the above, butter is extracted from the kernel. The butter is also locally used in traditional medicines, cooking, cosmetics, chocolates, candles and pastries as cocoa butter substitute. It is also used in the pharmaceuticals and cosmetics industries because it contains substantial amounts of Vitamins A, E, and F. Shea industry is the mainstay of livelihood for many rural women in the three northern Regions. According to Lovett (2009), it is estimated that over 900,000 rural and peri-urban women are engaged in the collection and processing of over 130,000 tonnes of kernel annually across the three Northern regions. The shea commodity is mostly exported to Europe, North America and Asia. (Elias and Carney, 2007). In these continents, it is processed into a wide range of food products including chocolate and popularly used in the cosmetic industry, (Schreckenber, 2000).

Therefore, with the necessary assistance from government, financial institutions and NGOs, the shea industry has the potential of increasing the incomes of rural women, hence, a reduction in poverty in northern Ghana.

## **1.2 Statement of the Problem**

According to the Ghana living standard survey (GLSS 6, 2012/2013), about a quarter of Ghanaians are poor whilst a little below a tenth of the population are in extreme poverty. Despite the fact that extreme poverty level is quite low, it is prevalent in Rural Savannah, with a little over a quarter of the people falling into this category. In ranking the ten regions of Ghana in terms of poverty, the Upper West region is the poorest while Greater Accra region records the least number of poor people. Within the period 2012/13, rural savannah contribution to the poverty incidence was found to be higher than both the rural coastal and forest belt. Notably, rural savannah contributes more than forty percent of the overall poverty in Ghana. More than four in every ten persons are poor in Upper East (44.4%), increasing to one in every two in the Northern region (50.4%) and seven out of every ten in Upper West (70.7%).

According to Loayza and Raddatz (2010), the contribution of a sector to reducing poverty hinges on the sector's ability to employ majority of the unskilled labour force. However, the story is different in the Shea industry as the women are consistently and persistently exploited and repudiated of resources and information needed to live a decent livelihood, (Brandth, 2004).

Most of the women who are engaged in Shea industry are logistically and technologically handicapped, making it difficult for them to gather more fruits which subsequently reduces both quantity and quality of butter produced, thereby denying women the full benefit of their labour and resources. The shea pickers wake up as early as 4:00am and travel farther distance on foot

in search of shea nuts to meet higher production needs. They are mostly bitten by snakes while picking the nuts because they do not have any protective clothing like wellington boots and hand gloves, sodden the rains, harassed by monkeys and Fulani herdsmen. Others abandoned the nuts in the bushes because they are unable to carry the nuts home due to long distance. Processing the nuts into butter involves a series of monotonous activities, drudgery and time consuming, simply because they lack the logistics such as big pots, dryers, crushers, kneaders, grinding mills and many others to process the nuts. As argued by Seidu, (cited in Aboba, 2011), the role of NGOs and the state is very key in providing simple equipment and tools to reduce the drudgery associated with shea nut/butter processing.

In the view of Laube (2015), the sale of shea nuts earned income for rural women and poor rural households in Northern Ghana most especially at a time of the year when resources are scarce and hence reduces poverty to a considerable degree. He however admitted that, the low level of production was as a result of limited labour supply and the inaccessibility to shea trees thwarted the efforts of the women to increase their incomes. Ololade and Ibrahim (2014), espoused that the fall in production and level of income of shea butter processors is mainly due to unavailability of shea nuts which in the long run affects the quality and quantity of shea butter produced. This mean if a greater share of the annual fruit/nut production were collected and properly dried, household incomes could be significantly increased, hence a reduction in poverty among the rural women in northern Ghana. In a similar view, Pascal (1978) concluded that any decision taken to increase total output of shea nut/butter production, would eventually increase the incomes of producers, as well as improve their living conditions.

For instance, in Burkina Faso, an NGO affiliated to the United Nations (UN) has come to the aid of Burkina Faso shea butter processors to improve their economic returns through

strengthening the access to valuable nuts while sustaining the trees from uneconomic exploitation. To add to that, most of the products are packaged and shipped to meet standard demands of the US cosmetics markets. Again, with the help of the West African Trade Hubs (WATHs), two Ghanaian entrepreneurs, Madam Comfort and Gladys fill orders for more than 12,000 shea soaps and 4,000 creams to United States markets. In addition to boosting their revenues, the order will also provide employment for the women who supply the shea butter to the two businesses Lovett (2004). Furthermore, women in Sagnarigu and Walewale have benefitted from the Japanese government grant of about 86,000 US dollars to help them in the processing of shea butter and to help raise their living standards (Ghanaweb, 2009). As Holtzman (2004) argued that finance could be a major constraint to expanding the shea exports from West Africa and also argue that in order for West African producers to export high quality shea butter, method of collection and storage of nuts must improve. Meanwhile collection methods can only improve if adequate support is given for the development of the shea butter industry.

Shea nuts collection, butter processing and marketing when given the necessary support would have the potential to alleviate poverty among women in rural Northern Ghana if the State, NGOs, and other stakeholders harness the potentials of the shea sector in the country and take initiatives to capitalize on the begging opportunity to transform lives, communities and the national economy as a whole. The overall potential of the shea industry as a source of employment, poverty reduction, propelling growth in northern Ghana and a source of foreign exchange for the country is therefore not fully utilized.

It is against this background that the researcher seeks to examine the role of the shea industry as a tool for poverty reduction among rural women in Northern Ghana.

The research questions the study seeks to answer are as follows;

1. What are the sources and types of funding schemes available in the Shea industry?
2. Do women in the Shea industry have access to logistical support and what factors influence their ability to access these support?
3. What are the factors affecting the Shea industry in the study area?
4. What are processing techniques used by the women in the study areas?
5. What are the socioeconomic characteristics of women engaged in the Shea industry?

### **1.3 Objective of the Study**

The main objective of the research is to examine the shea industry: a tool for poverty reduction among rural women in Northern Ghana.

#### **1.3.1 Specific objectives**

1. To identify the sources and types of funding available to women in the shea industry.
2. To ascertain whether women have access to logistical support and the factors influencing their ability to access the support.
3. To identify factors affecting the shea industry in the study area.
4. To determine Shea butter processing techniques been utilized in the study areas.
5. To identify and describe the socioeconomic characteristics of women involved in the shea industry.

#### **1.4 Relevance of the Study**

This research would offer stakeholders the first hand information with regards to the way forward in smoothing the operations of the Buipe processing factory and other processing centres.

Also, findings of the research would help the Savanna Accelerated Development Authority (SADA) in their policy formulation geared towards poverty reduction among women in Northern Ghana.

It would also guide the Ministry of food and Agriculture in their policy formulation and implementation on shea kernel and butter production and exportation aimed at reducing poverty among women in the shea belt zone.

Again, this document would also be relevant to the Ministry of Gender, Children and Social protection as to the way forward in reducing the rate at which women and children migrate down south in search of jobs.

Furthermore, the research findings will also divulge to financial institutions, NGOs and well-wishers of the plight of the shea industry for restructuring.

Finally, findings in this research would aid other researchers to know the extent of work done or carried out in the shea industry.

#### **1.5 Organization of the Study**

The study is organized in six chapters as follows: Chapter one contains the background, research problem and the objectives of the study. Chapter two takes a look at the overview of the Shea industry in Ghana. Chapter three reviews both theoretical and empirical literature on the study. Chapter four delves into the methodology of the study. Chapter five discusses the Data and analysis of the empirical results. Chapter six draws

conclusions to the research objectives and make relevant recommendations for policy makers and other stakeholders.



## CHAPTER TWO

### AN OVERVIEW OF THE SHEA INDUSTRY IN GHANA

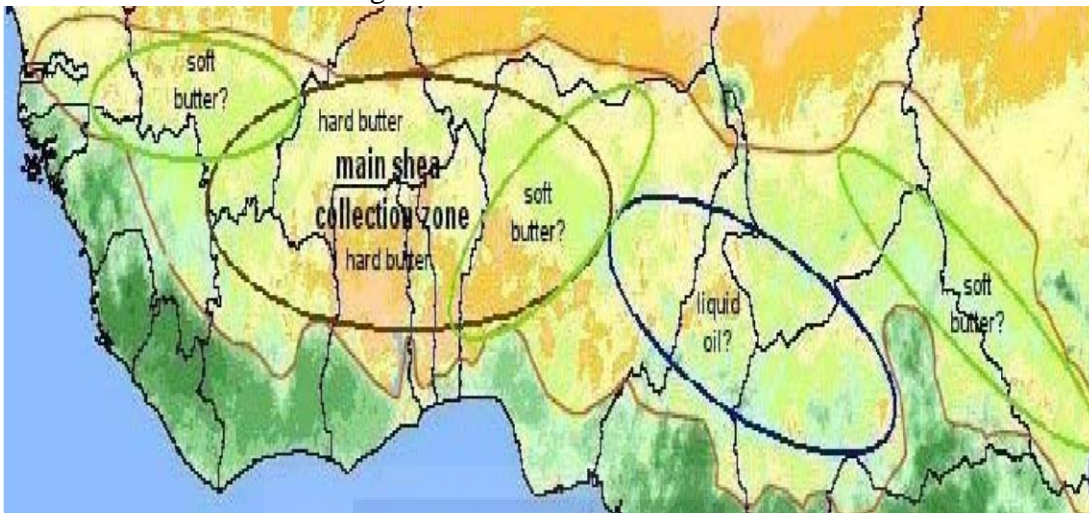
#### 2.0 Introduction

This chapter seeks to highlight the concept and historical perspectives of the shea industry. It particularly delves into the structure of the industry with emphasis on Ghana, the various mechanism involved in the production of the shea commodity, and how financing of the various activities of actors in the industry is done. The curtain is drawn to a close on the chapter by examining the marketing opportunities available for Shea products.

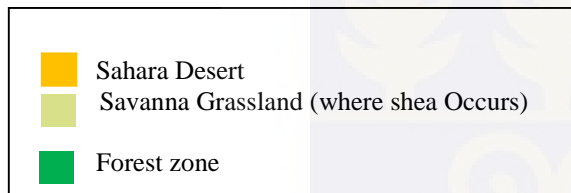
#### 2.1 Structure of the Shea Industry

The shea tree (*Vitellaria paradoxa*) has numerous dialect names, an indication of its widespread coverage approximately 5,000km from Senegal (West) to Ethiopia, Sudan, Uganda (East) and across the African Continent. The shea tree grows naturally in the wild, in the dry Savannah belt and semi-arid lands. The shea is found in 20 countries across the African continent namely; Ghana, Togo, Benin, Chad, Guinea, Burkina Faso, Senegal, Cameroon, Cote D'Ivoire, Central African Republic, Niger, Guinea Bissau, Uganda, Mali, Nigeria, Sudan, Ethiopia, Democratic Republic of Congo and Sierra Leone, (CRIG, Bole, 2002).

Figure 2.1: Estimated Range and Main Shea Kernel Production Areas



Source: WATH Technical Report No. 2.



The evolution of the shea industry began with the academic works on the shea plant by Mungo Park, a Scottish/English traveler in the 18<sup>th</sup> century who traveled between the Gambia River and River Niger, described the prominence of the shea tree and its products. The earliest research work on the biology of the shea tree in Ghana was conducted in 1928 on the flowering and propagation pattern of shea. Later in the late 1980s, a subsidiary of the Cocoa research institute of Ghana (CRIG), stationed at Bole in the Northern region of Ghana carried out scientific research on the shea tree with a core mandate to reduce maturation of the shea tree from 15 - 20 years to 7years. (CRIG, 2002)

### 2.1.1 The Shea Tree

The shea tree thrives on different soils and heights, except low lands that are frequently flooded (Boffa et al. 1996). A mature shea tree grows to an average height of about 15m with teeming

branches and a thick waxy and deeply fissured bark that makes it fire resistant. The yield per hectare of the tree is an average of 15–20kg of fruits annually. Some trees in suitable environment can yield up to 50–100kg per annum. In favourable environment, phonological germination of the nut takes place within 7 – 10 days. In places where nuts are planted the growth is slow and seedlings take 2 - 3 years to reach field planting. Gestation period lasts for 15 – 20 years which makes domestication difficult. Flowering starts at the age of 20 years, and the plant matures at the age of 40 – 50 years and can fruit for more than 200 years (CRIG, 2002). The shea tree is globally seen as a close substitute for cocoa to the extent that the shea can be used for all what cocoa is used for but same cannot be said for cocoa. The Shea tree has enormous uses ranging from domestic, industrial through to medicines uses.

Figure 2.2: The Shea Tree



Source: Field Survey, 2016

### 2.1.2 Economic Significance of the Shea Tree

The Shea tree plays an essential role for the livelihoods of the rural inhabitants over the years. Almost every part of the tree has some uses, ranging from domestic, to industrial through to medicinal. For instance, the fleshy pulp is very sweet and nutritious while the leaves are served as silage as well as an ingredient for making alkaline and paint (Carette et al., 2009).

#### (a) Industrial uses

The Shea butter is mostly used in the cosmetic, confectionery and pharmaceutical industries. The shea tree produces sap that can serve as a raw material for the gum and rubber industry. Also the edible fat is used for both medicinal and industrial purposes (Dogbevi, 2009).

#### (b) Domestic uses

Shea butter is mostly used as; edible oil, for traditional treatment and for hair and body creams. The butter heals like magic on burns, stretch marks, skin conditions, dryness and ulcerated skin. The vegetable fats it contains stimulates circulation and cell regeneration. It also serves as a substitute for margarine whereas poor quality butter is used as a source of light (Fobil, 2007). Again, the residue from the extraction of butter is mixed with mud for plastering traditional homes built with mud. Also, wood from the shea tree is good for making sturdy tools, pestles and mortars for food processing, hoe handles for farming and the sculpting of talking drums. Furthermore, the branch of the tree is used to inform in-laws the sex of a newly born baby. Finally, the fleshy pulp around the nut is very delicious and edible, making it the last resort as food for the rural folk especially farmers and children whereas the butter forms a chunk of oil consumption in most traditional homes in northern Ghana (Dogbevi, 2009).

### (c) Medicinal uses

The shea tree contains vital fatty acids that aids to protect and rejuvenate hair and damaged skin. Shea butter contains vitamins like A, E, and F, and other minerals. The vitamins help reduce wrinkling of the skin as well as other signs of ageing. It also assist in revitalizing and moisturizing of dull or dry skin especially during the harmattan winds where skins easily wrinkle, lips and feet easily crack, the butter plays a very crucial role in mitigating wrinkles and cracks. In traditional homes, the butter is used as pomade during pre-warm bath for babies to promote smooth agile skin. Not only that, it again stimulates the recuperation of the nipple of babies. Shea butter is used by most traditional healers to prepare ointments for the treatment of dislocations and fractures (Dogbevi, 2009). The bark and roots are mostly boiled or pulverized and then used to treat festering wounds, dysentery and other ailments (Fobil, 2007). Notwithstanding its enormous uses and benefits enumerated, the shea industry is yet to receive the needed attention it deserves (CRIG Bole, 2002).

#### **2.1.3 Factors affecting the yield of the Shea Fruits**

According to Dwomoh (2004), bush fires, harsh weather conditions, insects and parasites have a negative effect on the yield of the trees. In Dwomoh's view, droughts easily lead to crumpling of the seed or abortion of shea fruit. Most study respondents unequivocally espoused that the harmattan dust and strong winds cause flowers of the shea tree to drop down while others were of the view that droughts and bush fires have a negative effect on the flowers, fruits and shea tree. Some respondents however argue that most of the bust fires are deliberately set by the Fulani herdsmen to enable fresh grasses to grow easily while the Hunters set the fires to aid them hunt for "bush meat". These bush fires greatly affect young shea trees, killing them easily which affects tree regeneration. Furthermore, Caterpillars affect the foliage and fruits of the

shea tree. He found that a large quantity of caterpillars and tree foliage damage was recorded in the first week of August 2008. These caterpillars feed mostly on the foliage of the shea tree but go away when all the foliage on the tree is eaten up. Also some respondents stated that the mistletoe parasite affects the fruit yield especially if there are too many on the shea tree, the tree dies off. Dispersion of the shea nuts is done by both humans and animals like monkeys, bats.

#### **2.1.4 The Shea industry in Ghana**

The shea tree (*Vitellara paradoxa*) is found across northern Sub-Saharan Africa stretching along a narrow belt nearly 5,000 km long and 600 km wide with over 500 million trees across the semi-arid belt of Africa and in 20 countries across the continent. In Ghana, the *Vitellara paradoxa* is found all over Northern Ghana with few trees dotted around the Northern parts of Volta, Ashanti and Brong-Ahafo regions and covers a total land area of over 77,670 square kilometers. The Shea tree is densely populated in Tumu, East Gonja, West Dagomba, Wa, Nanumba South, Mamprusi, Lawra, Talensi/Nabdam, and West Gonja. (CRIG, 2002).

However, in Northern Ghana, the collection and processing of the shea nuts is predominantly a female pursuit that see women, often assisted by their children rushing to their farms as early as 4:00am largely due to the following reasons; (i) to enable them pick as many nuts as possible, (ii) the distant they have to walk before reaching their farms and bush, (iii) stiff competition from other women and the Fulani cattle and (iv) lastly to enable the women help their husbands in preparing farmlands or weeding the farms, since farming is the mainstay of rural livelihoods (study respondents, 2016). Shea nuts ripen at the beginning or during the rainy season, between June and August. This makes it feasible for women who are less busy on the farms during that

time, to engage in shea nut collection. Also the processing of the nuts falls within the jurisdiction of food preparation, mainly the responsibility of women. (Study respondents, 2016).

Women mostly pick as many nuts as possible from trees on farms and fallows or from trees in the bush. Picking of shea nuts on cultivated land is restricted to women whose husbands own the lands while shea nuts from uncultivated bush land is unrestricted. Most women carry the nuts in basin (approximately 15-20 kg) on their heads, wealthy women carry the nuts with a donkey cart and others with tricycles (popularly called motor king). In the house, the flesh pulp is either eaten or removed from the nuts, and the nuts are parboiled and left to dry. After drying, the nuts are de-husked from the shell and then dried again. (Study respondents, 2016). The dry nuts are then stored in sacks for sale, or processed into shea butter. Many respondents complained about the tedious and time consuming nature of picking the nuts as they get up at dawn and set off to their farms or into the bush. They sometimes cover a total distance of between 5 to 10 kilometers (Study respondents, 2016).

During a focus group discussion, some women lamented that *“Carrying such heavy loads on their heads and walking even half this distance demands a lot of energy. Since picking happens during the rainy season, we are often soddened by the rains and get sick, and we are sometime either frightened or bitten by snakes while searching for the nuts. Again, traditionally, all women know how to process shea nuts and prepare shea butter, but because of manual crushing of the nuts and the hand kneading, it has discouraged many of us from processing shea butter on regular basis and now we resort to either buying from the local market or from the industrially produced cooking oil”*. (Study respondents, 2016).

The shea tree unlike the cocoa tree, grows in the wild with a potential to be cultivated. The shea tree has served as an economic crop for the people of Northern Ghana for many decades now.

Traditionally, the picking and processing of the shea nuts into butter is solely the preserve of rural women and children. Due to this, the shea industry serves as a source of income for many poor households in Northern Ghana, with most of the women engaged in various businesses offered by the shea industry as a way of life rather than real business meant to supplement farm produce. (Study Respondents, 2016).

This clearly indicates the similarity between the small holder farmer in the cocoa industry and that of the shea industry, but the latter needs state intervention and support similar to the former to grow and flourish. The key stakeholders of the shea industry as identified by this study are institutions and individuals both at the community and district levels encompassing shea pickers in various households, shea processors, land owners, millers of shea and marketers of shea products. The most active of the shea stakeholders in the shea industry are Civil Society Groups comprising the Shea Dealers Associations in the three regions of Northern Ghana, Produce buying company (PBC), individuals as well as NGOs such as Afrikids Ghana, SNV, a Dutch Development Organization, Savannah Fruits Company, TechnoServe, Savanna Farmers Marketing Company, the Association of Church Development Projects (ACDEP) and its subsidiary, among others. These organizations, groups and individuals have carried out different studies on the shea industry as well as organized and facilitated workshops to sensitize shea pickers, processors, buyers and exporters. Some go the extra mile to help these women add value to the butter they produce through the making of soaps and pomades from the butter.

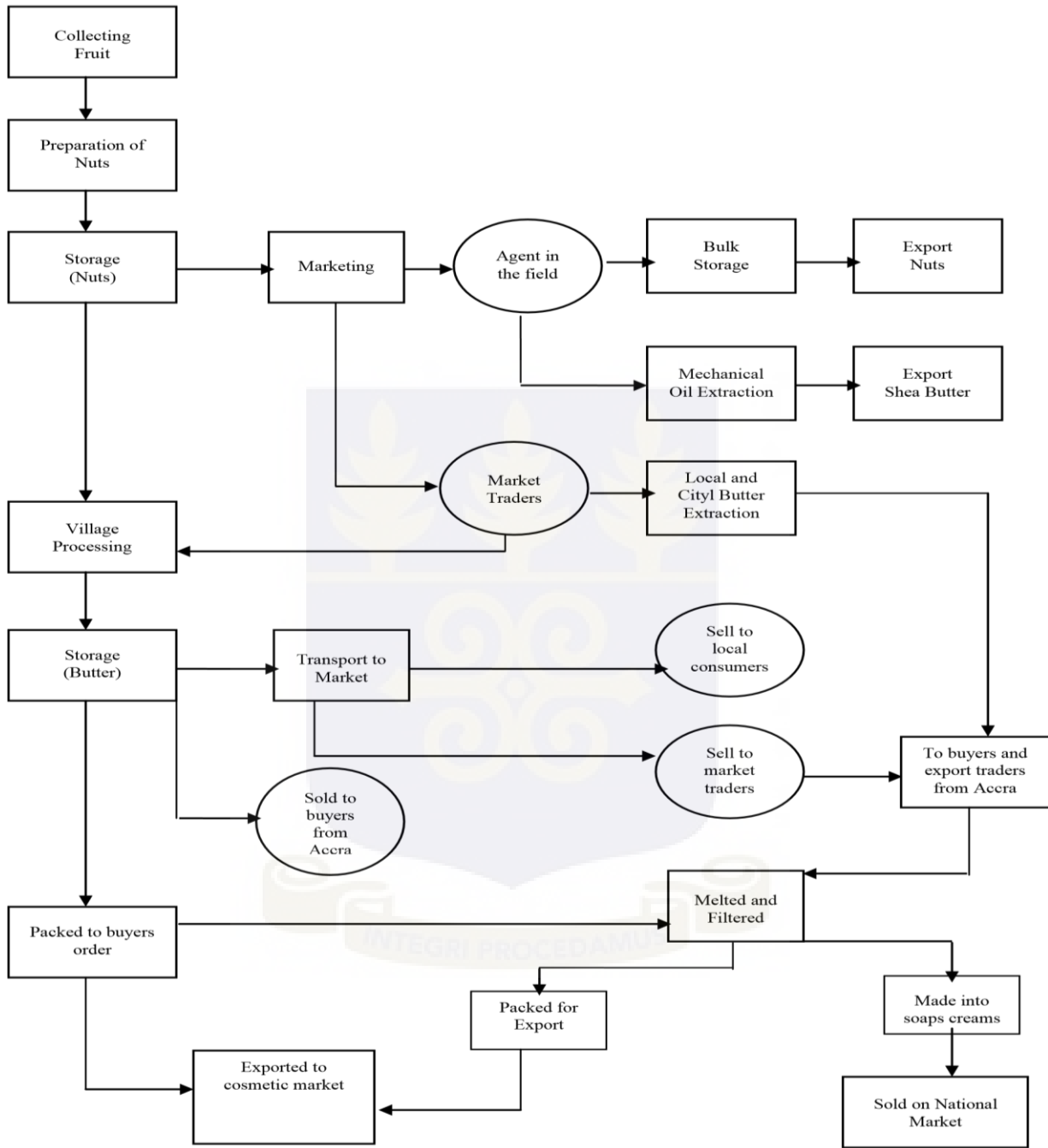
Therefore, developing the shea industry is very crucial in alleviating poverty among rural people since it serves as an avenue of income generation for rural dwellers most especially women in the three Northern regions of Ghana.

### 2.1.5 The Shea Value Chain in Ghana

The shea industry comprises pickers who do the picking of shea nuts from farmlands and bushes, processors who process nuts into butter and Agents (middlemen and women) who buy nuts directly from the pickers for onward delivery to produce buying companies (PBCs), exporters and processing factories / centres.

The figure 2.3 below depicts a comprehensive shea value-chain processes involved in the processing of shea nuts into butter. The long and tedious process women go through to obtain shea butter from shea nuts, starts with the picking of fresh nuts from their farms and bushes, followed by the preparation of the nuts( this includes de-pulping, par-boiling, first drying, de-husking and second drying), and storage of nuts in jutsacks for sale constitute the first stage. After the first stage, one chooses to either sell the nuts to local assembler, local cooperative /association, processing associations /plants, sheanut exporters or process the nuts into butter for both domestic consumption and sale at the market for income. If the women decide to process the nuts into butter, then they will first of all crushed the nuts, roast the crush nuts, grind into paste, and then knead the paste to obtain butter. These processes are a revelation of the sufferings, women in the shea industry encounter to make shea nuts and butter available on the market, yet the dream of most Shea women of getting value for their labour may never see the light of day in the current unregulated nature of the industry.

**Figure 2.3: Shea Value Chain**



Source: ACDEP, 2005

## **2.2 Production of Shea nut / butter in Ghana**

### **2.2.1 Processing Stages of the Shea Nuts**

#### Stage 1: Picking / Gathering

A study by Addaquay (2004), pointed to the fact that picking of the shea fruits is exclusively a woman pursue. Picking is done on farmlands belonging to their husbands and from the bushes. Pickers wake up at dawn and walk long distances to farmlands and bushes to pick nuts. The fruits are mostly carried in basins with their head or using donkey cart or tricycles. During the picking, the women are exposed to scorpion stings and snake bites, especially beyond cultivated areas.

#### Stage 2: De – Pulping

De-pulping is the removal of the fleshy pulp around the nut. Women de-pulp the fruits by either using their hands or trample on the fruits.

#### Stage 3: Boiling and Drying of Nuts

The shea nuts are par-boiled for 15 to 30 minutes and then Sun dried for 5-10 days. This reduces the moisture content to about 15-30% (Addaquah, 2004).

#### Stage 4: De-Husking/Sorting

De-husking is the act of removing the hard shell covering the nut. Various methods are employed to remove the husks. They include cracking the nut between two stones, trampling the nut with the legs, and pounding the nut using a mortar and pestle.

Stage 5: Drying of Shea Kernel

Thorough drying or baking of nut stops the build-up of fatty acids of the kernel and, in addition, it prevents the growth of fungi. With a moisture content of about 7%, the kernel could be stored for up to 2 years. The diagram below depicts the best practices for quality Shea nut production.

Figure 2.4: Quality Shea nuts; best practices for production



Source: Global shea Alliance

**2.2.2 Butter Extraction Process**

The first stage of butter extraction involves crushing / pounding of nuts into grits, followed by roasting of the grits. The roasted grits are then ground into paste, which is then mixed with

warm and kneaded until the emulsion floats. The extraction process, involves a series of activities to yield the final product thus the crude butter. Below is the step by step procedure one needs to follow in order to come out with shea butter (Study respondents, 2016).

### Step 1: Crushing/Pounding and Roasting

Crushing and grinding is done either using a crusher or by placing the nut on a stone and using a wood to hit it into grits. The grits are then roasted after crushing/pounding process. This aids the oil extraction. The intensity of the fire during the roasting process must be controlled in order to reduce or prevent charring of grits, a condition that reduces the quality of the butter. However, during the field survey, it was revealed that most women used a nut Crushers at a fee.



Figure 2.5: crushing of nuts into grits at the mill



Figure 2.6: Roasting of grits using a roaster

### Step 2: Milling of Girts and Kneading

Roasted girts are then sent to the mill and ground into paste. Warm water is added to the paste and the hand or a kneader is then used to knead the paste. Warm water is intermittently added to the paste, this process continuous until the emulsions floats. The kneading is a key step in determining the quality of the shea butter finally produced. (Study respondent, 2016)



Figure 2.7: Milled paste



Figure 2.8: Kneading process starts

**Step 3: Floating, Washing and Refining**

The floated emulsion is skimmed and rinsed thoroughly with water until the colour changes from grey to white. The emulsion is then put on fire to melt in a pot and allowed to boil until it is clear and bubbly clarifies the butter. The juice of a ceratotheca plant is added to the emulsion to stimulate flocculation of the suspension and accelerates sedimentation of the heavier non-oil residue. The oil is then poured into a basin where it is left to solidify. (Addaquah, 2004).



Figure 2.9: Crude butter starts to float



Figure 2.10: Separating butter from dirty water fraction



Figure 2.11: Emulsion on fire



2.12: Semi solid shea butter

**2.2.3 Shea Butter Processing Techniques**

In Ghana, there are three methods of processing shea nuts into butter. They are; traditional, semi-mechanized and fully mechanized industrial systems (Addaquay, 2004). These methods are discussed below.

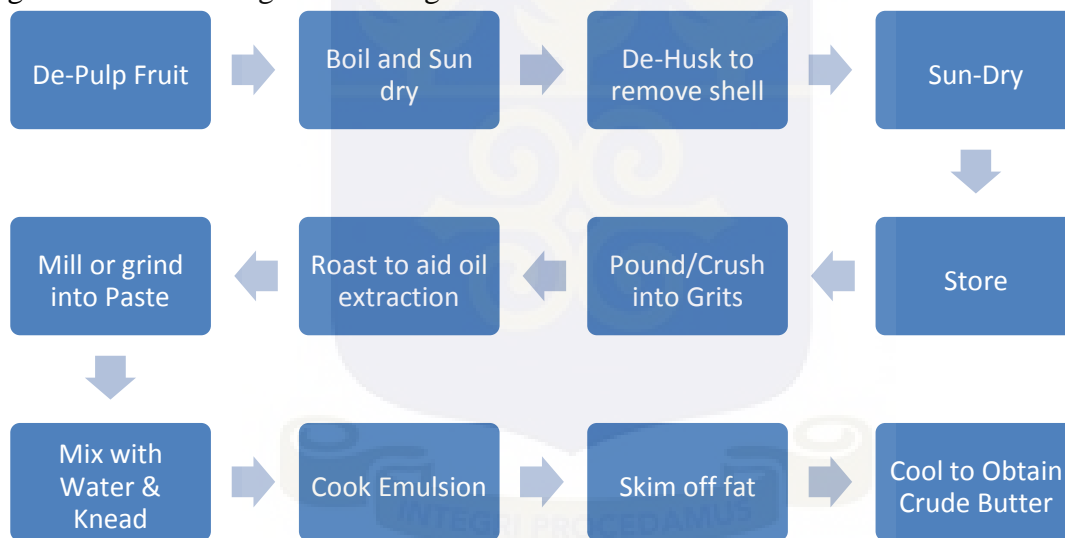
## (a) Manual Traditional System of Production

According to Addaquay (2004), the traditional method of extraction predominates in West Africa, with an extraction rate of almost twenty percent. This could be due to lack of funds to procure appropriate simple tools to facilitate and expand the production of shea butter.

He further argued that it will take an individual 20-30 hours to collect and process 1kg of Shea butter. It is also estimated that 8.5-10.0kg of fuel wood is needed to produce 1kg of shea butter.

The diagram below depicts the traditional shea butter processing stages described by Addaquay (2004).

Figure 2.13: Flow diagram showing Traditional Production Process



Source: Addaquay (2004)

From figure 2.13, shea kernels are obtained after de-pulping, boiling, sun-drying, de-husking and drying. This is then stored, sold or further processed into shea butter. The processing of shea butter begins with the crushing of dry shea kernels through to cooling the oil to obtain crude butter.

The traditional processing stages could be improved upon through adequate financing to enable processors acquire appropriate technological machines to aid processing of shea butter in

Ghana. Aculey (2007) indicated that, the traditional processing of shea butter most often results in poor quality and unhygienic products, resulting in low prices. Carette *et al.*, (2009) indicated that the women preferred the traditional method to the mechanized process because of its affordability and availability notwithstanding the fact that the method is less efficient and tedious.

Nahm (2010), argued that the timely gathering and processing of nuts contributes significantly to the quality butter produced. He lamented that the picking activity is tedious, inept and dangerous. Adding that nut collectors are frequently bitten by snakes, poor visibility, sodden by the rains, walk long distances, harassed by Fulani herdsmen and monkeys. An earlier study by Yidana (2009), observed that the traditional method consumes so much water, very tedious and monotonous especially for women who used their hand in kneading.

A recent study by Seidu. J (2015) showed that manual and semi-mechanized methods of processing nuts into butter require excessive use of fuel wood and large quantities of water. He concluded that, the lack of access to inputs and market coupled with the nature of processing tools used for shea butter production were significant in determining the quantity and quality produced.

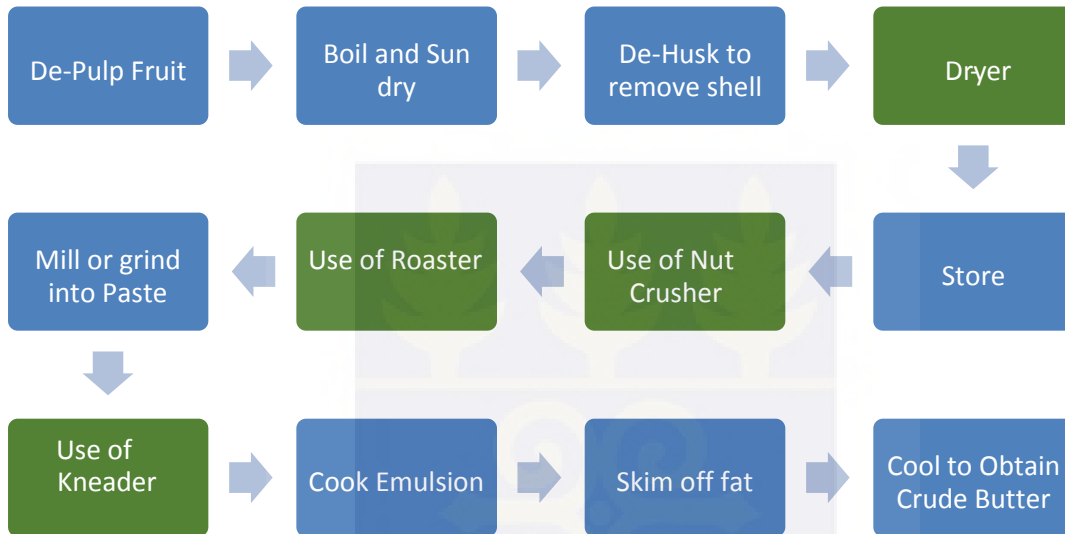
#### (b) Semi-Mechanized System of Production

The semi-mechanized system of extraction employs suitable technology to replace some units of operations in the traditional method. For instance, the stone and wood for crushing is replaced with a nut crusher, the saucepan replaced with a roaster, and the manual hand kneading replaced with a kneader or a hydraulic/screw. The introduction of these equipment has reduced the drudgery the women go through during processing nuts into butter. In the view of Seidu

(2011), the role of the state and enterprise is key in the manufacturing of simple tools in order to reduce the drudgery accompanying the production of shea butter.

Addaquay (2004), argued that innovations have improved the extraction rates from 20% to 35 – 40%. He concluded that the semi-mechanized system is good for Ghana.

Figure 2.14: A flow chart which includes the use of appropriate equipment for processing.



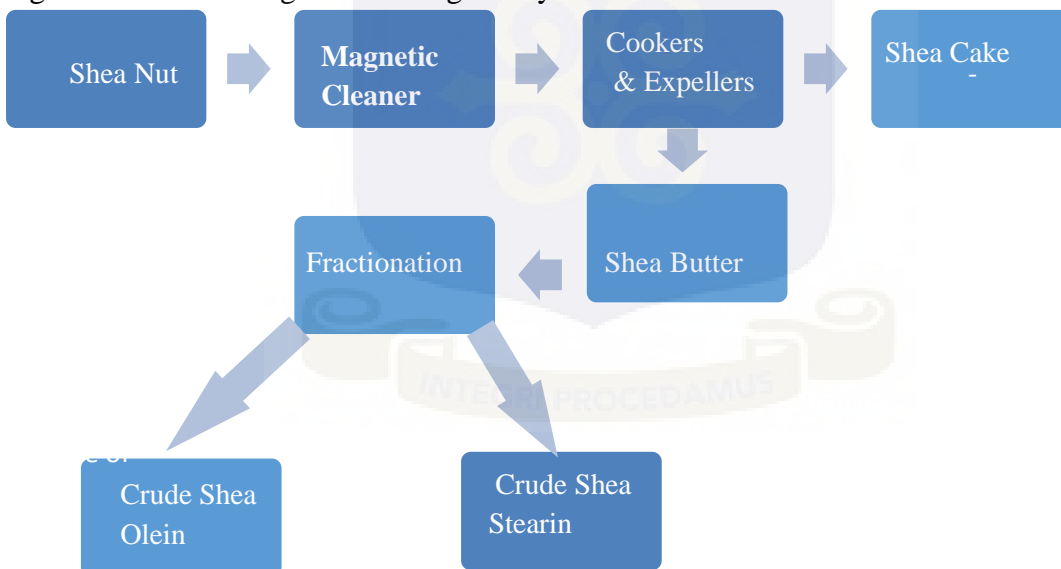
Source: Addaquay, (2004).

In figure 2.14 above, notwithstanding the fact that the production stages are the same, improved machines are used to enhance the efficiency of production. Instead of pounding, sun drying, roasting with fuel wood, manually kneading; nut crusher, a dryer, roaster and kneader are used to increase production efficiency and product quality respectively. In the view of Kumi et al., (2012), Shea fruits stored for more than three days before depulping coupled with drying the nuts on the bare floor had a negative effect on the quality of the kernel and butter produced. Hence, solar and mat drying should be adopted to enhance the quality of shea butter.

### (c) Fully Mechanized System of Production

Industrial processing in Ghana is done by PBC shea limited at Buipe, Ghana specialty fat limited at Tema free zones, OLAMS- Ghana, and Juaben Oil mills use hot presses like hydraulic, filter, screw, expellers and chemical solvents. This produces Shea butter and Shea cake (waste product). The Shea butter then undergoes a process called fractionation which separates the liquid oil (olein) and solid butter (stearin). This process enriches the amount of unsaponifiable components. (Field survey, 2016). The use of chemicals and heat increases the overall extraction up to 80% (HALL et al. 1996). Chemical treatment also tends to destroy important biological and chemical features of the shea butter, such as vitamin E and A content and raises the peroxide value (ALANDER, 2004).

Figure 2.15: Flow diagram showing a fully mechanized Production Process



Source: Author's Construct, 2016

### 2.2.4 Some production challenges

Adesiji et al (2013), found that majority (73.3%) of respondents were illiterates, 52.2% were middle aged and 81.1% were married. The research also identified factors hindering the

production of shea butter as: inadequate credit facilities, inadequate water supply, inadequate transport facilities, inadequate processing equipment, limited supply of labour and nuts. Furthermore, the study revealed that age and years of experience both have a significant relationship with the indigenous techniques of processing shea butter. The study advocated the need for extension agents to be posted to rural areas to educate rural women and build on their indigenous knowledge of processing shea butter in order to produce high quality butter. Apart from that, declining numbers of shea trees is largely due to the activities like wood charring, bush burning, commercial farming, inadequate technical and financial support as well as limited research on domestication of the tree. (Bup Nde *et al.*, (2013).

### **2.3 Financing of the Shea Industry**

There is no doubt that credit plays a vital role in the sustenance and growth of any business including the Shea business. There are two major sources of funding for players in the shea industry, namely; formal and informal sources.

Formal sources of funding include; Investment Banks, Commercial Banks, Savings and Credit Banks, Cooperative Banks, Rural Banks and funds set up by government such MASLOC, YES (Youth enterprise support) or with the support of donor agencies like the Japanese government, Netherland government, IFAD, AfDB, and many others, are mostly accessed by shea processing groups/centres, exporters of sheanuts/butters and agents (middlemen or women), whereas the informal source of funding includes; personal savings, friends, relatives, private money lenders, traders, Rotation Credit and Savings Associations (ROSCA's), owners of capital asserts and credit from NGOs, are mostly accessed by individuals or groups engaged in shea nut / butter processing and retailers in their various localities (Pufaa, 2010). Most NGOs operating in the shea industry basically support women who engaged in shea picking or butter processing with

logistics like crushers, roaster, grinding mills, protective gloves, warehouses for storage of nuts, capacity training, big pots, boreholes and only a hand full give microcredit to the women due to fungibility of money. NGOs such as; Afrikids-Ghana, Techno-serve Ghana, Savannah Fruits Company, Shea Alliance Association and a host of others put the women into groups and train them on soap and pomade making using the shea butter. After these have been equipped with these skills, the NGO then loans the women seed capital (payable with interest) to go into bulk production of soap and pomade. (Study respondents, 2016).

According to Pufaa (2010), there are three funding schemes in the shea industry, namely; contract financing, leasing credit, and micro credit arrangements.

(a). Contract Financing

In contract financing, NGOs enter into a contract financing agreement with shea butter processing groups to provide them with logistical support such as crushers, roasters, dryers, grinding mills, kneaders, wellington boots, protective gloves, tricycles, donkey carts, big pots, storage facilities and so on, as well as organize capacity training workshops. The women groups intend make a commitment to sell the nuts/butter to the NGOs as first priority. Other NGOs pre-finance the collection of the nuts by providing the pickers with credit to buy more nuts and some processing equipment. Pufaa further revealed that these women groups pay for using the facilities/equipment provided by the NGOs. This financial arrangement create groups for possible extortion.

#### (b) Leasing Credit Scheme

Leasing is a financial tool that makes plausible for enterprises to meet their medium-term investment needs like equipment, machinery, vehicles and other fixed assets. In the Shea industry, wealthy individuals or groups purchase processing equipment such as roasters, donkey cart, crushers, kneaders, storage facilities and list continuous for both personal and commercial purposes at a fee. This arrangement has made it possible for pickers, butter processors, retailers and wholesalers of nuts and butter, and exporters who are logistically constraint to meet demand from their customers. Also, the leasing scheme has helped to reduce the drudgery these women undergo in processing the nuts.

#### (c) Trade/Micro Credit Scheme

In this scheme microcredit is available by financial institution like rural banks and credit savings institutions to pickers / butter processors, buyers and exporters. This is an attempt to meet the capital requirements of players in the industry. Some financial institutions take the pain to organize these women into smaller solidarity groups where group members mutually serve as guarantors for each other's loan but each member is liable for the repayment of the loan she took in the event of defaults.

### **2.4 Marketing of Shea Nuts and Butter**

The sale of shea nuts and butter is done both locally and internationally. On the local market, nuts are sold to agents of PBCs, exporters and processing factories whereas the butter is sold in community markets or to agents of exporters. Since the acceptance of shea butter as a Cocoa Butter Equivalent (CBE) in 2003 by the European Union due to rising world consumption of chocolate and confectionery products, coupled with high prices for cocoa, and strong demand for natural cosmetics and soaps, the world has witnessed an increasing importation of shea nuts

/ butter to countries such as Denmark, Japan, France, North America, Netherlands, and UK (Carette et al., 2009). This has led to shea products gaining recognition in international trade, triggering an increase in demand for shea butter and nuts in Europe. This has necessitated a documentation of best practices for the export of shea butter products to the US, Europe and other Western markets (WATH, 2005). The Shea butter in the international market is put into three grades, grade A, B, and C, with grade A having the highest market, followed by B and then C. According to Carette *et al.*, (2009), the shea industry, is earning Ghana foreign exchange of about 30 million USD yearly. Adding that earnings will triple when the industry is given the needed attention and support it requires and would also provide jobs for the teaming youths, women and the aged.

Examining the trading and marketing dynamics of the shea sector both locally and internationally, the WATH Technical Reports No. 2, 3 & 4 (2004), examined how the shea supply chains can be improved. The reports revealed the following; (i) Ghana was the leading export country of shea in West Africa, (ii) feasibility studies which should include supply chain analysis for the export promotion of both refined shea products and bulk shea butter to US markets, (iii) the dynamics and implications of refining shea butter in terms of the economies of production and the economic potential and opportunities for commercial state-of-the art refining of shea butter within West Africa, and (iv) shea butter is used as a substitute for cocoa butter in Europe, citing that almost 95 percent of shea butter exports are destined for chocolate production in Belgium, France and Switzerland.

In view of the prospects the shea industry has in improving the livelihood of the rural folks and most, especially the foreign exchange Ghana and some west African countries stand to benefit, the WATH in 2005 produced an export guide for shea industry to include some of the best

practices in shea production and sale based on the adhoc operations of shea actors as well as other businesses in Ghana. The guide is intended to be a benchmark for West African businesses to export shea butter to US, Europe and other Western markets. The documentation was thus related to issues around customs, shea butter certification for international trade, international Quality Standards and Labeling and Packaging. It is evident that reports focused on market opportunities but appeared to be silent on issues of national legal and policy context for shea operations or better still the issue of sustainability in shea supply through a better managed shea industry as an essential cash crop.

Table 2.1 below presents estimates of shea kernel production in tons in the six leading producers of shea in West Africa namely; Mali, Nigeria, Ghana, Cote d'Ivoire, Burkina Faso and Benin.

Table 2.1 : Estimated Annual Shea Kernel Production and Utilization in tones

Country	Est. Total Potential Production (tons)	Est. Actual Collection	% share of Actual Shea kernel production in WA	Est. Consumption	Total Exports	Exports as shea kernels	Export as Shea Butter
Mali	250,000	150,000	28.03	97,000	53,000	50,000	3,000
Nigeria	250,000	100,000	18.69	80,000	20,000	20,000	0
<b>Ghana</b>	<b>200,000</b>	<b>130,000</b>	<b>24.29</b>	<b>70,000</b>	<b>60,000</b>	<b>45,000</b>	<b>15,000</b>
Cote d'Ivoire	150,000	40,000	7.47	15,000	25,000	15,000	10,000
Burkina Faso	150,000	75,000	14.01	35,000	40,000	37,000	3,000
Benin	80,000	40,000	7.47	14,900	35,100	35,000	100
Total	1,130,000	535,000	100	321,900	263,000	217,000	46,000

Source: WATH Technical Report No. 2, Nov. 2004

It is obvious from table1 above that, the leading producers of shea products in West Africa as 2004 according a study carried out by the West Africa Trade Hub (WATH) are Mali, Nigeria, Ghana, Cote d'Ivoire, Burkina Faso and Benin. In terms of percentage share of actual Shea

kernel production in West Africa, among the six (6) leading shea producing countries, Ghana trails Mali with 24.29% to 28.03% respectively. However, Ghana appears to have a higher comparative advantage compared with the other five countries with respect to shea butter exports as a direct industrial inputs. This implies that with value addition to shea kernel and butter, Ghana could earn huge revenue in the form of export duty and direct income to shea dealers given that stakeholders in the industry channel their energy to picking, processing and exporting the rest of the estimated 70,000 tonnes uncollected nuts left in the bush to rot. (WATH, 2004).

#### **2.4.1 Some Marketing Challenges**

According to Salifu and Adams (2011), the constant and persistent exploitation of women by Agents (middlemen) of produce buying companies (PBCs) who play on the ignorance of the women do not only deny them fair prices but also the incentives provided by the PBCs. In their view, the arduous processes of extracting butter discourages large production of butter. In addition to the above mentioned, Al-hassan (2009) concluded that one's levels of education and entrepreneurial skills plays a crucial role in one's ability to access; the shea market, adopt new technology and meeting international standards.

## **CHAPTER THREE**

### **LITERATURE REVIEW**

#### **3.0 Introduction**

This chapter discusses the relevant literature both theoretical and empirical works on the study. Some of the issues raised in the chapter include; the concepts and measurements of poverty, causes of poverty, the concept of value chain, value chain development, Shea value Chain, and some empirical works on agriculture growth and poverty reduction as well as on the shea industry.

#### **3.1 Theoretical Review**

##### **3.1.1 Concepts and Measurements of poverty**

Anytime poverty is mentioned, two issues come to mind, namely; (i) how do we identify who is poor and who is not, and (ii) how do we measure poverty for society as a whole? The former issue comprises the choice of a criterion of poverty (e.g., the selection of a "poverty line" in terms of real income per head), and then establishing those who fulfill that criterion (e.g., fall below the "poverty line") and those who do not, (Sen, 1976).

Notwithstanding the issues raised earlier, there exist various concepts of poverty definitions and diverse ways of measuring poverty. These include relative, absolute, subjective, objective, indirect, direct, deprivation-based, budget-standard, income-based, consumption-based, consensual, primary, political, secondary, and tertiary poverty lines, to mention but a few. This calls for a general definition of poverty which holds for all (or nearly all) poverty definitions. Kuhn (2000, p. 3), identified two elements running through all the poverty definitions. First, poverty is a dichotomous concept: all can be divided between "poor" and "not poor". This

implies the existence of a poverty line, or at least of criteria to distinguish between poor and not poor. Second, all poverty definitions describe a lack. Generally, what is regarded to be lacking is “well-being” or “welfare”: “Poverty is the counterpart of well-being. Hence poverty may also be defined as lack of welfare” (Kuhn, 2000).

Identifying poverty should not be based on the question of subjectively assessing a present situation. Instead, whether an individual is poor should be objective and absolute thus by general social criteria, not by the individual defining himself or herself as poor or less satisfied.

The United Nations (UN, 2001), defines poverty as a human condition characterized by the sustained or chronic deprivation of the resources, capabilities, choices, security and power necessary for the enjoyment of an adequate standard of living and other civil, cultural, economic, political and social rights.

In a groundbreaking article, Amartya Sen (1976) espoused a number of axioms for aggregate poverty measures. He indicated that head-count ratios and poverty gaps satisfy these axioms only in part. In the view of Sen (1976), while the head-count ratio tells us the percentage of people below the poverty line, the income-gap ratio tells us the percentage of their mean short-fall from the poverty level. Both head-count ratio and income-gap have failed to indicate the extent to which the poverty short-fall per person, and the numbers involved. Sen concluded that neither measure satisfies the transfer axiom: thus given other things, a pure transfer of income from a person below the poverty line to anyone who is richer must increase the poverty measure. In spite of these limitations, the head-count ratio and poverty gap are very widely used (Sen, 1976). The ‘capability approach’ was subsequently developed which defines poverty as the deprivation of basic capabilities such as under-nourishment, illiteracy, premature mortality,

and also social stigmatization and low self-esteem rather than merely as lowness of incomes.(Sen, 1999).

A poverty line serves a purpose if the definition of poverty is indirect, i.e. poverty is understood to be a lack of resources. On the other hand, the direct measurement of poverty is based on observations of the endowment of goods (Kuhn, 2000).

The poverty line can be useful in social policy programs but the value of the poverty line diminishes if poverty is defined directly (Kuhn, 2000). The World Bank, for example, defines poverty in developing countries as a per-capita income below 1\$ per day at purchasing power parity.

Another poverty measure is the “political poverty lines”, which is based on social security regulations, precisely, on those that require some level of social assistance. This approach can be seen as representative of society since it is defined by society, and politicians. Anytime Social assistance is increased to reduce poverty, it is accompanied with a rise in the poverty threshold, while a decrease in social assistance usually brings about lowering the official poverty threshold to re-define the poor as non-poor, (Kuhn, 2000).

The subjective poverty line (SPL) is based on minimum income. Its calculation is based on the assumption that non-poor overestimate poverty threshold while poor underestimate it. The result is that the poverty threshold is set precisely at the point where the stated minimum income is same with the actual income, while that of the Leyden Poverty Line (LPL) is determined based on the evaluation of income. The evaluation scale is constructed such that the threshold between poor and non-poor lies exactly in the middle of this scale, (Kuhn, 2000).

Foster et al (1984) came out with a new poverty measures called the FGT measure, which encompasses the basic properties proposed by Sen (1976), the relative deprivation concept of poverty is additively decomposable with population-share weights.

Let  $y = (y_1, y_2, \dots, y_n)$  be a vector of household incomes in increasing order, and suppose that  $z > 0$  is the predetermined poverty line. Where  $g_i = z - y_i$  is the income shortfall of the household,  $q = q(y; z)$  is the number of poor households (having income not greater than  $z$ ), and  $n = n(y)$  is the total number of households. For each  $\alpha > 0$

$$P_\alpha(y; z) = \frac{1}{n} \sum_{i=1}^q \left(\frac{g_i}{z}\right)^\alpha$$

Where  $P_0$  is simply the headcount ratio  $H$ , while  $P_1$  is a renormalization of the income-gap measure. The Poverty measure,  $P$  is obtained by setting  $\alpha = 2$ . The parameter  $\alpha$  is observed as a measure of poverty aversion: where a larger  $\alpha$  gives greater emphasis to the poorest poor. As  $\alpha$  becomes very large  $P_\alpha$  approaches a "Rawlsian" measure which considers only the position of the poorest household.

### 3.1.2 Measurement and Poverty lines in Ghana

In Ghana, the standard of living for each individual is measured as the total consumption expenditure per equivalent adult, of the household to which he or she belongs, expressed in constant prices of Greater Accra in January 2013. The methodology used produced an extreme poverty line of GH¢792.05 (\$1.10). This focuses on what is needed to meet the nutritional requirements of household members. Individuals whose total expenditure falls below this line are considered to be in extreme poverty, since even if they allocated their entire budget to food, they would not be able to meet their minimum nutritional requirements while an absolute poverty line of GH¢ 1,314.00 (\$1.83) per equivalent adult per year incorporates both essential

food and non-food consumption. Individuals consuming above this level can be considered able to purchase enough food to meet their nutritional requirements and their basic non-food needs. (GLSS 6, 2012/2013)

### **3.1.3 Causes of Poverty**

Several literature have deliberated on the causes of poverty in contemporary time. Notably among them is Bradshaw (2005) who discussed the various schools of thoughts arguments on the causes of poverty as follows:

Firstly, the individual deficiencies theory: This theory argues that the individual is responsible for their poverty situation. They are of the view that, with harder work and better choices, the poor could have avoided their problems. They attribute poverty to individual laziness, bad choice, incompetence, and inherent disabilities (lack of genetic qualities such as intelligence).

Secondly, the cultural belief systems: This school of thought espouses the argument that, the transmission of a set of beliefs, values, and skills over generations that are socially generated and believed by the individual is to be blamed for poverty and not necessarily the individuals because they are victims of their dysfunctional subculture or culture. In a nut shell, they are of the view that, poverty is as a result of the acceptance of subculture values that are counterproductive and contrary to norms of success.

Thirdly, the political - economic structure / distortions: Theorists in this belief blame poverty on the economic, political, and social system which causes people to have limited prospects and resources with which to achieve income and wellbeing. They argue that, systematic barriers thwart the poor effort from accessing and achieving vital social amenities and institutions such as, education, jobs, housing, security, health care, political representation, to mention a few.

Fourthly, the geographic disparities: This notion points to the fact that people, institutions, and cultures in certain areas lack the resources needed to generate wellbeing and income, and that they are unable to claim redistribution. This notion of poverty is a spatial expression of the “capitalist system.” Some development literatures have tried to explain why regions lack the economic power to compete to include disinvestment, proximity to natural resources, density, diffusion of innovation, and other factors.

Lastly, the cumulative and cyclical interdependencies: This theory looks at the individual and their community as caught in a helix of prospects and problems. Once these problems linger on, they shut other opportunities, hence create a cumulative set of problems that make any effective response virtually impossible. They further argue that, problems of individuals such as earnings, housing, health, education, self-confidence are interdependent and strongly linked to community deficiencies like loss of business and jobs, inadequate schools, inability to provide social services to mention but a few.

### **3.1.4 The Concepts of Value Chain**

Reji (2012), reviewed literatures from the various schools of thoughts regarding the concept of Value Chains and Small Enterprise Development. He espoused the definition of a value chain by Porter (1985) which says “a value chain constitutes a whole range of discrete, though interrelated, activities involved in the design, production and marketing of a product”. He also looked at the various chain conceptualizations, namely; the global value chain analysis, Porter’s value chain, commodity, filière approach, and the linkage approach. All talking about the flow of products and services along the chain, co-ordination of production chains and relationships between firms.

According to Reji (2012), the two prominent chain conceptualizations are the Porter's value chain and the linkage approach. With the linkages approach arguing that investment in a firm produces demand effects that encourage ensuing investment by input suppliers, Porter (1985), described a firm's competitive advantage within an industry using the concept of a value chain. He elucidated the concept of a value chain to comprise all the activities that a firm does to design, produce, market, deliver and support its product. In Reji's view, the *filière* approach, initially dealt with the vertical integration of firms in agriculture trade. Their focus was on how to map the actual commodity flows and to identify the agents and activities within a *filière* (chain), which is viewed as a physical flow chart of commodities and transformations.

Korzeniewicz et al., (1994), revised the early *filière* analysis into a more comprehensive analytical framework called Global Commodity Chain (GCC) analysis. Stating that GCC comprises a set of transnational inter-organizational linkages that constitute the production, distribution and consumption of a commodity. The distinctive difference between the two approaches is that the *filière* approach concentrated explicitly on agricultural commodities, whereas the GCC analysis concentrated on manufacturing firms.

However, Gereffi *et al.*, (2005) replaced the global commodity chain analysis with a more general term, global value chain (GVC) analysis. They argued that the GVC analysis concentrated on the governance structure of value chains, where the lead firms, the governors of value chains have the capability and power to define and impose the parameters of contracts and subcontracts in their supply chain. It is obvious that typology of governance relations in value chain of the GVC analysis differs from other chain conceptualizations mentioned above. For instance Gereffi (1999) identified two different governance types, namely; "buyer driven" and "producer-driven". The buyer-driven chains are led by large retailers, branded marketers and

trading companies; while the producer driven chains are led by capital and technology-intensive firms. This leads to development of a typology of governance relations consisting of five governance categories involving: arm's length, modular, relational, captive and hierarchical, that has implications on governance structure of the value chains. Gereffi and Sturgeon (2005).

Quite apart from that, Humphrey and Schmitz (2002) developed four typologies of upgrading, a concept extensively used in the GVC analysis viz: process upgrading (enhanced efficiency), product upgrading (higher unit value through increased sophistication), functional upgrading (increasingly concentrating on skill content), and inter-chain/sector upgrading (moving up to a more profitable GVC in another sector), that have significant impact on the competitiveness of the firms in the value chain. Various literature have espoused the view that the GVC analysis has offered a new practical insights on governance structures and upgrading opportunities of the firms in the value chains.

### **3.1.5 Value Chain Development**

According to Kula et al, (2006), value chain approach should focus on identifying both problems and opportunities that could propel industrial growth by examining the firms, linkages among them, supporting markets, end markets, and the enabling environment at all levels. Again value chain approach should looks at other factors that sway the chain's performance: regulatory and policy environment, access financial support and requirements of the market, technology and many others.

Kaplinsky (2000), examined how integration into value chains supports the small firms to: upgrade along the value chain; develop inter-firm linkages that reduce transaction costs; and increase the efficiency of its internal operation. Meanwhile, other studies are of the view that, the value chain development can be achieved, by building a broad collaboration between the

firms facilitate, reach larger export levels as a result of collective efficiency and improving competitiveness; sharing of knowledge, technologies and inputs; and develop greater responsiveness to global demands (Schmitz, 1995; Canina et al, 2005; and Storper, 1997).

A study by Deka and Kumar (2009) to ascertain how the poultry industry could be made lucrative for the Poor in Madhya Pradesh. Focusing on the experiences of PRADAN a national level NGO, the study revealed that through motivation, Self Help Groups (SHGs) organize themselves into a co-operative groups. This made it feasible for the co-operative to set up four Chicken outlets in Bhopal where both live and processed chicken were sold to the public. The study came to the conclusion that, PRADAN's role in the provision of capacity building, exchange and providing linkages, support, research and so on, has contributed to the success of the poultry business.

A similar study by Lusby et al (2006), examined the role played by Action for Enterprise (AFE), a NGOs in the Malian Shea Value Chain. The study revealed that a large proportion of the Shea is consumed in Mali and a small fraction nuts is exported to Europe. Also, the study found that buyers only meet ten percent of their annual kernel obligation from Mali because of high transactional cost, poor product quality, and unreliable delivery. The study further showed that the AFE team undertook the following initiatives namely: persuasion of exporters to invest in the production and supply of quality nuts/butter; facilitated contact with international buyers via advertisements; capacity building of exporters to respond to buyers with quotes and professional samples; and finding and eliminating packaging and transportation concerns. The interventions of AFE lead to; the promotion of quality shea nuts which resulted in an increase in incomes of rural kernel pickers, investment to improve upon the quality of Shea kernel, easy access to

market, an improvement in the linkages between exporters and their suppliers, and between suppliers and pickers.

It is obvious from the literature above that, the value chains if properly built, will profit poor producers by giving them the opportunity to ride along on growth of demand in distant locations, which small producers can by no means reach on their own.

## **3.2 Empirical Review**

### **3.2.1 Agriculture Growth and Poverty Reduction**

There exist varied literature on poverty reduction, with some espousing unanimous views that the contributions of the various sectors to economic growth makes a substantial change in reducing poverty while others schools of thought opine that growth in agriculture is exceedingly helpful for poverty reduction while admitting that as economies grow and diversify, its significance tapers.

The significance of agriculture in alleviating poverty stems from two basic situations: (i) the incidence of poverty is unevenly high in developing countries, which still depends greatly on agriculture for output and employment; and (ii) as the poorest households also have few assets and no skills, they usually depend largely on agriculture and mostly encounter difficulty in getting along with the non-agricultural economy for employment and income. Furthermore, social and economic marginalization reduce other prospects that may be available to certain groups, including the youth, women, indigenous people, and ethnic minorities. Thus, agriculture plays a key role in employing a greater share of the unskilled workforce and the poor, thereby making economic growth more pro-poor, (Grewal et al., 2012).

Kolawole (2014), empirically investigated the impact of the agricultural sector on poverty reduction in Nigeria over the period 1986 to 2012. Employing the error correction mechanism (ECM) model, the study revealed that food production index and government spending had negative impact on poverty headcount ratio in Nigeria. Thus, as food production and government size increased, the level of poverty declined in Nigeria. The study further argued that the Nigerian government needed to invest more in the agriculture sector in order to soar up food production in the country, since a boost in food production would subsequently make food available to the ordinary citizen who lives below USD 1.25 per day. In the view of the researchers, government should channel more of its spending on productive and capital projects, since such spending would translate into creating additional jobs and hence increasing the incomes of the average Nigerian.

According to the IFAD, (2011), the concentration of poverty in rural areas in developing countries draws attention to the significance of agriculture in poverty-reduction strategies of these countries, since majority of the rural folks depends indirectly or directly on agriculture. The findings showed that about 72% of those living in poverty in developing countries reside in rural areas. With rural Sub-Saharan Africa, recording 75%, while a little over 80% is recorded in rural South Asia. The studies further revealed that for Asia and the Pacific Region to meet the MDG of halving the poverty, it calls for increases of 24% and 23% in agricultural investment, and fertiliser use respectively and 28% in agricultural expenditure during 2007–13, together with an increase in official development assistance to agriculture by 56%.

De Janvry and Sadoulet (2010), examined the nexus between poverty reduction and agriculture growth in East Asia Africa, Latin America, Caribbean and Pacific. The results showed that growth in agriculture is almost thrice more effective in reducing poverty than a growth in

manufacturing and almost double that of growth in construction. The study also revealed that, while growth in agricultural production played a crucial role in poverty reduction in the developing countries of Sub-Saharan Africa and other parts of Asia, same could not be said in Latin America and the Caribbean. The researchers were of the view that, growth in agricultural productivity did not bring about lower rural poverty rates because they were capital driven, hence, created fewer employment opportunities in Latin America and the Caribbean. They further argued that, a sector's impact on poverty rests on its ability to employ a greater number of the unskilled workers, and since agriculture and construction are leading this course, both have a large impact on poverty reduction.

In a similar study, Loayza and Raddatz (2010), investigated the nexus between output growth and poverty reduction, using data in more than 50 countries. The study revealed that poverty alleviation does not depend only on the size of economic growth but also its composition in terms of intensive use of unskilled labour as input in production process, significantly matters for poverty reduction. They espoused the view that, the more labour-intensive a sector is, the propensity it has to alleviating poverty. They concluded that agriculture has the propensity in reducing poverty, trailed by construction and then manufacturing, whereas services, utilities and mining, appeared not to help in fighting poverty.

A study by Virmani (2007) to assess the nexus of growth, poverty and malnutrition in India. Employing an OLS regression on the national account data by State and Sector spanning from 1993-1994 and 2004-2005, found that a boost in agriculture growth brought about a substantial reduction in poverty. Thus for every 1% increase in agricultural growth leads to a 0.45% reduction in the rate of poverty. Virmani argued that, developing agriculture sector resulted in a reduction in poverty via four transmission mechanisms namely: the availability of cheaper food

for both urban and rural poor; a direct and relatively immediate effect of enhanced agricultural performance on rural incomes; agriculture's contribution to growth and the creation of economic prospects in the non-farm sector; and agriculture's central role in encouraging and supporting economic transition, as countries (and poor people's livelihoods) move away from being primarily agricultural towards an industrialized economy.

Sampling data on macroeconomic and agricultural economic performances of 25 countries for the period 1980 – 2005, Cervantes-Godoy and Dewbre (2010), examined the economic significance of agriculture for poverty reduction using a time-series and cross-section regression analysis. The study revealed that reduction of extreme poverty was stimulated by growth in agriculture whereas, growth in non-agricultural impacted more in reducing poverty among the non- poor. They also found that as countries grew richer and accompanied by increases in income inequality, the impact of agriculture growth in reducing extreme poverty declined. Furthermore, it was found that 12 countries experienced a little over 52% reduction in poverty largely due to agricultural growth, whereas remittances contributed to 35% of the reduction and the remaining was due to non-agricultural growth.

Suryahadi and Hadiwidjaja (2011), assessed the role of agricultural growth on poverty reduction in Indonesia and relating it to the pre and post Asian financial crisis eras. Using sectoral share of GDP for the period 1984-2008, the findings showed that the growth in service sector had an enormous effect in reducing poverty before and after the crisis periods, with growth in rural service rising enormously after crisis in both rural and urban areas, whereas growth in the agriculture in rural areas exhibited a slight decline in the post-crisis period. The study further found that the services sector is coming out as a new major source of poverty reduction.

Nevertheless, the crucial role of growth in the agricultural sector in reducing poverty in rural areas cannot be underestimated.

A study by Habito (2009) to determine the systematic relationships between the poverty elasticity of growth and its likely determinants of fifteen Asian countries. Using data from the annual reports of the Asian Development Outlook, Human Development and World Development for the periods 1990–1996 and 2000–2006 and employing the pairwise analyses such as scatterplots, simple regressions, and multiple regressions. The study revealed that factors such as; agriculture growth, good governance, and public expenditures on social services accounted for the poverty elasticity of growth across countries. Habito, using a multiple regression, explained the variation in poverty elasticity of growth across countries to be emanating from the joint effect of these factors. Whereas, that of the pair-wise correlation analysis, found that agriculture growth appears to be an important factor of the poverty elasticity of growth.

Grewal B. et al. (2012), assessed the role of agriculture in poverty reduction in five (5) countries. The study employed a multidimensional Poverty Index (MPI) and used data from demographic and health survey (DHS), multiple indicators cluster survey, world health survey (WHS), for the period 2002- 2007. The findings showed that all the countries achieved a significant improvement in poverty reduction, though their performance had been uneven. They also found out that, whereas impressive gains have been made towards reducing poverty in China, Vietnam and Indonesia, same could not be said for South Africa and India as both of them witnessed a slow progress in poverty reduction. They argued further that most developing countries relied heavily on agriculture as a source of livelihood for the rural folks and that growth in agriculture contributes to food security and a reduction in food prices which

eventually benefits both rural and urban poor. They outlined some challenges facing agriculture in most developing countries to include improving product quality, increasing efficiency of energy, protecting the environment, water usage and raising crop yields. In the view of the researchers, demand for services and non-agricultural products out stripes that of agricultural products as economies experienced growth.

A study by Ravallion and Chen (2007) on China's progress and its impact on poverty reduction over the period 1980–2001, revealed that even though the progress was uneven over the period and across provinces, the primary sector (agriculture) played a vital role in reducing the headcount poverty dramatically by 3.5 times more than either the secondary or tertiary sector. The study also found that, China has  $-7.85$  poverty elasticity growth rate for agricultural and  $-2.25$  for non-agricultural economy; meaning, for every 1% growth in the primary sector brings about a 7.85% reduction in poverty, whereas a similar growth in the non-primary sectors led to only a 2.25% reduction in poverty. Furthermore, inflation and tax hurt both farmers and the poor; whereas, local government spending aided them in absolute terms; foreign trade had little short-term effect. The researchers came to the conclusion that Provinces starting with relatively high inequality experienced a sluggish progress against poverty, due to a lower growth in elasticity of poverty reduction.

However, Pack (2009), cast doubts as to whether the South Asian countries could replicate the growth trajectory of the East Asian countries. Arguing that, in South Asia, growth in rural employment and incomes can drive growth in agricultural productivity which in turns triggers an increase in demand for agricultural inputs and household products by rural families, efficiently produced in rural areas.

Investigating the role of Ghanaian women in agriculture, Akua (2004) solicited both qualitative and quantitative data from 400 respondents across four regions of Ghana namely; the Northern, Volta, Ashanti and Brong Ahafo regions. Her study showed that women farmers were marginalized on the basis of both gender and the wrong perception regarding their status as farmers. Aside that, activities such as child care, cooking, fetching of water, and collection of fire wood affected the productive lives of rural women engaged in agriculture. Thus these activities greatly affected the time women spend on farm activities. Women farmers who engaged in food crop as well as subsistence farming did not have access to the requisite financial resources to develop their farms. It was also revealed that customary laws thwarted the efforts of women who engage in agriculture to have access to the factors of production. Akua lamented the limited access to extension services and advocated that more women extension officers should be trained to augment the existing numbers.

Diao (2010), looked at the relationship between poverty and income generation, based on the three runs of national representative household surveys in Ghana. Employing the economy wide computable general equilibrium (CGE) model together with a micro simulation model, the study revealed that the agriculture sector will continue to play a vital role in the economy, despite higher growth in the non-agricultural sectors, and that the manufacturing and export services sectors can only experience rapid growth if these sectors significantly improve upon their international competitiveness. Furthermore, the study revealed a low patronage of modern inputs at the farm level in Ghana, and that the difference in yields (e.g. in the case of maize) between households that use and do not use these inputs is negligible. The study conclude that poor practices such as poor land husbandry, inappropriate use of tools and inputs, chemical inputs and low price hinder farm income.

Peter Hazell (2007), reviewed the implications for rural development of modern transformations in agriculture. The study identified factors affecting the transformation process in agriculture to include: OECD agricultural policies, and changing market chains. The study proposed some tactical interventions for the rural sector and small farms in developing countries: increasing the productivity of food staples, organizing small farmer for marketing, better education and training for nonfarm jobs, diversification into higher value products, targeting; the vulnerable, agricultural research and extension, revamping financial systems to meet small farm credit needs, improved risk management policies, safety net programs and migration. The study recommended local communities participation in the design and implementation of targeted programs.

It is obvious that the impact of agriculture in alleviating poverty depends on the relations between several factors. To begin with, the effect of growth in agriculture translates in an increase of income levels of those engaged in the sector. To add to that, the quantum of poor people who stand to benefit from agricultural growth depends on their involvement in the sector. As espoused by Loayza *et al.*, (2010) that the significance of a sector in alleviating poverty depends on the number of unskilled labour it can engage. Finally, the overall contribution of agriculture to poverty reduction substantial depends on the relative size of the sector to the national economy.

### **3.2.2 Empirical studies on poverty reduction on Shea Industry**

Several studies have been carried out on Ghana's Shea industry, particularly on the economics of the shea nut. Paschal (1978) looked at shea butter production in Dagomba district. Using cost - benefit analysis to determine the profitability of the shea industry. The study revealed for

every GH¢ 1 invested, a profit of GH¢1.43 was realized. In Pascal's view the major problem confronting the industry by then was technical inefficiency.

According to Aboyella (2002), most rural women engage in the sale of shea nut / butter as their major source employment and livelihood. Aboyella further argues that shea nut / butter processing plays a vital role in reducing poverty as well as increasing food security. He therefore opined that any measure taken to boost production of nuts and butter will eventually raise the income of shea nut / butter processors.

Laube W.(2015), examined the global shea nut commodity chains and poverty eradication in northern Ghana. Using both qualitative and quantitative analysis on shea pickers in the Upper East and Upper West regions, the study revealed that selling of shea nuts boosted the income of rural women engaged in the picking of nuts in Northern Ghana most especially during the lean season when nuts are in insufficient supply. However, most shea pickers are challenged with access to shea trees and limited availability of labour to assist in the collection of the shea fruits. In view of these challenges, Laube cast doubts on the prospects of the shea nut business as a key factor in poverty eradication, amidst a rise in shea nuts price above current exploitative levels. The study advocates the need for government, NGOs and other stakeholders to assist shea traders with fair prices, quality premiums, training, credit, improved transport facilities, or even wellington boots and gloves to avert the departure of rural women into other business opportunities.

Adam et al (2014), assessed the challenges in the Shea nut industry in the Savelugu/Nanton District. The study identified problems confronting the industry to include; snake bites, lack of support for credit and logistics, absence of ready market and inability to pick more nuts due to the fact that most shea trees are found in the bush coupled with long distances. Also, majority

(97%) of respondents stated that their involvement in the industry has brought about an improvement in their living conditions. It was further pointed out that most of the respondents had their funding through NGOs Microcredit. The study concluded that the involvement of Government in the Shea industry will sanitized the industry and help address the plight of the women engaged in the shea business. Also, the participation of financial institutions and NGOs is key in solving the technical and credit needs of Shea pickers and processors in the industry.

A study conducted by the Institute of Statistical, Social and Economic Research of the University of Ghana (ISSER, 2015), dubbed “peasants autonomy and capture in times of increasing integration of global food markets”. The study revealed that the Shea industry in its current state cannot be a tool for reducing poverty, as Shea pickers are denied fair prices by Agents of PBCs. Adding that a Shea picker only earned GH¢112.5 for picking approximately 2.5 bags. In the view of ISSER, government and NGOs should commit more resources to developing the Shea industry to enable it penetrate the confectionary and cosmetics industries. Their findings further revealed that, Shea industry is unregulated and has a fragmented market structure, with clumsy activities and hence hinders its growth. They recommended a detailed sector analysis such as cost benefit analysis that depicts the sector’s investment prospects and its ability to support livelihoods and reduce poverty as well as a robust alliance and firming up of public private partnership at the national and regional levels, among Shea producing nations in West Africa, to institute policies, uniform standards and harmonize the prices of Shea across borders. Also, strengthening of the Shea Unit under COCOBOD, and the development of shea plantation in districts and communities to sustain the industry.

Senchi (2012), examined the processing and marketing of Shea butter in Zuru Local Government Area of Kebbi State, Nigeria to identify the socioeconomic characteristics of Shea

butter processors and marketers. The study employed the profitability and multiple regression models in analyzing the data. The results showed that, most 71.2% of the respondents were married, 43.7% achieved formal education. Senchi further reported that 46.3% of Shea butter processors made a profit of ₵1– ₵300 per week with 30.19% and 1.30 rate of return and benefit cost ratio in Shea butter business respectively. This indicates that revenue from shea business has propensity to recoup the total cost and earn some profit.

Issahaku (2012), estimated the viability of shea butter processing in the Northern Region of Ghana using household level data on three different processing methods (traditional, improved shea butter processing technology (ISBPT) and the bridge press (BP) methods). Using the analytical techniques; Net Present Value (NPV), Benefit-cost (B/C) ratio, sensitivity analysis and switching values. The research revealed that the NPV and B/C ratio analyses, shea butter processing generally is a viable enterprise. While the estimates (NPV and B/C) of the BP method are higher than those of the ISBPT method, the estimates of the ISBPT method are higher than those of the Traditional method. The switching value and sensitivity analysis showed that the BP and ISBPT methods are more conditioned to handle risk than the Traditional method. Issahaku made a clarion call for stakeholders in the shea industry most especially government and NGOs to embrace the shea business as a means of alleviating poverty among the rural folks since it does not only increase their incomes but as well empower them economically.

### **3.2.3 Interventions by Non-Governmental Organisations (NGOs) in the Shea Industry**

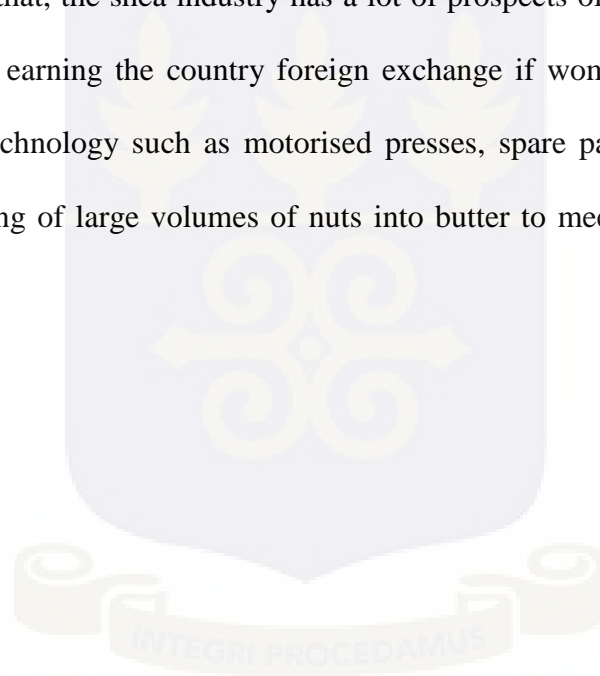
Abujaja (2013), examined the impact of interventions by development agencies on the productivity and profitability of Shea nut / butter processors. The results revealed that labour productivity of beneficiaries of development interventions differ slightly from non-

beneficiaries. Abujaja identified market sourcing as a major problem confronting butter processors in the district.

Examining the contributions of IFAD towards rural poverty reduction among small-holder farming in the Sekyere-West District, Ashanti Region, Ghana, Asamoah (2009), elicited a cross-sectional data spanning from 2000 - 2004 from 240 IFAD assisted farmers in the District. The study revealed that IFAD successes were largely due to effective training and monitoring of resources given out to farmers were used for the intended purpose. This resulted in the project registering a high food crop production rate, thereby leading a high loan repayment rate of the farmers. Again, the study found that prior to the interventions, small-holder farmers could not access credit either due to lack of collateral or exploitative nature of the local money lenders. However, with the emergence of IFAD, there has been easy access to micro-credit as well as low interest rates on loans given to small-holder farmers. This has helped many beneficiary farmers to expand their farms. Furthermore, IFAD's interventions have not only helped farmers acquire more factors of production to expand their business but also raised their farm income substantially, some over 300% from their farming activities making it possible for them to meet the needs of their households. Asamoah argued that, notwithstanding the small fraction of farmers benefiting from the IFAD's intervention, the project has helped in reducing the shocks, and risk associated with small-holder farming and has also significantly contributed to alleviating the poverty levels of the beneficiary farmers thus improving their well-being.

Ndow (undated), investigated the success story of Fatou and the Songtaab-Yalgré rural women's association in the shea industry in Burkina Faso. The study assessed how rural women are organized in the shea butter enterprise. The study revealed that through the commitment of the government to empowering women economically, triggered the revitalization of the shea nut

sector. This support has aided the women to process shea nuts into shea butter, provided jobs, additional income and an improvement in the well-being of numerous Burkinabé women. Also, the findings showed that access to; credit, technology, and foreign markets through the right assistance from government, and NGOs, women in the shea industry have chalked a lot of successes. The finding further revealed that, adherence to shea quality, packaging, cut down of shea trees for fuel wood, product certification, ensuring consistency of supply and coordinating concerted action above partisan concerns were the major issues confronting the shea industry. The study concluded that, the shea industry has a lot of prospects of improving the standard of living of women and earning the country foreign exchange if women are given the requisite training, additional technology such as motorised presses, spare parts for their equipment to facilitate the processing of large volumes of nuts into butter to meet the growing demand for shea and its products.



## CHAPTER FOUR

### METHODOLOGY OF THE STUDY

#### 4.0 Introduction

According to Loayza and Raddatz (2010), the contribution of a sector to poverty reduction hinges on the sector's ability to employ majority of the unskilled labour force. However, the story is different in the Shea industry as the women are consistently and persistently exploited and repudiated of resources and information needed to live a decent livelihood, (Brandth, 2004). Shea nuts picking, butter processing and marketing when given the necessary support would have the potential to alleviate poverty among women in rural Northern Ghana if the State, NGOs, and other stakeholders harness the potentials of the shea sector in the country and take initiatives to capitalize on the begging opportunity to transform lives, communities and the national economy as a whole. The overall potential of the shea industry as a source of employment, poverty reduction, propelling growth in northern Ghana and a source of foreign exchange for the country is therefore not fully utilized. It is against this background that the study seeks to examine the shea industry as a tool for poverty reduction among rural women in Northern Ghana. Micro level household data was solicited from thirty-five selected communities in the three regions of Northern Ghana using structured questionnaires. The structure of this chapter includes; the scope of the research, the profile of the study areas, sources of data, sample size and sampling techniques, model specifications, research design and some ethical issues. The study employed both descriptive and inferential statistics to analyze the responses from the field survey. The specific tools employed included; percentages, means, frequency distributions, cross-tabulations, pie-charts, bar-graphs, the Probit and multiple linear regressions models, F-test and t-test.

#### 4.1 Scope of the Research

The study selected two districts each from the three regions of Northern Ghana out of a total of fifty (50) districts in the area. The choice was founded on the varying geological (physical, biological, environmental, ecological, and geographical) and social differences in the three regions in question. The case study made it possible for the research to ascertain how the shea industry is growing in the three northern regions. The method also assisted the research to evaluate the support (if any) given by various actors especially government in the shea industry. The choice of some rural districts of the three regions was done deliberately to help give a clearer picture of the features, human institutions and interactions prevailing within the shea industry.

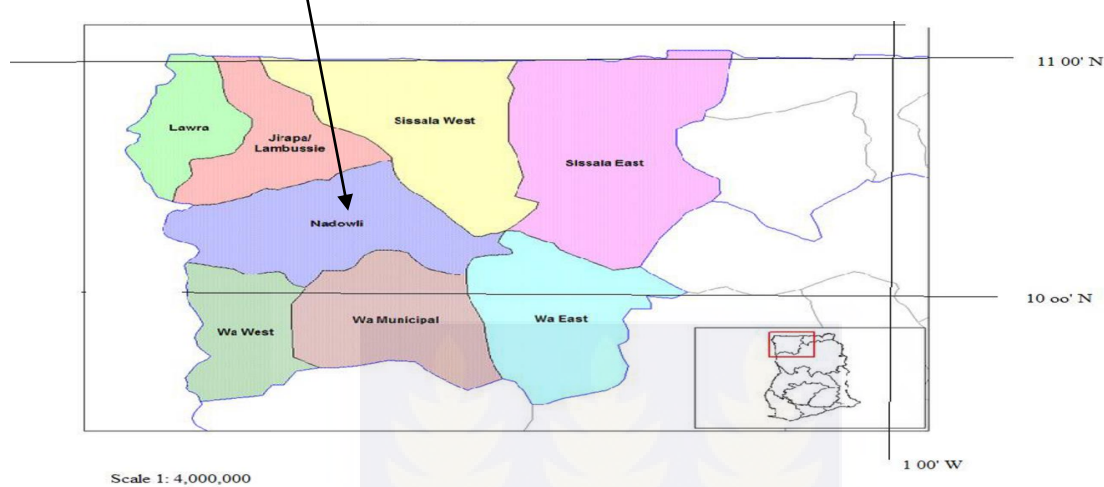
The districts are Central Gonja and West Mamprusi districts in the Northern Region, Talensi and Nabdam districts in the Upper East Region and Wa-East and Nadowli- Kaleo Districts in the Upper West Region. A wide range of information was solicited on the role of the shea industry in reducing poverty among women in those areas and sought to understand:

- The activities of shea pickers and butter processors
- The challenges confronting the shea industry
- The various activities involved in shea processing (manually and mechanically)
- The forms of support the women receive from government, NGOs and Civil society groups.
- The prospects of the Shea industry in alleviating poverty among rural women
- The nexus existing among the various actors in the shea industry to enable the State harness and stream line the activities of the shea industry.

## 4.2 Study Area

### 4.2.1 Profile of Nadowli – Kaleo District

**Figure 4.1:** Location of Nadowli – Kaleo District – Upper West Region



Source: [www.ghanadistricts.com](http://www.ghanadistricts.com)

Nadowli is the district capital of the Nadowli - Kaleo District. The District lies between latitude 11° 30' and 10° 20' north and longitude 3° 10' and 2° 10' west. It is bounded by Jirapa District to the North, Wa -West to the South, Daffiama Bussie Issa District to the East and Ivory Coast to the West. The district has a low but gently rippling landscape, with altitudes spanning between 150m- 300m above sea level. The Bakpong and other transitory streams flow through the district into the Black Volta.

The district has two seasons a rainy season which starts in April and ends in September while the dry season sets in, in October through to March. The district records a mean annual temperature of 32° and a mean annual rainfall of about 1100mm with August as its peak month.

The district has a population of 94,388. Out of which 44,724 are males and 49,664 are females giving a sex ratio of 90.1. It is obvious from population census that the district predominated by women. It is therefore imperative that policies should be geared toward solving women's plight.

There are two major tribes in the district namely; the Dagaabas who constitute 96% of the population and the Sissala who are 3%. Other tribes constitute only 1%. The Willaa, Sankana Kalibi and the Zenbenti are the festivals celebrated by the people in the District.

### **Vegetation, & Agriculture**

Nadowli – Kaleo is located within the guinea savannah woodland with shrubs, grassland and dispersed small trees. Some economic trees in the district include dawadawa, shea, mango, kapok and the baobab trees. The underlying rocks in the districts are Birimanian and Granite. The sandy loam, laterite and sandy soils are found in the district. The economy is predominantly Agriculture followed by industry and commerce. Major crops propagated in the district are sorghum, yam, cowpea, maize, and millet whereas cash crops grown include pepper, groundnuts, tiger nuts, soybeans, cotton, cassava, and cowpea. Artisans include cloth/smock weaving basketry, pottery, blacksmithing, shea butter extraction and pito brewing, are yet to receive the needed support. The district has few dams for irrigational and fishing purposes. The district Assembly in partnership with the rural enterprise programme, NBSSI, IFAD and AFDB has put up a rural technology facility to process shea butter, rice, groundnuts and others.

### **Problems confronting Agriculture in the District**

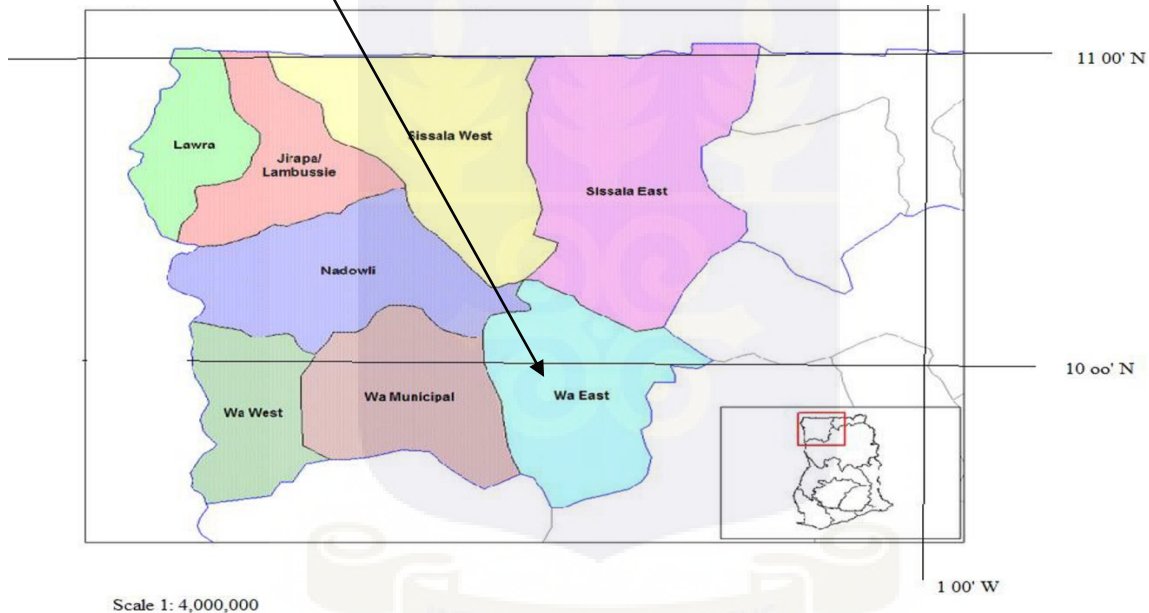
- ❖ limited availability of Extension Service
- ❖ unreliable rainfall
- ❖ Sand and gravel winning
- ❖ inadequate storage facilities
- ❖ silting of water bodies like dams and ponds
- ❖ Insufficient irrigation facilities
- ❖ limited access to credit facilities

- ❖ Low technology
- ❖ Poor soils fertility
- ❖ Poor and unmotorable roads linking farms to marketing centres.
- ❖ Deforestation - bush burning/fire and forestry management

Source: [www.ghanadistricts.com](http://www.ghanadistricts.com)

#### 4.2.2 Profile of Wa East District

**Figure 4.2:** Location of Wa East district – Upper West Region



Source: [www.ghanadistricts.com](http://www.ghanadistricts.com)

The Wa East district was created by the L.I 1746 in July 2004, with Funsu as its district capital. The district is bounded by Sissala to the East and West, North Gonja to the South-East and Mamprugu- Moaduri to the North –East. The district has a landmass of nearly 1,078km<sup>2</sup>, and which lies between latitudes 9° 55”n and 10° 25”n and longitude 1° 10”w and 2° 5”w. The landscape is mostly undulating with height between 180-1300m above sea level. The kulpawn and its tributaries dominates the drainage system in the district. The underlying bedrocks in the

district are metamorphic and granite rocks with traces of minerals such as iron, bauxite and gold in some parts of the district especially around Bulenga. According to the 2010 population census, the District recorded 72,074 inhabitants. Out of this 36,396 are males and 35,678 are females, giving a sex ratio of 102.0. The Wa East district is endowed with several ethnic groupings, notably among them are the Sisalas, Dagabas, Walas, Chakalis, Lobis and many others. There are three major religions in the district namely; Christianity (10%), Traditional (20%) and Islam (70%). The dominance of the Islamic religion has seen the marginalization of women in decision making.

#### Vegetation and Agriculture

There are two main types of soils in the district namely; the sandy and loamy soil, with both soils suitable for the rearing of livestock and the cultivation of legumes, cereals and tubers. Agriculture is the mainstay of the people, employing over 90% of the unskilled labour in the district while the remaining 10% is engaged in other businesses. Women in the district are mostly engaged in the gathering and processing of shea nuts and dawadawa. Other activities women and men engage in include pottery, weaving, pito brewing blacksmith, smock weaving and mining (galamsey).

#### **Problems confronting Agriculture in the District**

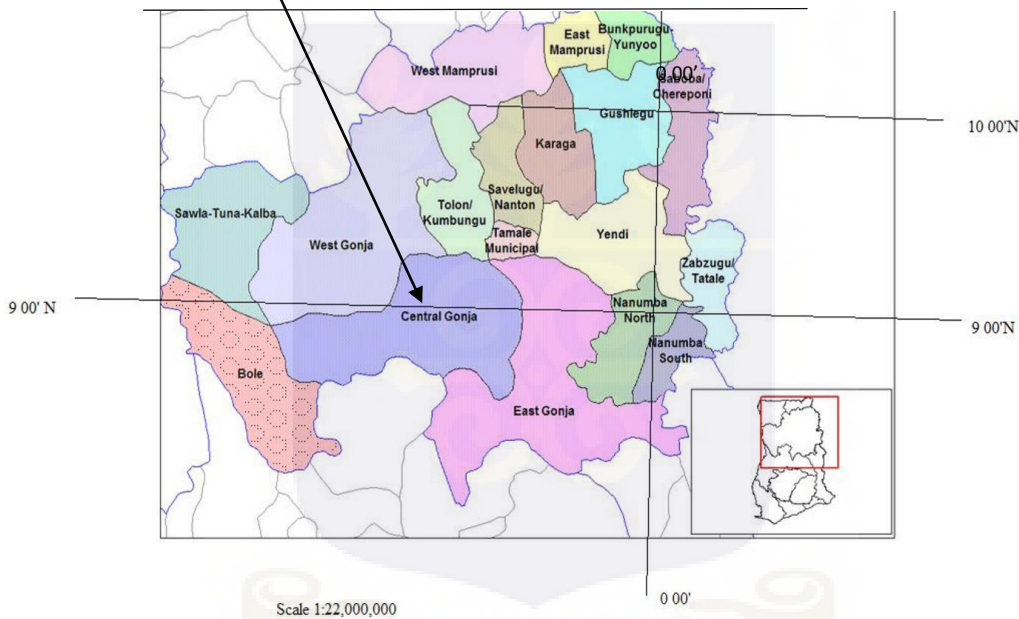
- ❖ Low application of technology
- ❖ Poor roads linking farming centres
- ❖ Deforestation- bush burning, fuel wood
- ❖ limited availability of Extension Service
- ❖ erratic rainfall patterns
- ❖ inadequate storage facilities

- ❖ silting of water bodies like dams and ponds
- ❖ Insufficient irrigation facilities
- ❖ limited access to credit facilities

Source: [www.ghanadistricts.com](http://www.ghanadistricts.com)

### 4.2.3 Profile of Central Gonja District

**Figure 4.3:** Location of Central Gonja District – Northern Region



Source: [www.ghanadistricts.com](http://www.ghanadistricts.com)

Buipe is the district capital of Central Gonja District. The district is bordered by Tamale to the North, Kintampo to the South, East and West Gonja districts to the East and West respectively. It has a total landmass of 8,353 Km<sup>2</sup>. The landscape of the district is generally low but gentle sloping at altitudes between 150m - 300m above sea level. The White and Black Voltas are the major rivers flowing through the district. The district has two main seasons namely the rainy and dry seasons, with the rainy season starting from May to October and average rainfall between 1000mm -1500 mm whereas the lean season spans from November to April with an

average temperature of 35°C. The savanna ochrosols, laterite and alluvial soils characterized the types of soil in the District. According to the 2010 population census, the District has a population of 87,877. Out of this, 43,860 are males and 44,017 are females, giving a sex ratio of 99.6. This calls for policies to address the influx of females to southern Ghana in search for jobs. The major tribes in the district are the Gonjas, Mamprusis, Dagombas, Dagaabas and the Hangas, with Damba as their major festival. The district is predominantly Muslims, with few Christians and traditional believers co-existing peaceful.

### **Agriculture**

The main occupation of the people is Agriculture including fishing and livestock rearing, employing over 90% of the unskilled labour. Others are engaged in artisanal works like blacksmithing, carving, food processing, weaving and many others. The soil is suitable for the cultivation of tubers, legumes and cereals.

### **Industry**

The District is blessed with two manufacturing industries namely; the Savanna Diamond Cement and the PBC shea limited processing factory. These industries have employed the teeming youth in the district. Other small-scale activities engaged in by the inhabitants in the District include; gari processing, rice milling, groundnut oil and shea butter extractions.

Buipe serves an inland port for the Volta Queen which carries cotton, iron rods, petroleum products, cement, cattle, and many others to and from the north. Motorized boats and Canoes commute from one community to the other. The Yakumbo Forest Reserve can serve as a source of revenue for the district if properly managed.

### **Problems confronting Agriculture in the District**

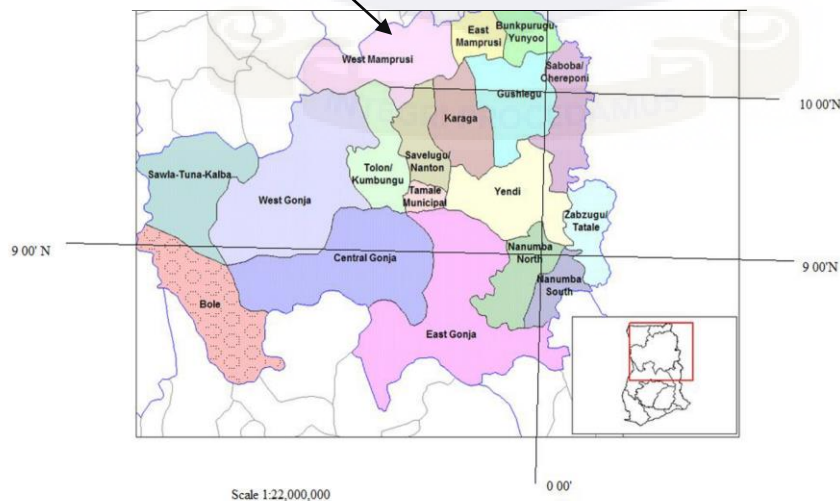
- ❖ limited availability of Extension Service

- ❖ unreliable rainfall
- ❖ Sand and gravel winning
- ❖ inadequate storage facilities
- ❖ silting of water bodies like black and white Volta rivers
- ❖ limited access to credit facilities
- ❖ Low technology
- ❖ Poor soils fertility
- ❖ Inadequate transportation system
- ❖ Unmotorable roads linking farming communities and marketing centres.
- ❖ Deforestation - bush burning/fire and mining activities

Source: [www.ghanadistricts.com](http://www.ghanadistricts.com)

#### 4.2.4 Profile of the West Mamprusi District

Figure 4.4: Location of West Mamprusi District – Northern Region



Source: [www.ghanadistricts.com](http://www.ghanadistricts.com)

The West Mamprusi District was created in 1988, with **Walewale** as its administrative capital. The district shares boundaries with Bolgatanga and Kassena- Nankana districts to the North, Savelugu to the South, North Gonja and Karaga districts to the East and Sissala East to the west. The topography of the district is characterised by isolated hills and gentle slopes. The underlying bedrocks in the district are the Birimian and middle lower Voltaian rocks. There are two seasons in the district namely, the rainy and dry seasons. The rainy season in the district spans from April to October, with an average annual rainfall of between 950 mm - 1,200 mm whereas the dry season is characterized by the Hamattan winds, with March-April recording the highest temperature of approximately 45°C. The White Volta and its tributaries flow through the district

According to the 2010 population census, the West Mamprusi District recorded a population of 168,011. Out of this 83,005 are males and 85,006 are females, giving a sex ratio of 97.6. The major tribe in the district is the Mamprusis co-existing peacefully with other tribes such as the, Ewes, Kassenas, Bimobas, Frafras and the Fulanis.

#### Vegetation and Agriculture

The vegetation of the West Mamprusi District is characterized by shrubs and perennial grasses. Agriculture is the mainstay for the inhabitants of the district. Large acres of land is cultivated with major crops like, cotton, guinea corn, millet, groundnuts, maize and tubers like yam and cassava as well as vegetables. Most women in the district engage in Shea nut/ butter processing, Dawadawa spice, groundnut oil extraction, smoked fish, parboiled rice. The flat grassland in the district makes it suitable for poultry and livestock rearing.

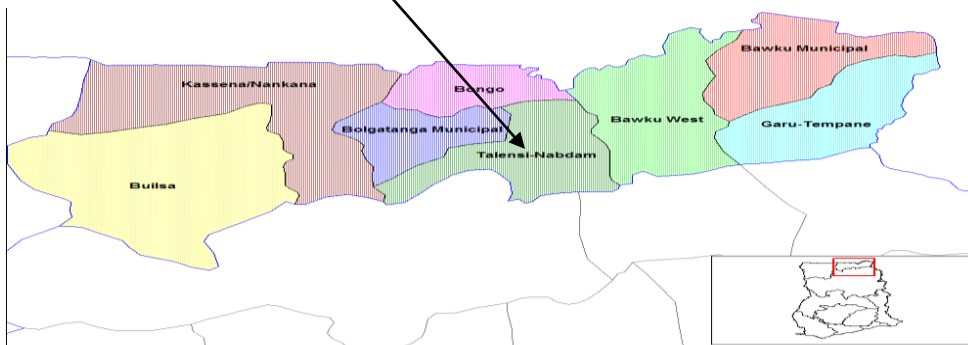
### Problems confronting Agriculture in the West Mamprusi district

- Perennial bush fires
- Unstable prices for agricultural produce.
- Decreasing soil fertility
- Use of primitive farming tools
- Inadequate supply of agricultural machinery and equipment
- High cost of inputs and spares
- Insufficient market structure.
- Unreliable rainfall pattern
- Poor road infrastructure, e.g., poor road network.
- Limited access to support for farmers, e.g. credit
- Seasoning farming.
- Inadequate storage facilities.
- Inadequate extension services

Source: [www.ghanadistricts.com](http://www.ghanadistricts.com)

### 4.2.5 Profile of the Talensi District

Figure 4.5: Location of Talensi – Nabdam district – Upper East Region



Source: [www.ghanadistricts.com](http://www.ghanadistricts.com)

The Talensi District was carved out the then Talensi-Nabdam district in 2012. Its administrative capital is Tongo. The District shares boundaries with Bolgatanga Municipal to the North, West and East Mamprusi Districts to the South, Kassena-Nankana and Bawku West Districts to the West and East respectively. The district lies between latitude  $10.15^{\circ}$  and  $10.60^{\circ}$  north of the equator and longitude  $0.31^{\circ}$  and  $10.5^{\circ}$ . The topography of the district is characterised by isolated hills and gentle slopes, with the Voltarian, Tarkwanian and the Birimian rocks forming the bedrock of the district. The district has the Red and White Volta and their tributaries flowing through it. According to the 2010 population census, the then Talensi – Nabdam District has a population of 115,020. Out of which 57,702 are males and 57,318 are females, giving a sex ratio of 100.7. This indicates the then Talensi - Nabdam district was predominated by males. It also shows that with the needed support in agriculture, most of the youth who migrate down south in search of jobs during the lean season will reduce to its barest minimum if not eliminated. The Talensi speaking people constitute the majority tribe in the district, closely followed by gurune speaking people. The people celebrate the golug, tingama, and adaakoya festivals.

### **Vegetation & Agriculture**

The vegetation of the Talensi District is best described as Guinea Savannah Woodland, comprising shrubs and perennial grasses. About 90% of the population are engaged in agriculture as their source of income and livelihood. The farmers cultivate both Cereals and legumes during the rainy season. Some vegetables cultivated during the dry season include; Pepper, Okro, Tomato, Garden Eggs and Vegetables; Tubers cultivated include Frafra Potato and Sweet Potato. The vegetation is also suitable for the rearing of livestock like; cattle, goats, guinea fowls, donkeys, ducks, turkeys, pigs fowls and sheep. Others economic activities

engaged by the people are mining, Shea butter processing, livestock rearing, hunting, fuel wood and fishing. Some Economic trees in the district include the baobab, dawadawa and shea trees.

### **Industry**

The district has two kinds of quarrying system, the industrial quarrying which produces chippings and dust while the Artisanal stone quarrying and heaping activities that also produce stones for the construction industry. The North Star Tomatoes Factory and the Ghana Cotton company are both situated in the District, serving as a source of employment for the teeming youth. The District has only one Shea processing plant owned by a private entrepreneur located at Puso - Namongo which employs over thirty women. Also the craft and tourism industries if well harnessed in the district, will go a long way to serve as a source of income for both the unskilled labour and the district Assembly.

### **Problems confronting Agriculture in the District**

- Limited irrigation facilities
- Bush fires
- Erratic rainfalls
- Poor road network especially to food producing areas
- Deforestation- mining activities, fuel wood
- Silting of water bodies
- Landscape destruction by mining activities
- Soil erosions
- Perennial Flooding of farm lands and home
- Inadequate extension/technical staff
- Inadequate logistical support to farmers

- Poor soil fertility
- Poor market structure

Source: [www.ghanadistricts.com](http://www.ghanadistricts.com)

#### 4.2.6 Profile of Nabdam District

Nabdam District was carved out of the Talensi-Nabdam district by the L.I. 2105 in 2012. It has **Nangodi** as its district capital. The Nabdam district is bordered to the West by Bolgatanga Municipal, to the North by Bongo District, to the South and East by the Talensi and Bawku West districts respectively. The District lies between latitude  $10.15^{\circ}$  and  $10.60^{\circ}$  north of the equator and longitude  $0.31^{\circ}$  and  $10.5^{\circ}$ . The topography of the district is characterised by undulating lowlands and gentle slopes. Three types of rocks namely; the Birimian, Tarkwanian and Voltarian rocks form the bedrock of the district. The district is drained mainly by the Red Volta and their tributaries. The district has no separate statistics on the population of people living in it. Nabdams are the major tribe, followed by the Talensis and a handful of Frafras. The people celebrate Adaakoya and Tenlerege festivals.

#### Vegetation & Agriculture

The vegetation of the Nabdam district is best described as Guinea Savannah Woodland, comprising shrubs and perennial grasses. Majority of the populace are engaged in agriculture as their source of income and livelihood. The farmers cultivate both Cereals and legumes during the rainy season. Some vegetables cultivated during the dry season include; Pepper, Okro, Tomato, Garden Eggs and Vegetables; Tubers cultivated include Frafra Potato and Sweet Potato. The vegetation is also suitable for the rearing of livestock like; cattle, goats, guinea fowls, donkeys, ducks, turkeys, pigs fowls and sheep. Others economic activities engaged by

the people are mining, shea butter processing, livestock rearing, hunting, fuel wood and fishing. Some Economic trees in the district include the baobab, dawadawa and shea trees. Others economic activities engage by the people are mining, Shea butter processing, livestock rearing, hunting, fuel wood and fishing. The district has one kind of quarrying system, thus the Artisanal stone quarrying and heaping activities that also produce stones for the construction industry. The District has two Shea processing plant owned by private entrepreneurs located at Kongo and Dasabligo, employing over 200 women. Also the craft and tourism industries if well harnessed in the district, will go a long way to serve as a source of income for both the unskilled labour and the District Assembly. Economic trees like the shea, dawadawa, and baobab, which constitute a major source of income for women, are still wild and prone to destruction by annual bushfires.

#### Problems confronting Agriculture in the District

- Limited irrigation facilities
- Bush fires by herdsmen and hunters
- Erratic rainfalls
- Poor road network especially to food producing areas
- Deforestation- mining activities, fuel wood
- Silting of water bodies
- Landscape destruction by mining activities
- Soil erosions
- Perennial Flooding of farm lands and home
- Inadequate extension/technical staff
- inadequate logistic support

- Poor soil fertility
- Poor market structure

Source: [www.ghanadistricts.com](http://www.ghanadistricts.com)

### **4.3 Sources of Data**

Two data sets were used for the study, namely; primary and secondary data. The primary data were sourced using direct observations, focus group discussions as well as a structured interview guide with shea nut collectors and butter processors groups and individuals as well as shea nuts buyers, exporters and their agents (middlemen and women). Structured questionnaires (thus questions which seek to address the research objectives) were administered at the field and the responses constituted the primary data. Secondary data were solicited from, State institutions like District Assemblies, the Ministry of Food and Agriculture, Cocoa Research institute of Ghana(CRIG), SADA, West African Trade Hub(WATH), Shea Associations, Exporters of Shea nut/butter, PBC Shea limited, Shea processing factories, and NGOs in the shea industry like Technoserve Ghana, Afrikids - Ghana, Global Shea Alliance, and many others. The views sought helped in addressing the research objectives.

### **4.4 Sample Size and Sampling Techniques**

#### **4.4.1 Population of the Study**

The target population for the study was drawn from women involved in the shea industry in six (6) selected districts, two districts each from the three Northern Regions.

#### 4.4.2 Sample Size

The sample size will be calculated using the expression below:

$$n = N / (1 + N(e)^2);$$

Where

n= sample size;

N= sample frame and

e= level of precision.

N=2750, (Field survey, 2016)

(e) = 0.05;

Therefore:  $n = 2750 / (1 + 2750(0.05)^2) = 349.2$ , approximated to 349.

Although the calculated sample size is 349, an arbitrary sample size of 210 was agreed upon based on the researcher's capacity in terms of available time, funds and logistics.

#### 4.4.3 Sampling technique

Multistage sampling techniques was employed in the selection of the districts and respondents for the study. Also both probability and non- probability sampling techniques were used to collect data for the study. A stratified sampling was conducted according to the population of women engaged in shea picking and butter processing in each community. The Shea pickers were apportioned 57.14% (120) of the sample size, and the butter processors 42.86% (90) of the sample size.

The first stage of the sampling procedure involved a non-random selection of six (6) districts, two from each region based on certain economic characteristics (like poor markets, roads and infrastructure, dense shea tree, and the existence of processing factory) in the districts. Thus, in the Upper East Region, Talensi and Nabdam districts were

selected, in the Upper West, Nadowli - Kaleo and Wa East districts and in the Northern Region, West Mamprusi and Central Gonja districts.

The second stage involved a purposive and convenience selection of five (5) communities from each selected district. Purposive sampling offered the researcher the opportunity to select communities with shea tree population and noted for picking or processing large quantities of nuts or butter for sale. It also helped the researcher to select communities which are were far and near the district capitals. The convenience sampling made it feasible for the researcher to choose the communities at his discretion, based on accessibility and availability of resources.

In the third stage, due to the heterogeneous nature of most communities selected, the women were grouped into strata for focus group discussions. This method offered the researcher the opportunity to delve into how the shea industry operates at the various localities, the plight of women in the industry and how to address these challenges. This also enabled the researcher to fetch firsthand information regarding how the various groups or tribes process their nuts / butter.

The final stage involved a random (ballot) selection of seven (7) respondents; comprising four (4) shea nuts pickers and three (3) butter processors from the strata formed in each community. This gave the number of women to be interviewed in each district to be thirty five (35) as shown below (see tables 4.1, 4.2 & 4.3). Thus a sample size of two hundred and ten (210) women in the shea industry was interviewed in the study.

#### 4.4.4 Sample Size Distribution

Table 4.1: Estimated Shea population in selected communities of the Upper East Region

UPPER EAST REGION					
Talensi District					
Selected Communities	Estimated Population of women in Shea industry	N <sup>o</sup> of Strata	N <sup>o</sup> of Respondents		Total
			Shea Pickers	Butter Processors	
Winkogo	90	5	4	3	7
Pusu-Namongo	60	4	4	3	7
Balungo	80	3	4	3	7
Pwalungu	100	5	4	3	7
Gorogo	60	3	4	3	7
<b>Sub-Total</b>	<b>390</b>	<b>20</b>	<b>20</b>	<b>15</b>	<b>35</b>
Nabdam District					
Nangodi	70	3	4	3	7
Sakoti	100	4	4	3	7
Kongo	110	4	4	3	7
Zua	80	3	4	3	7
Dasabilgo	100	4	4	3	7
<b>Sub-Total</b>	<b>460</b>	<b>18</b>	<b>20</b>	<b>15</b>	<b>35</b>

Source: Author's Construct, 2016

Table 4.2: Estimated Shea population in selected communities of the Upper West Region

UPPER WEST REGION					
Wa East District					
Selected Communities	Estimated Population of women in Shea industry	N <sup>o</sup> of Strata	N <sup>o</sup> of Respondents		Total
			Shea Pickers	Butter Processors	
Bulenga	130	6	4	3	7
Charku	50	3	4	3	7
Goripie	100	5	4	3	7
Busa	80	5	4	3	7
Manwe	90	4	4	3	7
<b>Sub-Total</b>	<b>450</b>	<b>23</b>	<b>20</b>	<b>15</b>	<b>35</b>
Nadowli- Kaleo District					
Sambo	140	4	4	3	7
Serekpere	70	3	4	3	7
Gbonko	100	6	4	3	7
Goriyire	90	3	4	3	7
Nadowli	110	5	4	3	7
<b>Sub-Total</b>	<b>510</b>	<b>21</b>	<b>20</b>	<b>15</b>	<b>35</b>

Source: Author's Construct, 2016

Table 4.3: Estimated Shea population in selected communities of the Northern Region

NORTHERN REGION					
Central Gonja District					
Selected Communities	Estimated Population of women in Shea industry	N <sup>o</sup> of Strata	N <sup>o</sup> of Respondents		Total
			Shea Pickers	Butter Processors	
Bilsikura	90	4	4	3	7
Lingbinkura	100	3	4	3	7
Kabilpe	110	5	4	3	7
Warantu	70	4	4	3	7
Yepaale	80	2	4	3	7
<b>Sub-Total</b>	<b>450</b>	<b>18</b>	<b>20</b>	<b>15</b>	<b>35</b>
West Mamprusi District					
Nemeyela	60	2	7	3	7
Gbeo	120	5	4	3	7
Karimenga	40	6	4	3	7
Kurugu	100	4	4	3	7
Wulugu	170	5	4	3	7
<b>Sub-Total</b>	<b>490</b>	<b>22</b>	<b>20</b>	<b>15</b>	<b>35</b>
<b>Grand Total</b>	<b>2,750</b>	<b>122</b>	<b>120</b>	<b>90</b>	<b>210</b>

Source: Author's Construct, 2016

#### 4.5 The Probit Regression Model Specification

Linear Probability Model (LPM), probit and logit models can be used to analyse binary choice models. However, linear probability model has serious defect in that, the estimated probability values can lie outside the normal 0-1 range (see Cameron and Trivedi 2005 and Gujarati 1988). Hence probit and logit models are advantageous over LPM in that the probabilities are bound

between 0 and 1. In addition, these models also fit the non-linear relationship between the probability and explanatory variables better.

The Probit regression was employed to ascertain the capacity of women to access logistical support and the factors influencing their ability (objective 2). Seven (7) variables (factors) were hypothesized to influence enterprise owners' ability to access the support. The variables include age, level of education, experience, processing technique (technology), level of output, capacity training and belonging to an Association (membership). The age variable tells how energetic one is and the ability to increase production. The education variable describes one ability to appreciate information and adopt new ideas. Also, the experience variable describes how long one has been in the industry and one's knowledge on the industry. Again, output level tells the quantity of nuts/butter one is producing and the prospects of increasing their produce. Furthermore, the processing technique variable describes the method used to process the fruits into nuts and the dry kernel into butter. The technology used can go a long way to improve upon the quality and quantity of nuts/butter produced. The capacity training variable connotes the effects of the training workshops one has received regarding changes and best practices. Finally, membership of association makes it easier for sharing of information and support for colleagues.

According to Kebede *et al.*, (1990), the characteristics of business owners have strong impact on the performance of small scale enterprises in Nigeria and that the level of human capital (representing the years of schooling of the owner) and experience are the most significant factors affecting the performance of small scale enterprises in Nigeria.

The Probit model is generally specified as

$$y_i = \alpha + \beta X_i + \varepsilon_i \dots \dots \dots (1)$$

$$y_i = \begin{cases} 1, & y_i = \text{if respondent have access to support} \\ 0, & y_i = \text{if respondent does not have access to support} \end{cases}$$

Where Y is a vector of values representing the dependent variable; X is a vector of explanatory variables that affect business owner and enterprise specific categories;  $\beta$  is a vector of parameters of the control variables and  $\varepsilon$  is the standard vector representing the stochastic error term. Given the binary nature of the dependent variable, the probit regression estimation technique was used to determine how each of the explanatory variables influenced the probability that a Shea farmer had access to logistical support or not.

Equation (1) is therefore specified as

$$\text{Pr}(Y = 1|X_i) = \Phi(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7)$$

Where Y is the dependent variable and  $X_i$  denotes the set of explanatory variables. Assuming that the model is linear in the set of parameters,

$\Phi$  is the cumulative normal distribution function.

$Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7$  is the “z-value” or “z-index” of the Probit model.

$\beta_s$  are the effect on the z-score of a unit change in  $X_i$ .

$X_1$ = Experience in shea butter processing (years),

$X_2$ = Education (years of schooling),

$X_3$ = Capacity development (number of workshops attended),

$X_4$ = Membership association (1= belonging to an association and 0 = otherwise),

$X_5$  = Output (quantity of shea nuts or butter produced) and

$X_6$  = Entrepreneurial skills dummy (1= modern method of processing shea butter and 0 = otherwise).

$X_7$  = Age (in years)

#### 4.6 The Multiple Linear Regression Model Specification

The multiple linear regression model was adopted to help establish the relationship between the dependent variable (output) and some independent variables. The multiple linear regression was modeled using the OLS estimators. Also, the pairwise correlation matrix was carried out to check the extent to which the selected independent variables were correlated. Thus to check for multicollinearity.

The model is specified as follows:

Mathematical representation of the Model

$$Y = \beta_0 + \beta_1 C + \beta_2 Labo + \beta_3 Cap + \beta_4 Exp + \beta_5 Ass + \beta_6 Skil + \beta_7 Age + \beta_8 Market + \beta_9 Edu + \beta_{10} Price + \varepsilon$$

Where:

$Y$  = Quantity of nuts/butter produced (number of basins)

$C$  = access to support (1= yes and 0= otherwise)

$Lab$  = labour per day (mandays)

$Cap$  = capacity development (number of workshops attended)

$Exp$  = number of years in the industry

$ASS$  = membership association (1=belonging to an association and 0= otherwise)

**Skil** = entrepreneurial skills dummy (1= modern method of processing shea butter and 0 = otherwise).

**Age** = age in years

**Market** = access to market (1= have ready market for produce and 0= otherwise)

**Edu** = years of schooling

**Price** = Cost per bag in Ghana cedis

$V_i - U_i$  = the standard error or deviation( $\epsilon$ )

$\beta^{\delta}$  are the regression coefficients estimated.

#### 4.6.1 Hypotheses of the study

Ho<sub>1</sub>: There is no significant relationship between access to logistical support and the quantity of Shea nuts / butter processed.

Ho<sub>2</sub>: There is no significant relationship between processing technique used and quantity of Shea nuts/butter produced.

#### 4.7 Research Design

The opting for a case study approach enables the researcher to investigate and comprehend the dynamics of the shea industry. The good things about this approach are that it creates the opportunity to scrutinize current happenings such as the shea industry which has several veracities and yet encumbered with hitches accessing the desired information (Nachmias and Nachmias, 1987). The method makes it feasible to use findings from this study to advice policy direction and planning about the shea industry.

The weaknesses of the case study approach lie in the fact the researcher has little influence on the event under investigation and that the outcome might not certainly reflect a general picture.

Further, the variations in social issue under investigation may constrain the applicability of the result from one locality to another.

#### **4.8 Ethical Consideration**

According to Silverman (2005) consent of the participants must be obtained before partaking in the study. This is done by first explaining to the participants what the research is about. This will enable participants to make an informed decision about whether to participate or not. It is essential to make sure the subjects understand what the information will be used, and also ensuring the participation is voluntary.

The ethical issues that are likely to be encountered are issues with regard to participation. Some of the participants may refuse to participate while others may conceal important information. This will be addressed through informed consent, thus informing participants about the nature and purpose of the research and also potential participants will be told that participation is not compulsory but voluntary and anytime the participants feel they do not want to participate, they can stop without any harm.

Another ethical issue is the safety of participants during the research session. This can be addressed by ensuring that the site of the interview will not pose any threat to the participants. Research will not be carried out in a dark area, crime prone zones, etc. The researcher will also ensure that participants are in good health before allowing them to participate.

Some participants may also request for money before participating in the study. It will be explained to participants that the exercise is purely academic and no money has been made available for the research. Furthermore, participants will be made to understand in clear terms that information obtained from participants is not meant for money.

University of Ghana <http://ugspace.ug.edu.gh>

## **CHAPTER FIVE**

### **DATA PRESENTATION AND ANALYSIS**

#### **5.0 Introduction**

This chapter seeks to describe and analyse the responses in the questionnaire administered on the field, by using bar graphs, pie charts and the econometric software (STATA) to analyse the Probit regression and the multiple linear regression and to make some inferential conclusions as and when necessary.

#### **5.1 Descriptive Analysis**

Descriptive statistics was used to; identify the sources and types of funding available to women in the shea industry (objective 1), identify factors affecting the shea industry in the study area (objective 3), determine Shea butter processing techniques utilized in the study areas (objective 4) and finally identify and describe the socioeconomic characteristics of women involved in the shea industry (objective 5). The tools used in the descriptive analysis included; bar graphs, pie charts, frequencies and percentages distribution tables.

For the purpose of the study, a sample size of 210 respondents were selected and interviewed. All respondents were females due to their dominance in the shea industry. This is largely due to the tedious and time consuming nature which most often than not discourages the men from engaging in the picking and processing of the nuts into butter. However, the few men in the industry act as; middlemen between the women and the buyers, operators of the crushers and grinding mills, packaging and loading of the nuts or butter into trucks, (field survey, 2016). This finding buttresses that of Baba et al. (2014), who found that 91.2% of shea nut processors are mainly females.

Also, results from Table 5.1 reveals that majority (60.48%) of the respondents are aged 20-45years while 39.52% of them are above the youthful age. This shows that 60.48% of the farmers are energetic and have the potential of increasing their productivity when given the needed support like credit, logistics like wellington boots, protective gloves, donkey carts, to mention but a few. Also, the results indicate that most of the women (67.14%) are married, 30% are widows. The dominance of both married women and widows' respondents in the study areas points to the fact that most, if not all are enjoying some form of cheap labour from their children and family members. Again, majority (68.1%) of the women had no formal education while 31.9% of them had some form of formal education. The high level of illiteracy among women in the industry poses a threat to the level of acceptance and adaptability to new ideas and changes in the industry. These findings support that of Adesiji et al. (2013), who found that majority of respondents; 52.2% were youth, 81.1% were married, 73.3% had no formal education and 83.3% depended on shea processing as their primary occupation.

Furthermore, table 5.1 shows that most (57.14%) of respondents have been in the shea industry since infancy and about 21.9% had more than ten (10) years working experience either in nuts picking or butter processing. Long experience in the industry was evident in the field as most respondents demonstrated how to identify good shea nuts from bad ones as well as good shea butter from bad butter. Again, 67.14% of respondents had males as the head of the household whereas 32.86% of respondents had females as the head of the household.

Table 5.1: Socio - Economic Characteristics of Respondents

Socio-economic characteristics	Frequency N=210	Percentage
<i>Age (years)</i>		
20–35	42	20.0
35–45	85	40.48
46–60	58	27.62
60+	25	11.90
Total	210	100
<i>Marital status</i>		
Married	141	67.14
Single	0	0
Widowed	63	30.0
Divorced	6	2.86
Total	210	100
<i>Education Status</i>		
Non-formal education	143	68.1
Primary	50	23.81
Middle /JHS	16	7.62
SHS	1	0.48
Tertiary	0	0
Total	210	100
<i>Head of Household</i>		
<i>Husband</i>	141	67.14
<i>Wife</i>	69	32.86
<i>Total</i>	210	100
<i>Years of experience</i>		
Less than 5	16	7.62
6–10	28	13.33
More than 10	46	21.90
Since infancy	120	57.14
Total	210	100

Source: Field Survey, 2016

## 5.2 Sources and types of funding available to women in the shea industry

### 5.2.1 Sources of Funding

The study revealed two major sources of funding for players in the shea industry, namely; formal and informal sources.

Formal sources of funding include: Commercial Banks, Investment Banks, Savings and Credit

Banks, Cooperative Banks, Rural Banks and funds set up by government like MASLOC, YES (Youth enterprise support) or with the support of donor agencies like the Japanese government, Netherland government, IFAD, AfDB, etc. These are mostly accessed by shea processing groups/centres, exporters of sheanuts/butters and agents (middlemen or women), whereas the informal source of funding include: personal savings, friends, relatives, private money lenders, traders, Rotation Credit and Savings Associations (ROSCA's), owners of capital asserts and credit from NGOs, are mostly accessed by individuals or groups engaged sheanut / butter processing and sheanut retailers in their various localities, (Field Survey, 2016). The results in table 5.2 shows that majority (43.3%) of respondents rely on personal savings as a source of funding their shea nut/butter business and about 39.1% of respondents are beneficiaries of logistics like crushers, roaster, grinding mills, protective glooves, warehouses for storage of nuts, capacity training, big pots, boreholes and credit, etc., from either government or NGOs (Zofa, Afrikids-Ghana, Mondo, Techno-serve Ghana, Savannah Fruits Company, Shea Alliance Association and a host of others). This finding is contrary to that of Adams & Abdulai (2014), who established that most (55%) of the respondents had their funding through NGOs Microcredit. Also, the study found that majority (60.95%) of respondents have never received any form of support from either government or NGOs. Similar findings of a lack of access to credit to purchase equipment were reported by Issahaku et al. (2011) and Adam et al. (2014).

It was also revealed that most (75.12%) respondents pick the shea fruits from either farmlands or bushes whereas 21.53% of respondents pick and buy some shea fruits from pickers and about 3.35% of respondents indicated they only buy the shea fruits from pickers. This shows that with the needed support including donkey carts, protective gloves, torch lights and above all fair pricing, more women will be encouraged to pick more shea fruits.

Furthermore, majority of the respondents (57.14%) picked  $\frac{1}{4}$  -1 bag of shea fruits per day, it was

closely followed by 20.48% of respondents who picked 2-5 bags per day while 17.14% and 5.24% of respondents picked 6-10 bags and more than 10 bags respectively per day. This indicates that with the right policies and needed support from government and NGOs coupled with the elimination of information asymmetry in the shea industry, rural women engaged in the industry will experience a substantial increase in their incomes and be motivated to pick more.

### 5.2.2 Funding Arrangements

On the funding arrangements, it was revealed through focus group discussions that some agreements were reached between some shea nut/butter processors and some profit making NGOs. They include the following:

1. The NGOs enter into an agreement with groups of women who process shea butter, by making available processing facilities in the community for the women to use and process the nuts into butter and then sell the butter to the NGOs at a price not determined by the women but rather by the NGOs.
2. The NGOs procure both nuts and equipment for processing nuts and then engages the services of these women to process the nuts into butter. Each woman is paid an amount of Ghc 60.00 per bags processed into butter. However, these women can bring their own nuts to the processing centre, use the equipment in the centre to process their own nuts at no cost.
3. Some NGOs and entrepreneurs put up processing centres in the communities for the general public to use at a fee - thus for commercial purposes. This affirms the findings of Yidana (2009) who argued that this arrangement makes it possible for investors to contribute to several needs of the shea industry.
4. Again some NGOs provide the women with processing facilities to process nuts owned by

the women and then give the butter to the NGOs to get buyer(s) outside the country and upon selling the butter, the NGOs then deduct all expenses incurred and the profit shared between the NGOs and the women.

5. Another funding arrangement identified during the study is pre-financing. In this funding scheme, the NGO gives a group or as individual woman money to purchase nuts and process them into butter for the NGO. The money given to these women includes their wages and rent for equipment.
6. Furthermore, most middlemen and women pre- finance the collection/picking of the nuts from the bushes and farmlands. Thus, agents pay very low prices for a certain number of bags of nuts at the beginning of the fruiting season and the pickers are obliged to stick to the agreement even when other buyers offer better prices for the same quantity.
7. Finally, some NGOs like Akoma, Afrikids Ghana, Techno-serve Ghana, and ZOFA equip women groups with skills in soap making and pomade using shea butter. These women are then supported with credit to go into soap and pomade production as a means of making a livelihood.

It is obvious that contract financing, leasing credit, and micro credit arrangements characterized the types of funding schemes in the study areas. This buttresses the findings of Pufaa (2010) who found contract financing to be dominating the funding schemes among shea butter processors in the Tamale Metropolis.

Table 5.2: Sources and types of funding available to women in the shea industry

Sources	Frequency N=210	Percentage
Personal Savings	91	43.3
Relatives	27	12.9
Membership Associations	10	4.7
NGOs / Government	82	39.1
Financial institutions	0	0
Total	210	100
Support		
Yes	82	39.05
No	128	60.95
Total	210	100
Sources of Sheanuts		
Pick the shea fruits myself	157	75.12
Pick and Buy some from pickers	45	21.53
Buy shea fruits from Pickers	8	3.35
Total	210	100
Quantity of Shea fruits picked/day		
¼ -1bag	120	57.14
2-5 bags	43	20.48
6-10 bags	36	17.14
Greater than 10 bags	11	5.24
Total	210	100

Source: Field Survey, 2016

In table 5.3, the results show that 58.7% of the respondents are engaged in sheanut/ butter processing as an occupation while 41.3% are engaged in other businesses like petty trading, pito brewing and fuel wood/charcoal selling aside picking / butter processing. This shows that most women in the study areas depend largely on the shea industry as a source of their livelihood. Some respondents espoused that the shea business contributes significantly to their well-being, with majority (60.47%) admitting that they have experienced an increase in their incomes via the selling of nuts and butter while 39.53% of the respondents experienced an improvement in their standard of living (thus paying their children school fees, meeting their health and shelter needs and above all affording a balance diet). Others were quick to add that due to the support they give to their husbands, they are often involved in decision - making in the family and the community as a whole. However, the increases in the incomes

of these women is only sufficient to take them out of the extreme poverty bracket of \$ 1.25 per day. Also, those who experienced an improvement in their standard of living were those who belong to cooperatives and shea butter processing groups. These groups dealt directly with the PBCs, Investors and NGOs in the shea industry.

Table 5.3: Livelihood Activities and Effects of the Shea Business on the rural woman

Occupation	Frequency N=210	Percentage
Processing of shea nut/ butter only	123	58.57
Others	87	41.43
Total	210	100
Contribution of the shea nut/butter	210	100
Yes	0	0
No	210	100
Total		
Effect of the Shea Business		
Increase in household income	127	60.47
Improvement in standard of living (Education, health, Food, etc).	83	39.53
Total	210	100

Source: Field Survey, 2016

### 5.3 Shea Butter Processing Techniques Utilized in the Study Areas

The result from figure 5.1 indicates that majority (56.7%) of the respondents employ the semi- mechanized processing technique while 43.3% of them were still comfortable using the traditional/manual method of processing their nuts into butter. This is contrary to the findings of Jamala G.Y et al. (2013), which indicates that majority (73%) of the respondents use the manual method of processing Shea butter.

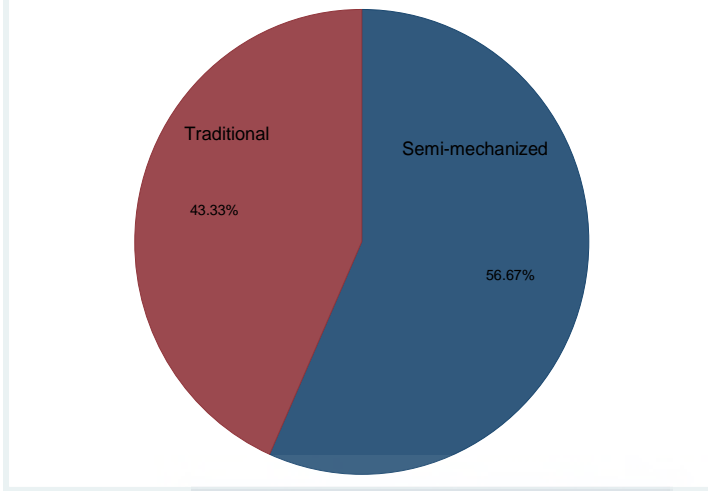
It was also found out that all processing centres visited were not fully semi – mechanized, as most of them could only boast of a crusher and the grinding mill. None of the centres had a dryer while only three centres had kneaders but had abandoned them for the manual (hand) kneading, with the excuse that the kneader yields less quantity of butter compared to the

manual (hand) but were quick to say that butter extracted using the kneader tasted better. These assertions were confirmed by Mr. Alex Ekow Walker, the supply chain manager of PBC Shea limited who pointed out that the mechanized processing method improves the quality of butter but reduces the quantity of butter produced. Again, centres that had roasters abandoned them arguing that the roaster causes the nuts to burn if one fails to properly regulate the intensity of the fire.

On the other hand, Shea butter processors who were classified as traditional, only had access to a grinding mill but crushing of the nuts into grits was done using a pestle and a mortar or a stone and a flat surface. Also, roasting nuts was done using a pan and a wooden stick. The traditional method of crushing and roasting of nuts is very tedious, stressful, time consuming and subjects the women to so much heat.

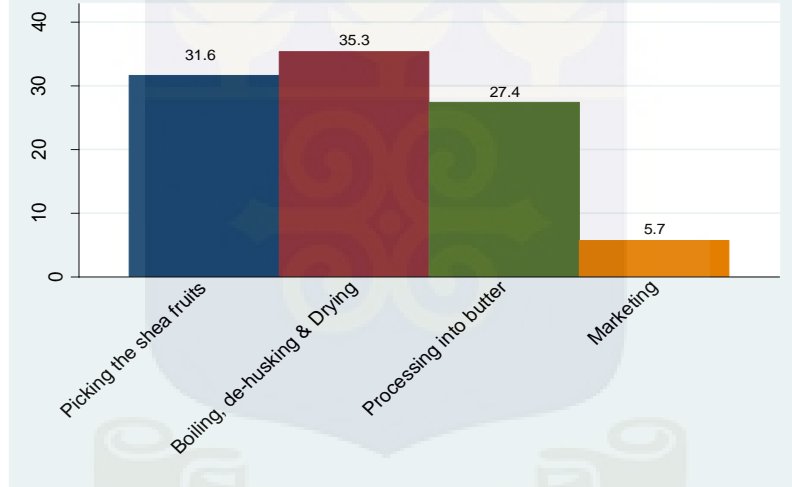
When respondents were asked to rank the following activities (see figure 5.2) in order of difficulty, about 35.3% women were of the view that Par-boiling, de-husking and drying of the nuts are more challenging, closely followed by picking of nuts from farms and bushes with 31.6%, while processing of nuts into butter obtained 27.4% and marketing of either nuts or butter laid at the bottom with 5.7% as the activity with little or no difficulty. The finding buttresses that of Yidana (2009), who found that women who are engaged in the Shea nut industry face a daunting tasks in collecting the nuts.

Figure 5.1: A pie chart showing Sheabutter processing Techniques among respondents



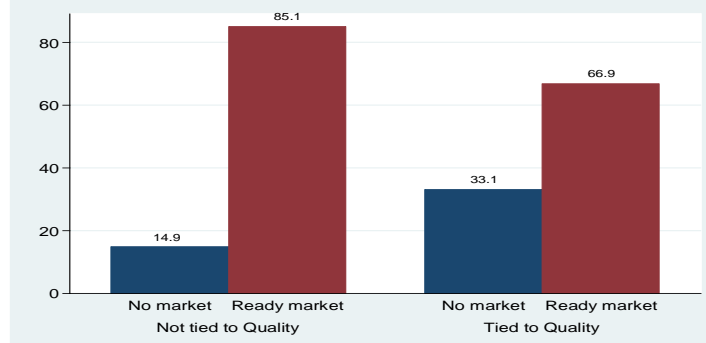
Source: Field Survey, 2016

Figure 5.2: A bar graph ranking the activities in order of difficulty



Source: Field Survey, 2016

Figure 5.3: A multiple bar graph showing the marketing of nuts based on Quality



Source: Field Survey, 2016

Figure 5.3 shows that majority (85.1%) of respondents who said marketing of nuts was not tied to the quality of the nut had ready market for their nuts while 66.9% of the respondents who said quality was tied to market, had ready market for the nuts and butter. This is affirmed by Mr. Koffi and Mr. Ekow of Ghana Specialty fats limited and PBC Shea limited respectively who both espoused that they were satisfied with the quality of nuts from both Ghana and Burkina Faso. They were however quick to add that due to the limited supply of nuts in Ghana, they had to purchase most (65%) of the nuts from neighbouring Burkina Faso to augment what they purchase from Ghana in order to keep their plants working all year round.

Also, when respondents were asked if they were aware that their produce were expected to meet some quality standard, majority (78.6%) of them responded in the affirmative while 21.4% of respondents said they weren't aware of any quality or standard that their produce were expected to meet. (see table 5.4 below)

Again the results in table 5.4 show that majority (79.52%) of the respondents rely heavily on relatives and friends for information. About 11.9% of them depend on extension services, 7.14% from radio and 1.44% from television. This indicates that most respondents adopt information passed down to them from generations. This explains why some respondents found it difficult to adopt new innovations of processing nuts/butter. This findings affirms that of Adesiji et al. (2013), who argued that information from descendants play a critical role in the indigenous techniques of processing shea butter.

Table 5.4: Awareness of Quality of nut/butter and sources of information

Aware of quality	Frequency	Percentage
Yes	165	78.57
No	45	21.43
Total	210	100
Source of information		
Relatives and Friends	167	79.52
Extension agents	25	11.90
Radio	15	7.14
Television	3	1.44
Newspaper	0	0
Total	210	100

Source: Field Survey, 2016

#### 5.4 Results from the Probit and Multiple Linear Regression Models

STATA and Microsoft Excel were used to analyze the data. Also, the F- test and the t-test at 1% and 10% levels of significance respectively were used to determine the goodness of the model and how significant the explanatory variables are to shea nuts and butter production.

Results from table 5.5 was used to assess the capacity of women (pickers and processors) to access support (logistics) for the production of shea nuts/ butter. The Probit results indicate that the probability that a shea picker or butter processor will receive some form of support is significantly determined by one's level of output, processing technique (modern or traditional) and capacity training (workshops attended). This can be interpreted to mean that the level of output plays a crucial role in determining whether the women have the ability to increase their produce or not when given the needed support. Also, the processing method gives an insight into the nature of equipment the women are using to produce the dry kernel and subsequently the butter. Modern equipment like the roaster, crusher, dryer, kneader to mention but a few, do not only improve the quality and quantity of nuts/butter produced but also reduces the time spent and the tedious nature in processing these nuts. Again, capacity training indicates that one is abreast with current happenings and best practices in the industry. The Pseudo R-square is

67%. This means that 67% of the variation in the dependent variable is being explained by the independent variables.

Table 5.5: Probit analysis of Determinants of support accessibility - Dependent variable is Support (logistics) accessibility

Variable	Parameters	Coefficients	z-statistic
Constant	$\beta_0$	-3.8272	-6.09
Age	$\beta_1$	0.0127	0.82
Education	$\beta_2$	0.0776	1.31
Experience	$\beta_3$	0.0094	0.57
Technology	$\beta_4$	1.1304	2.80*
Output	$\beta_5$	0.3532	3.46*
Capacity Training	$\beta_6$	0.5038	2.94*
Membership	$\beta_7$	0.2013	0.72
Log pseudolikelihood	-45.855354		
Wald chi2(7)	111.38		
Prob > chi2	0.0000*		
Pseudo R <sup>2</sup>	0.6736		
<b>N</b>	<b>210</b>		

Source: Field survey, 2016. Note: \* represents 1% level of significance. Also a robust test was done to check for endogeneity.

The ANOVA (see table 5.6) is used to test the hypothesis thus  $H_0$ : all the  $\beta$ 's are equal against  $H_1$ : all the  $\beta$ 's are not equal. This is done by comparing the F calculated value to the F table value. Also the ANOVA table helps us to know the extent to which the R<sup>2</sup> explains the variation in the data and based on this value conclude whether the multiple regression model is good or not.

Table 5.6: ANOVA TABLE

SOURCE	SUM OF SQUARE	Df	MEAN SQUARE	Fcal	F tab
Model	1911.17425	10	191.1174	59.70	1.88
Residual	637.0650	199	3.2013		
Total	2548.2393	209	12.1925		

R-Squared = 0.7500    Adjusted R-Squared = 0.7374    Number of Observations =210

Source: field survey 2016.

From the table 5.6,  $F_{\text{calculated}} > F_{\text{tabulated}}$ , this implies that we reject the null hypothesis (thus all the  $B$ 's are not equal).

Also, the  $R^2$  value suggests that about 75% of the variation in the dependent variable is being explained by the independent variables, hence the linear multiple regression model is considered good.

Also results in table 5.7 show that support (logistics), has a positive sign and statistically significant at 1% level of significance. This implies that we reject the null hypothesis and accept the alternative which states that support received by shea farmers contributes significantly to improving output levels. Thus a 1% increase in support will increase output of shea nut / butter by 192%. The findings provide a clue that supports is an essential tool for improving on and increasing the agricultural productivity in general and that of the shea industry in particular. This finding conforms to that of Jasaw et al., (2015) who found that accessibility to logistics is a key determinant of the varying quantities of both nuts and butter processed.

The results also revealed that labour and Technology both have positive signs and statistically significant at 1% level of significance. This implies that a 1% increase in labour and technology will increase output by 130 % and 149% respectively. Again, since technology is significant, it implies that we reject the null hypothesis and accept the alternative which states that technology used in processing nuts/butter significantly affect levels of output. A similar finding by Aniah et al. (2014), showed that labour, capital, and technology were all statistically significant at 1% level of significance and positively correlated with productivity.

Furthermore, education is statistically significant and positively affects the level of output at 10% level of significance. This means that a 1% increase in years of schooling will increase output by 7.9%.

Finally, price is statistically significant and positively affects the level of output at 10% level of significance. This means that a 1% increase in price per jutsack bag of nut will increase output by 2.2%.

Table 5.7: Ordinary Least Squares Results of the Multiple Linear Regression Model  
Dependent variable = Output (Number of Jut sack bags (80-85kg))

Variable	Parameters	Coefficients	t-statistic
Constant	$\beta_0$	0.7607	0.78
Age	$\beta_1$	-0.0078	-0.51
Education	$\beta_2$	0.0796	1.71**
Experience	$\beta_3$	0.0154	1.07
Technology	$\beta_4$	1.4913	3.27*
Capacity Training	$\beta_5$	0.1641	0.94
Membership	$\beta_6$	-0.2568	-1.01
Support	$\beta_7$	1.9179	4.24*
Labour	$\beta_8$	1.3027	8.05*
Market	$\beta_9$	-0.3671	-1.31
Price	$B_{10}$	0.0219	1.89**

Source: Field survey, 2016. Note: \* and \*\* represent 1% and 10% level of significance, respectively. Also, a robust test was done to check for endogeneity.

The multiple linear regression was used to establish the relationship between the dependent variable and the explanatory variables. However, there is the need to further establish whether or not there exist multicollinearity between the explanatory variables. For this reason the study found it imperative to employ the pairwise correlation matrix to demonstrate the extent to which the explanatory variables (if any) are correlated.

From table 5.8, it is obvious that education and age have a weaker negative correlation whereas experience and age have a moderate positive correlation. Similarly, experience and education have a weaker negative relationship. It is also observed that technology and education have a moderate positive correlation. In the same vein, capacity training and education have a moderate positive relationship while the correlation between capacity training and technology is moderately positive.

To add that, table 5.8 indicates that there exist a weaker positive relationship between belonging to an association and capacity training. Also, the results reveal that access logistical support has a strong and positive relationship with education, technology and capacity training. Again, labour is observed to have a moderate positive relationship with education and capacity training on one hand and a strong positive relationship with technology on the other hand. Furthermore, the correlation results show that access to market has a weaker negative and positive relationship with age and capacity training respectively.

Finally, the pairwise correlation results indicates that price has a weak and positive relationship with education, technology, support and labour on one hand and a weaker and positive capacity training and experience.

In conclusion, despite the fact that there exists a relationship between the explanatory variables, their coefficients show that the correlations are generally weak and does not render the results of the multiple linear regression invalid.

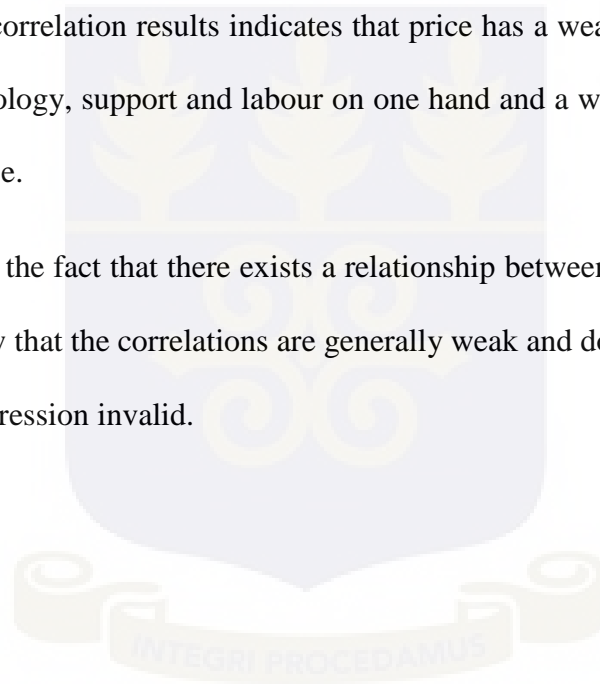


Table 5.8: A Pairwise Correlation Matrix showing the correlation coefficients of the explanatory variables

Variables	Age	Education	Experience	Technology	Capacity Training	Membership	Support	Labour	market	Price
Age	1.0000									
Education	-0.1345**	1.0000								
Experience	0.6255*	-0.2086*	1.0000							
Technology	-.0152	0.4235*	-0.0410	1.0000						
Capacity Training	0.0647	0.4697*	-0.0052	0.5844*	1.0000					
Membership	0.0328	-0.0076	0.0961	0.0756	0.1337**	1.0000				
Support	0.0709	0.4332*	0.0411	0.7971*	0.6072*	0.0857	1.0000			
Labour	0.0479	0.4632*	0.0227	0.6055*	0.5964*	0.0890	0.4086*	1.0000		
Market	-0.1228**	0.1031	-0.0512	0.0938	0.1671*	-0.0585	0.0821	0.1028	1.0000	
Price	0.1087	0.2285*	0.1223**	0.2428*	0.1997*	0.0891	0.2712*	0.3466*	0.0785	1.0000

Source: Field survey, 2016. Note: \* and \*\* represent 1% and 10% level of significance, respectively

### 5.5 Income Analyses for Pickers and Shea Butter Producers

The study revealed that prices offered for shea nuts/butter varied with distance to the purchasing centres. Thus distant rural communities coupled with poor roads were offered prices lower than urban communities which were closer and had good roads. The Agents capitalized on information asymmetry to cheat these pickers and processors (with some paying as low as GH¢ 50.00 per bag and others engaged in barter trade). Others thrive on moral hazard and abscond after taking the nuts/butter on credit from the women. The activities of these Agents and some profit seeking NGOs have over the years deprived the rural shea women farmers that golden opportunity of improving upon their standard of living from returns accruing from the sale of dried kernel and butter. Hence the inability of these rural folks to come out of poverty.

Also, the exploitation of the women demotivate them from increasing production to meet demand of players in the upstream of the value chain. The findings buttress that of Dogbove (2009), who found that in rural areas prices offered for Shea products are generally lower than those of better road connected and urban areas.

To demonstrate the effects of unfair prices on the incomes of rural women engaged in the shea industry in Northern Ghana, a comparative analysis was carried out using the average price prevailing on the market and the price at which PBCs purchase the nuts from their Agents. The study revealed the following:

1. the average number of bags a picker can pick in a season is 15 bags (each bag weights averagely 82kg)
2. PBCs and NGOs pay a price of GH¢ 120.00 per jutsack bag of dried nuts plus GH¢1.00 commission and GH¢ 8.00 per kilogram of butter whereas the average price on the market per jutsack bag of nuts is GH¢ 77.00

Note: For comparison sake, those into butter processing stick to the 15 bags of nuts they picked, no buying of additional nuts.

Table 5.9: Income of shea pickers

Buyers	Total Qty per season(in bags)	Price/82kg (GH¢)	Annual income (GH¢)	Average monthly income (GH¢)
PBCs	15	120.00	1800.00	150.00
AGENTS	15	77.00	1155.00	96.25

Source: Author generated.

Table 5.10: Income of shea butter processors

Type of production	Total Qty per season (in bags)	Processing cost per bag of nuts (GH¢)	Qty of butter produced (kg)	Price per kg of butter (GH¢)	Sales per processed bag (GH¢)	Total Cost of production in a season (GH¢)	Annual income (GH¢)	Average annual Profit (GH¢)	Average monthly profit (GH¢)
Semi-merchanized	15	53.00	540	8.00	288	795	4320	3525	293.75

Source: Author generated.

Also, table 5.10 indicates the shea butter processors earn higher average monthly income of GH¢ 293.75 compared to the shea pickers who only earn an average monthly income of GH¢ 96.25. Again, processors have an average daily minimum income of GH¢ 9.79 (\$ 2.51) compared to GH¢ 3.20 (\$ 0.82) per picker. It is obvious that processors earn incomes above the \$ 1.83 absolute poverty line whereas pickers earn incomes above the \$ 1.10 extreme poverty line. Furthermore, analyzing data from table 5.9 reveals that the pickers are better off selling the nuts directly to the PBCs than to the Agents.

These returns can only see the light of day if information asymmetry is eliminated, moral hazard curbed and the needed support from Government and NGOs given to farmers. It is apparent that both shea pickers and processors have the prospects of not only increasing their incomes but also supplying to meet demand of consumers, processing factories and exporters of nuts in the country if fair prices are paid for their produce and the necessary credit and logistical support are given to these rural women engaged in the shea industry. The findings are similar to that of Hatskevich A. et al., (2011) who found an average monthly income of \$ 53-173 attainable per picker and \$ 97-279 per extractor and that with the needed assistance, their incomes could increase two-to-three times. Also, Laube W.(2015), argued that the sale of shea nuts boosted the income of rural women engaged in the picking of nuts in Northern Ghana most especially during the lean season when nuts are in insufficient supply. He, however, cast doubts on the

prospects of the shea nut business as a key factor in poverty eradication, amidst a rise in shea nuts price above current exploitative levels.

## 5.6 Challenges in the Shea Industry

The plight of women in the industry can be attributed to several factors, namely:

- Inadequate support in terms of credit and logistics like protective gloves, wellington boots, raincoats, donkey carts, storage facilities, anti-venom for snake bites and little space for drying of nuts. This has made it difficult for the women to increase the collection of nuts and subsequent production of butter.
- Lack of processing equipment like big pots for par-boiling, donkey carts, crushers, roasters, dryers, kneaders and mills hinder large scale production of nuts and butter.
- Exploitation by Agents (middlemen and women) due to the ineptness on the part of PBC limited and Ghana specialty fats limited to organize the women into cooperative groups to enable them buy directly from the pickers instead of the Agents. This confirms the findings of Adam (2011) and Salifu (2011) who lamented over the exploitation of the rural women by the middlemen most of whom are town dwellers, well equipped with all the necessary information and invade the rural areas at the start of the Shea nut season.
- It was also revealed that cost of fire wood and inadequate water supply was a major factor affecting the quality of nuts / butter production. This is evident in the fact that water is needed for par-boiling, washing of dry nut, milling of kernels, kneading of paste and washing of emulsion. Due to scarcity of water, some women are compelled to sear their nuts instead of par-boiling.
- Poor and unmotorable roads linking farming communities and market centres. This has led to high transactional cost.

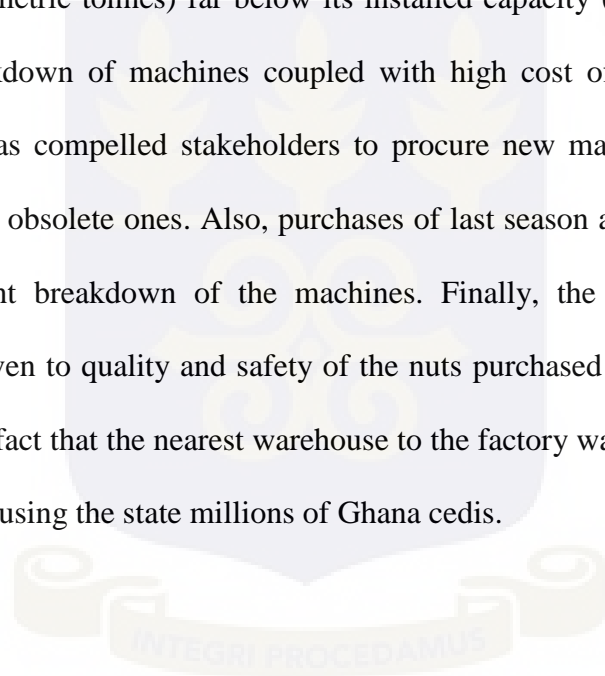
- The Shea industry lacks a strong local stakeholder network. This has made it difficult for them to put forth a strong bargaining power and the slow rate at which information is disseminated.

## 5.7 Major Findings of the Research

- ❖ Price variations across communities, districts and regions. It was revealed that Wa- East has the lowest price ranging from GHc 1.50 – 2.50 per an “alonka” of nuts, Central Gonja and West Mamprusi had prices ranging from GHc 2.00 – GHc 3.00 per an “alonka” of nuts and the Talensi and Nabdam districts recorded the highest price ranging from GHc 4.00 – 5.00 per an “alonka” of nuts. These variations could be attributed to the availability of shea trees in the communities, and remoteness of the communities.
- ❖ Exploitation from agents (middlemen and women). Most agents use wrong measurements when buying the nuts from the women. For instance the jutsack bag is the standard bag but most agents come with different sacks instead. Also these agents capitalize on the fact that the shea season coincides with the hunger period in the three Northern regions to engage in a barter trade with the shea pickers.
- ❖ Traditional rites like pouring of libation to thank the gods delay picking of nuts in most communities. This causes a good number of shea nuts to germinate.
- ❖ Harmattan winds blow flowers off the shea tree and this causes some to dry up or experience abortion
- ❖ Unreliable fruiting of shea trees. Some shea trees do not bear fruits every year. This has led to an erratic supply of nuts to processing factories compelling these factories to buy huge quantities of nuts from neighbouring Burkina Faso despite the poor quality of nuts from that country.

- ❖ Some butter processors use bitter salt to wash the nuts before crushing the nuts, while others add porridge and onions to the emulsion (liquid butter) before it solidifies. The porridge is added to increase the quantity of butter whereas the onions give flavor to the butter.
- ❖ Some shea pickers (especially the energetic youth) pluck the unripe fruits, induce the fruits to ripe by burying them, eat the pulp and give the nuts to their mothers. It also revealed that butter made from induced ripe fruits taste starchy in the mouth and gives low quality of butter.
- ❖ Due to the distance to sources of water or the inadequate supply of water in some communities, some women are left with no option but to bury the ripe fruits to sear them as a way of par-boiling the nuts. This method reduces the oil formation in the nut. It is mostly practiced in Burkina Faso.
- ❖ Pickers of shea fruits often face a stiff competition from the Fulani cattle for the fruits and that anytime they (women) try driving away these cattle, it results in a quarrel between them (pickers and Fulani herdsman).
- ❖ Some NGOs like Akoma, Afrikids, Ghana, Techno-serve, Ghana and ZOFA equip women groups with skills in soap making and pomade using shea butter. These women are then supported with credit and logistics to go into soap and pomade production as a means of making a livelihood.
- ❖ Women who belong to Shea Associations benefited: cheap labour from colleagues, capacity training workshops, received good pricing, as well as logistics like crushers, grinding mills, roasters, big pots for par-boiling and microcredit from financial institutions and NGOs.

- ❖ Factors that determine the quality of nuts/butter include; Colour (redish-brown for good nut, bad nuts have a black colour), method of par-boiling (water produces more butter, searing produce little butter), germinated and unripe nuts taste bitter and starchy in the mouth. It is striking to note that pricing of nuts is not tie to quality whereas pricing of butter is tie to quality.
- ❖ No due diligence was done regarding the siting and procuring of equipment / machines for the Shea Factory in Buipe. This is evident in the fact that the factory is producing (less than 40 metric tonnes) far below its installed capacity (100 metric tonnes) due to frequent breakdown of machines coupled with high cost of transporting raw nuts to Buipe. This has compelled stakeholders to procure new machines for retrofitting and also to replace obsolete ones. Also, purchases of last season are yet to be processed due to the frequent breakdown of the machines. Finally, the study revealed that little attention is given to quality and safety of the nuts purchased by PBC limited. This was evident in the fact that the nearest warehouse to the factory was gutted by fire at the time of the study causing the state millions of Ghana cedis.



## CHAPTER SIX

### CONCLUSIONS AND RECOMMENDATIONS

#### 6.0 Introduction

The chapter seeks to present the findings of the research and base on that, draws conclusions on the Specific objectives for which the study was carried out and to formulate policy recommendations where necessary for stakeholders and other well-wishers. Also, limitations of the study are expatiated in the chapter.

#### 6.1 Conclusions

The study was carried out in thirty-five (35) Shea farming communities in six (6) districts, two from each region in Northern Ghana in 2016 to determine the role of the Shea industry as a tool for poverty reduction among rural women. For the purpose of the study, a sample of 210 was randomly and purposively selected and interviewed. The research revealed that all respondents were females due to their dominance in the shea industry. This is largely due the tedious and time consuming nature which most often than not discourages the men from engaging in the picking and processing of the nuts into butter. However, the few men in the industry act as middlemen between the women and the buyers, operators of the crushers and mills, packaging and loading of the nuts or butter into trucks.

The study also showed that 60.48% of the women are energetic and have the potential of increasing their productivity when given the needed support like credit, and logistics like wellington boots, protective gloves, donkey cart, to mention but a few while 39.52% of them are above 45years. Again, the study concluded that 58.7% of women in the study areas largely depended on the shea industry as a source of their livelihood while 41.3% are engaged in others businesses like petty trading, pito brewing and fuel wood/charcoal selling aside picking/ butter

processing. Furthermore, the study found that the shea industry is dominated by both married women (67.14%) and widows (30%), an indication that most of them are enjoying some form of cheap labour from their children and family members. Again, 68.1% of the women had no formal education while 31.9% of them had some form of formal education. The high level of illiteracy among women in the industry poses a threat to the level of acceptance and adaptability to new ideas and changes in the industry. Meanwhile 57.14% of respondents have been working in the shea industry since infancy.

Secondly, the study found that 43.3% of respondents relied on personal savings as a source of funding their shea business whereas about 39.1% benefited from benevolent NGOs (Zofa, Afrikids-Ghana, Mondo, Techno-serve etc.) in terms of logistics such as crushers, roaster, grinding mills, protective gloves, warehouses for storage of nuts, capacity training, big pots, boreholes and credit and many more. Again, the study revealed three forms of funding arrangements namely; contract financing, leasing credit, and micro credit schemes.

Thirdly, the study pointed at 56.7% of respondents to be using the semi- mechanized processing technique while 43.3% of them still used the traditional/manual method to process their nuts into butter. The traditional method of crushing and roasting of nuts is very tedious, stressful, time consuming and subjects the women to so much heat. The t-test further revealed that a 1% increase in technology will increase output by 149%. This buttresses the argument espoused by Addaquah, (2004) that, the low extraction rate is largely due to the lack of funds to procure appropriate simple tools to facilitate and expand the production. The t-test further revealed that a 1% increase in support will increase output of shea nut / butter by 192%. This is an indication that support is an essential tool for improving and increasing the agricultural productivity in general and the shea industry in particular.

Fourthly, the Probit regression results indicated that the probability that a shea picker or butter processor will receive some logistical support is significantly determined by one's level of output, processing technique (modern or traditional) and capacity training (workshops attended).

Finally, some factors affecting production of shea nuts and butter include; limited supply of labour, inadequate support in terms of credit and logistics, inadequate modern processing equipment, high illiteracy rate, exploitation by Agents (middlemen and women), high cost of fire wood and inadequate water supply, price variations across communities, harmattan winds blow flowers off the shea tree, unreliable fruiting of shea trees, stiff competition from the Fulani cattle, indiscriminate felling of shea trees, poor and unmotorable roads and a weak local stakeholder network.

It is patent that the Shea industry in its current state might not help in a substantial increase in the incomes of rural women unless stakeholders (Government and NGOs) intervene with the needed logistical support and building the entrepreneurial skills of women engage in the Shea industry while ensuring the reduction in the number of Agents (middlemen) who capitalize on information asymmetry to exploit the women. When this is achieved, Shea farmers would get fair prices for their produce, leading to a substantial increase in their incomes and also encourage more women to go into picking and processing of nuts to meet demand by PBCs and processing factories. This in a long run would improve the incomes of many women and hence a reduction in poverty.

## 6.2 Recommendations

The study makes the following recommendations to help curtail if not eliminate major obstacles confronting the Shea industry for policy makers, stakeholders and other well-wishers in the Shea industry for onward implementation.

1. The Shea unit in the Ghana Cocoa Board (GCB) should be decoupled and a Shea board instituted under the auspice of the Savanna Accelerated Development Authority (SADA) to help make the shea factory effective and efficient.
2. SADA together with the produce buying companies (PBCs) in collaboration with the various District agriculture sector coordinating working groups through the Assembly representatives should organize the women into cooperatives groups and assist them access extension services, credit and logistics support as well as ready market for their produce.
3. Government should liaise with the Ghana Regional Appropriate Technology Industrial Service (GRATIS) foundation to design equipment like crushers, kneaders, roasters, donkey carts and a tool for de-husking the nuts for shea butter cooperatives groups at a reduced cost. This would significantly reduce the drudgery the women go through processing the nuts into butter.
4. PBCs should build storage facilities in each Shea produce district and establish buying centres which are easily accessible to the women. This would drastically reduce if not eliminate the numbers of exploitive Agents (middlemen and women) in the Shea industry.

5. Government should make a conscious effort to regravell rural roads leading to buying centres in order to make the roads motorable. This will encourage more vehicles to ply such roads at a reduced cost.
6. Ghana Health Service through the districts hospitals, should make available Anti Snake Vernon (ASV) to community clinics and chip compounds for prompt treatment of cases involving snake bites.
7. Government should subsidize the cost of both the cylinders and liquidified petroleum gas (LPG) as well as rope in more rural households into its free cylinders distribution policy. This would reduce the rate at which trees (including the Shea tree) are fell for domestic purposes.
8. All Metropolitan, Municipal and Districts Assemblies (MMDs) in collaboration with the Chiefs and opinion leaders should enact bye-laws to protect all economic trees especially the Shea tree, with stiffer punished given to those who flout the law.
9. The ministry of Food and Agriculture (MoFA) through its extension officers should encourage farmers to practice agroforestry with the Shea trees.
10. To meet the production needs of processing factories such as PBC Shea limited, OLAMS-Ghana, Juabin oil mill and Ghana specialty fat and to keep these factory running all year, the factories should lead the crusade of organizing these women into cooperative groups and assist them with logistics like donkey carts, tarpaulin, wellington boots, protective gloves, torch lights, big pots for par-boiling, jutsack bags and warehouses. Also, Premiums should be paid for quality nuts and timely delivery of nuts to buying centres. This will encourage more rural

women to go into shea picking to meet demand and as well as reduce the transaction cost of importing nuts from neighbouring Burkina Faso.

11. To ensure efficient and effective operation of PBC shea limited processing factory located at Buipe, Government should hand over the management (production and marketing) of the factory to a private concessionaire. This would see the injection of capital to replace obsolete and less efficient machines with highly efficient ones. Also, innovation by the private concessionaire may see the production of shea butter oil for cooking, pomade and soap for the local economy and for export as we have in Burkina Faso.

12. More research should be conducted by the Centre for Scientific and Industrial Research (CSIR), Savannah Agricultural Research Institute (SARI) and CRIG to shorten the maturation period of the Shea tree from 15-20 years to 5-7years. When this is done, it would encourage individual and groups to invest in the domestication of the shea tree.

13. Non-governmental organizations (NGOs) in the Shea industry should concentrate on adding value to the shea butter. This can be achieved by helping to equip the rural women with the needed skills in pomade and soap making using shea butter.

14. Lastly, future studies on poverty reduction and the shea industry should consider the income levels and the standard of living of women engage in the Shea industry.

### 6.3 Limitations of the Study

In the study, the following factors hindered the smooth collection of data on the field, they include;

- ❖ First of all, the researcher was financially, logistically and time constrained and this led to the reduction of the sample size from 349 to 210. Also, only six districts out of 50 districts in Northern Ghana were studied.
- ❖ Apart from that, language barrier made it difficult for the researcher to administer the questionnaire directly, rather the services of translators were employed. This slowed down the pace of the study.
- ❖ Again, in some communities the team could not speak to women without first seeking for permission from their Chiefs or opinion leaders.
- ❖ Another constrain worth noting is the discontinuation of the interviews by interviewees on grounds that the interview is lengthy.
- ❖ Furthermore, some respondents demanded money from the team before answering the questionnaires.
- ❖ Lastly, some processing groups or factories, Agents, exporters and NGOs were reluctant and some even declined to answer key questions posed to them.

## REFERENCES

- A.B Pascal (1978). “*Shea butter production in the Dagomba district*”. A dissertation submitted to the Department of Agric Economics & Agribusiness, University of Ghana.
- Aboba, Mathias (2011). *Woes of the Shea Industry in Ghana*. Feature Article of Tuesday, 25 October 2011, Ghanaweb.
- Aboyella, C.(2002). “*An economic analysis of sheanuts and cashew production in the Bawku East District*”. A Bsc. Dissertation submitted to the Department of Economics & Agribusiness, University of Ghana.
- Aculey, P. C. (2007). *Effect of Primary Processing of Shea Fruit on Shea Butter Quality, New Tafo-Akim*, Cocoa Research Institute of Ghana.
- Aculey, P.C. Lowor, S.T. Winifred O. Kumi and M.K. Assuah, (2012). *The Effect of Traditional Primary Processing of the Shea Fruit on the Kernel Butter Yield and Quality*. American Journal of Food Technology, 7: 73-81.
- Adam K. (2011), “*Cheating in the Shea nut Industry*, the Mirror, February 15, 2011.
- Adam, Alidu Wumpini and Abdulai, Abdul-Mumin (2014). *Towards Addressing the Challenges in the Shea Nut Industry in The Savelugu/Nantong District of Northern Region, Ghana*. International Journal of Economics, Commerce and Management, United Kingdom, Vol. II, ISSN 2348 0386.
- Addaquay, J. (2004).*The Shea butter value chain, Refining in West Africa*, WATH technical report no. 3.
- Afishata Mohammed Abujaja, Hudu Zakaria and Hamza Adam (2013). *Effects of Development Interventions on the Productivity and Profitability of Women Shea Butter Processors in the West Gonja District of Northern Ghana*. Asian Journal of Agriculture and Rural Development.
- Akudugu, M. A., Guo, E., and Dadzie S. K. (2012). “*Adoption of modern agricultural production technologies by farm households in Ghana: What factors influence their decisions?*” Journal of Biology, Agriculture and Healthcare Vol. 2(3), pp. 1-13
- Alain de Janvry and Elisabeth Sadoulet (2010). *Agricultural Growth and Poverty Reduction* World Bank Research Observer Volume 25, Issue 1 Published: February 2010 Pages: 1 - 20
- Alander J (2004): *Sheabutter - a multifunctional Ingredients for food and cosmetics*. Lipid technology 16(9):202 -216
- Al-hassan, S.(2015).*The Determinants of Firm Growth in Northern Ghana*, UDS International Journal of Development [UDSIJD] Volume 2 No. 1, August, 2015
- Asamoah K. Kennedy (2009). *The contributions of international development partners to rural poverty reduction in Ghana: A case study of the international fund for*

- agricultural development (IFAD) and small-holder farming in the Sekyere-West District, Ashanti Region.* Masters' thesis dissertation, Department of Geography and Rural Development Kwame Nkrumah University of Science and Technology, Ghana.
- Baba M. D., G. Yakubu, J. M. Yelwa and D. B. Senchi (2014). Assessment of Shea Nut Processing Among Rural Households In Fakai Local Government Area of Kebbi State, Nigeria. *Academia Arena*2014;6(9):1-5]. (ISSN 1553-992X).
- Bashir Olayinka Kolawole and Olufunsho Abayomi Omobitan (2014). *Raging Poverty and Agricultural Output in Nigeria: An Empirical Investigation.* Journal of Economics and Sustainable Development, ISSN 2222-1700, Vol.5, No.6, 2014 (Paper)
- Boffa, J.M., Yameogo, G., Nikiem,P., Knudson, D. M (1996). *Shea (Vitellaria paradoxa) nut production and collection in frontier agroforestry parklands in Burkina Faso.* Paper presented at the International Conference on Domestication and commercialization of non-timber Forest Products in Agroforestry Systems. 19-23 February 1996. Nairobi,Kenya.
- Brandith, Berit (2004). *On the Relationship between feminism and Farm .Women in Agriculture and Human Values.*
- Carette C, Malotaux M, van Leeuwen M, Tolkamp M. (2009). *Shea nut and butter in Ghana: Opportunities and constraints for local processing.* Wageningen University, Wageningen.
- Cervantes-Godoy, D. and J. Dewbre (2010), “*Economic Importance of Agriculture for Poverty Reduction*”, OECD Food, Agriculture and Fisheries Working Papers, No. 23, OECD Publishing.
- Cocoa Research Institute Ghana (CRIG), substation at Bole, 2002.
- Dogbevi E. K. (2009). *Shea nut has economic and environmental values for Ghana.* Sekaf Ghana Ltd. Publication.
- Duncan Akua Beatrice (2004). *Women in Agriculture in Ghana*, Second edition
- Dwomoh E.A., (2004). *Damage by the fruit borer Nephopterix sp. and other factors in Shea nut tree, and their distribution in northern Ghana*, Trop. Sci. 2004, 44, pp. 31–34.
- Edakkandi Meethal Reji (2012). *Value Chains and Small Enterprise Development: International Journal of u- and e- Service, Science and Technology* Vol.8, No.2 (2015), pp.321-336
- F. Lusby and E. Derks (2006). “*Shea Kernal Value Chain,*” *Small Enterprise Development*, Vol. 17, No. 2, pp. 36-46.
- FAO (2002). *The role of agriculture and land in the provision of global public goods.* Pp. 175-188 in the State of Food and Agriculture 2002. Rome: FAO.
- FAO-ILO-IUF(2005). *Agricultural Workers and their. Contribution to Sustainable Agriculture and Rural Development.* Report

- Fobil J. N. (2007): *Bole, Ghana: Research and development of the shea tree and its products*, New Haven. CT: HORIZON Solutions International, May 8, 2007. Available at: <http://www.solutionssite.org/artman/publish>
- Foster James, Joel Greer, and Erik Thorbecke (1984). *A Class of Decomposable Poverty Measures*, *Econometrica*, Vol. 52, No. 3.
- Garba, I. D. Sanni, S. A. and Adebayo, C. O. (2012). *Analyzing the Structure and Performance of Shea Butter Market in Bosso and Borgu Local Government Areas of Niger State*, Nigeria. *International Journal of u-and e-Service, Science and Technology* Vol.8, No.2 (2015), pp 321-336
- Gbolagade B. Adesiji, Kudirat D. Olarewaju, Rotimi S. Olaleye and Sola E. Komolafe (2013). *Assessment of Indigenous Methods of Processing Shea Butter among Women in Ilorin East Local Government Area of Kwara State*, Nigeria. *Journal of Agricultural Sciences* Vol. 60, No. 2, 2015 Pages 199-210.
- Gereffi, G. (1999). *International trade and industrial upgrading in the apparel commodity chain*. *Journal of International Economics*, 48(1), 37-70.
- Gereffi, G., J Humphrey and T Sturgeon, (2005). *The governance of global value chains*, *Review of International Political Economy*, vol. 12 no. 1, pp. 78-104, ISSN 0969-2290
- Gereffi, G., Korzeniewicz, M. and Korzeniewicz, R., editors, (1994). *Commodity chains and global capitalism*. Westport, CT: Greenwood Press.
- Ghana Statistical Service (2015). *Ghana Living Standards Survey 6 (2012/2013)*, Accra Ghana web, 2009. Accessed on 15 october, 2015
- Ghana Districts (2012). A repository of all district in the republic of Ghana. Ghana web, 2012. Accessed on 25 march, 2016.
- Global Shea Alliance(2013). *Industry Quality Standard for Shea kernel*. Accessed on 17 January, 2016.
- Grewal B., Grunfeld H. and Sheehan P. (2012). *The contribution of agricultural growth to poverty reduction*. ACIAR Impact Assessment Series Report No. 76. Australian Centre for International Agricultural Research: Canberra.
- H. K. Deka and K. Anish (2009). *Making Modern Poultry Work for the Poor: An Example of Co-Operative Development from Madhya Pradesh*, India, South Asia Pro-Poor Live Stock Policy Programme (SA PPLP), a Joint Initiative of NDDDB and FAO.
- H. Schmitz (1995). "Collective Efficiency: Growth Path for Small Scale Industry," *Journal of Development Studies*, Vol. 31, No. 4, pp. 529-567.
- Habito C. 2009. *Patterns of inclusive growth in developing Asia: insights from an empirical growth-poverty elasticity analysis*. Working Paper No. 145. Asian Development Bank Institute: Tokyo.

- Hall, J.B., D. P Aebischer, H. F. Tomlinson, E Osei-Amaning And J. R.Hindle, (1996). *Vitellaria Paradoxa: a Monograph*. School of Agricultural and Forest Sciences Publication Number: 8, Bangor, University of Wales.
- Haruna Issahaku (2012). *Evaluating the Viability of Shea Butter Production: A Comparative Analysis*. Research Journal of Finance and Accounting ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online) Vol 3, No 8.
- Haruna Issahaku, Al-hassan Ramatu and Daniel B. Sarpong (2011). *An analysis of allocative efficiency of shea butter processing methods in the northern region of Ghana*. Journal of Development and Agricultural Economics Vol. 3(4), pp. 165-173
- Hatskevich, A., Jenicek, V., & Antwi-Darkwah, S. (2011). *Shea Industry - A means of poverty reduction in northern Ghana*. Agricultura Tropica Et Subtropica, 44(4), 223-228.
- Hazell Peter (2007). *Transformations in agriculture and their implications for rural development*, Journal of Agricultural and Development Economics, Vol. 4, pp. 47-65.
- Holtzman J. (2004). *The Shea butter value chain, Study syntheses and recommendations for WATH*, WATH technical report no.1
- Humphrey John and Hubert Schmitz (2002). *How does insertion in global value chains affect upgrading in industrial clusters?* Institute of Development Studies, University of Sussex, Brighton BN1 9RE, UK.
- International Fund for Agricultural Development IFAD (2001). *Assessment of Rural Poverty, Western and Central Africa, and Eastern and Southern Africa*, Rome.
- International Fund for Agricultural Development (IFAD) (2011). *Rural Poverty Report: New realities, new challenges, new opportunities for tomorrow's generation*. International Fund for Agricultural Development (IFAD) Printed by Quintily, Rome, Italy, November 2010.
- Institute of Statistical, Social and Economic Research (ISSER, 2015), "*Peasants autonomy and capture in times of increasing integration of global food markets*" the Ghanaian Times Newspaper.
- Jasaw Seidu Godfred , Osamu Saito and Kazuhiko Takeuchi(2015). *Shea (Vitellaria paradoxa) Butter Production and Resource Use by Urban and Rural Processors in Northern Ghana*. Sustainability 2015.
- K. N. Harilal, K. Nazneen and J. Jeyaranjan (2006). "*Power in Global Value Chains: Implications for Employment and Livelihoods in the Cashew Nut Industry in India,*" International Institute for Environment and Development, London.
- Karlan, D. and J. Zinman (2006b). "*Expanding Credit Access: Using Randomized Supply Decisions to Estimate the Impacts.*" working paper.

- Kebede, Y., Gunjal, K., & Coffin, G. (1990). *Adoption of New Technologies in Ethiopian Agriculture: The case of Tegulet-Bulga District, Shoa Province*. *Agricultural Economics* 4 (1): 27 – 43
- Khan & Rahaman, (2007). *Customer behavioral approach for using micro-Credit: analysis of rural community of Pakistan*. Conference: 2nd International Conference on Contemporary Issues in Business Management, At University of Central Punjab, Lahore, Pakistan
- Kwode P. A. (2010). *Shea nut and poverty alleviation in Northern Ghana*. Ghana News Agency.
- L. Canina, C. A. Enz and J.S. Harisson (2005). “*Agglomeration Effects and Strategic Orientations: Evidence from US Lodging Industry*,” *Academy of Management Journal*, Vol. 48, No. 4, pp. 565-577.
- Laube W. (2015). *Global Shea Nut Commodity Chains and Poverty eradication in Northern Ghana: Myth or Reality?* Center for Development Research (ZEF), University of Bonn, Germany. *UDS International Journal of Development*, Volume 2 No. 1, August, 2015
- Loayza N.V. and Raddatz C. (2010). *The composition of growth matters for poverty alleviation*. *Journal of Development Economics* 93(1), 137–151.
- Lovett P. (2004). *The Shea Butter Value Chain: Production, Transformation and Marketing in West Africa*. West Africa Trade Hub (WATH) Technical Report. No 2, November 2004.
- Lovett P. N (2004a). *Research and Development of Premium Quality Shea Butter for promotion in Northern Ghana* (July 2001-March 2004), various reports to TechnoServe-Ghana. R & D support with funding from USAID.
- Lovett P. N, Haq N, undated. “*Literature review on the shea butter nut tree*”. Unpublished Report.
- Lovett PN. (2010). *Sourcing shea butter in 2010: a sustainability check: Global ingredients & formulations guide 2010*. The Green Book of Cosmetics. H. Ziolkowsky GmbH, Augsburg, Germany: Verlag für chemische Industrie, pp. 62–68.
- M. Elias, and Carney J. (2007). “*African Shea butter: a feminized subsidy from nature*”, *Africa*, Vol. 77 No. 1, pp. 37-62.
- M. Storper (1997). “*The Regional World: Territorial Development in a Global Economy*,” Guildford Press, New York.
- Nachmias and C. Nachmias (1987). *Research Method in the sociology Sciences*, 3<sup>rd</sup> edition.
- Nahm, HS. (2011). *Quality Characteristics of West African Shea Butter (Vitellaria paradoxa) and Approaches to Extend Shelf-Life*, Graduate School-New Brunswick Rutgers, The State University of New Jersey.

- Nde Bup Divine, Ahmed Mohammed Mohagir, César Kapseu and Zéphirin Mouloungui (2013). *Production zones and systems, markets, benefits and constraints of shea (Vitellaria paradoxa) butter processing*. OCL 2014, 21(2) D206 Published by EDP Sciences 2014.
- O. Kula, J. Downing and M Field (2006). “*Value Chain Programs to Integrate Competitiveness, Economic Growth and Poverty Reduction*,” *Small Enterprise Development*, Vol. 17, No. 2, pp. 23-36.
- Ololade, L. S and Ibrahim F. A, (2014). *Assessment of the Contribution of Sheabutter Processing to Poverty Reduction among Women in Kwara State, Nigeria*; *Journal of Sustainable Development in Africa* (Volume 16, No.3, 2014) ISSN: 1520-5509.
- Pack H. (2009). *Should South Asia emulate East Asian tigers?* Pp. 75–80 in ‘Accelerating growth and job creation in South Asia’, ed. by E. Ghani and S. Ahmed. Oxford University Press, for the World Bank: New Delhi.
- Park, M. (2005) *Life and Travels of Mungo Park in Central Africa*, edition 10 (Produced by Carlo travesso, Beginners Projects, Beth Trapaga, Tonya Allen, Steen Christensen, Thomas Berger, and the online distributed Proofreading Team).
- Pufaa, F.E (2010). *Financing the Production and Marketing of Shea Butter in Tamale Metropolis*, unpublished thesis.
- Pufaa, F.E (2010). *Financing the Production and Marketing of Shea Butter in Tamale Metropolis*, unpublished thesis.
- R. Kaplinsky (2000). “*Globalization and Unequalisation: What Can Be Learned from Value Chain Analysis*,” *Journal of Development Studies*, Vol. 32, No. 7, pp. 117-146.
- Ravallion Martin and Shaohua Chen (2007). *China’s (uneven) progress against poverty*. *Journal of development Economics* 82 (2007) 1- 42
- S. Al-hassan (2009). *Market Access Capacity of Women Shea Processors in Ghana*. Centre for Continuing Education and Interdisciplinary Research University for Development Studies (UDS).
- Salifu T.H (2011). “*Women in the Shea nut Industry in the Bawku District: A project work submitted to the faculty of Science, University of Science and Technology, Kumasi, June 1987*”
- Schreckenber, K.(2000). “*Non-timber forest products in the woody savannas of Benin Republic*”, pp. 285-306 in Cline-Cole, R. and Madge, C.(eds),“*Contesting forestry in West Africa*”, Ashgate Publishing Ltd, UK.
- Sen, A. K. (1976): *Poverty: An Ordinal Approach to Measurement*. *Econometrica*, 44, 219-231
- Sen, Amartya (1999). *Development as Freedom*, Oxford: Oxford University Press.

- Senchi A. A and Yakubu A. A.( 2012). *Assessment of Processors and Marketers of Sheabutter (Vitellaria Paradoxa C. F. Gaertn.) in Zuru Local Government Area, Kebbi State, Nigeria*. Journal of Research in Forestry, Wildlife and Environmental Volume 6, No. 2 September, 2014.
- Silverman David (2006). *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction* (Third edition). London
- Sirra Horeja Ndow (undated). *Women's Gold' – shea butter from Burkina Faso*, Network African Women Economists.
- Strengmann-Kuhn, Wolfgang (2000). *Theoretical Definition and Empirical Measurement of Welfare and Poverty: A Microeconomic Approach*. Date posted: November 26, 2002.
- Ted K. Bradshaw (2005). *Theories of Poverty and Anti-Poverty Programs in Community Development*. Rural Poverty Research Centre working paper No. 06-05 February, 2006.
- United Nations (2001). *Poverty and the International Covenant on Economic, Social and Cultural Rights*, UN Committee on Economic, Social and Cultural Rights, E/C.12/2001/10, New York: United Nations.
- United Nations (2006). *The Role of Women in Agriculture*, Agricultural Development Economics Division, the Food and Agriculture Organization of the United Nations Report.
- Virmani A. (2007). *The sudoku of growth, poverty and malnutrition: policy implications for lagging states*. Planning Commission Working Paper No. 2/2007-PC. Government of India: New Delhi
- Warr P. (2002). *Poverty reduction and sectoral growth: evidence from Southeast Asia*. Draft Paper, Economics Division, Research School of Pacific and Asian Studies. Australian National University: Canberra
- Welfare and Poverty: A Microeconomic Approach, the International Association for Research in Income and Wealth Cracow, Poland, 27 August to 2 September 2000.
- WATH (2005). *The Shea Butter Value Chain, Refining in West Africa*, Technical Report No. 3.
- World Bank, (2012). *Agriculture and Rural Development*, the World Bank Group report
- World Bank, (2014). *Agriculture and Rural Development*, the World Bank Group report
- World development Report, (2009). *Agriculture and Poverty Reduction*, the World Bank Group report.
- Xinshen Diao (2010). *Economic importance of agriculture for sustainable development and poverty reduction: findings from a case study of Ghana*. Global forum on agriculture 29 - 30 november 2010. Policies for agricultural development, poverty reduction and food security OECD headquarters, Paris.

Yidana, J. A. (1994) *Pollination in Shea Trees*, Cocoa Research Institute, Ghana, (Annual Report 1992/93, University for Development Studies).



# APPENDIX

## QUESTIONNAIRE AND INTERVIEW GUIDE

### HOUSEHOLD QUESTIONNAIRE FOR SHEA NUT/BUTTER PROCESSORS

I am a student of the Department of Economics (UG), and as a partial fulfillment of my Master of Philosophy Degree in Economics; I am undertaking a research on “THE SHEA INDUSTRY: A TOOL FOR POVERTY REDUCTION AMONG RURAL WOMEN IN NORTHERN GHANA”. Please be assured that any information provided shall be kept confidential. Thanks for your permission.

Region .....; District .....; Village .....

Name of Respondent(if not willing, skip): .....

TEL.....

Date of Interview...../...../..... State Time..... End Time.....

Code..... Serial No.....

#### SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. Sex: Male/Female                      2. Age: .....
3. Marital status : Married     Single     Divorced     Widowed
4. Educational Status: No Formal Education     Primary     JHS/Middle Sch.     SHS   
Tertiary
5. Who is the head of your household?.....    6. What is the Size of your Household.....

#### HOUSEHOLD LIVELIHOOD ACTIVITIES

7. Do you engage in Sheanut/ Butter Processing as a full time occupation? Yes/No
8. Which one of them do you engage in? Shea nut     shea butter     Both
9. Apart from Shea nut/Butter Processing, are you involved in any other Business? Yes/No
10. If Yes, specify.....
11. How long have you been engaged in the Shea Butter Processing?  
(a) Since infancy     (b) More than 10 years ago     (c) Between 5 and 10 years   
(d) Less than 5 years
12. How do you get the Shea Nuts that you use for Shea Butter Processing?  
(a) Pick Shea Fruits and Process them into Nuts Myself   
(b) Pick some Shea Fruits myself; Buy some more Fruits and processes Shea Nuts myself   
(c) Buy Shea Fruits and Process them into Nuts Myself   
(d) Buy the Shea Nuts from Producers

(e) Others specify.....

13. How many people in this family/compound are active in the shea industry?.....

14. Rank the following activities with respect to the hours devoted to each?

Picking  Boiling /drying of nuts  Processing  Marketing

15. How do get information regarding the Processing and marketing of Shea nuts/butter?

Relatives and Friends  Extension agent  Television  Newspaper   
Radio  Other specify.....

**TECHNOLOGY AND PRODUCTIVITY**

16. Indicate your output levels and price for last years on the table below:

Year	Output Level (in tons/bags/calabashes)	Local Prices (Gh¢ )
2015		

17. What Equipment do you use for Shea Nut Processing? .....

18. Have you changed your production technology over the last 5 years? Yes/No

19. If Yes, to Q17 above please answer the questions in the table below:

Time Period for change in technology	Type of Technology FORMALLY used	Type of Technology used NOW	Reason for change	Effects of change of technology on productivity

20. If No to Q17,  
why.....

**LABOUR AND STORAGE**

21. Do you employ other people to help you with the Shea Nut Processing? Yes/No

If Yes, to Q20 above fill the following table below

No. of People Employed	Monthly Salary (Gh¢)

22. How do you store the Shea Nuts?.....

**QUALITY STANDARDS**

23. Has there been any improvement in the quality of your products over the last 5years? Yes /No

24. Are you aware of any quality standards your products are expected to meet? Yes / No

25. If yes who enforces the standards?.....

**SHEA NUT/BUTTER MARKETING**

26. Is there ready market for Shea Nuts? Yes /No

27. Which of the following do you sell your produce to?

Local cooperative/association  Local assembler

Sheanut /butter exporter  Processing association/plant  Others (specify).....

28. How do you package the shea butter for sale?.....

29. Is the Price of Shea Nut/butter tied to its quality? Yes /No

30. What factor(s) determine the price of Shea Nuts/butter?

.....  
.....  
.....

31. Are you satisfied with the shea marketing alternatives available to you? Yes/No

If no,  
why.....  
?

33.What transport options exist for getting your sheanut/butter to the desired market?

Passenger vehicle  Others (specify).....

34. Mention major challenges you face as a Shea Nut /butter processor?

1.....  
2.....  
3.....

35. In your opinion, what is the way forward to these problem(s)?

1.....  
2.....

3.....

36. Do you have shea trees in this community? Yes or No  
 If yes, who owns shea trees and how does ownership of the trees affect the shea business?.....

37. As community members, how do you find the availability of shea trees now, compared to some years back? (a) Adequate/ enough trees  (b) Fewer trees now  (c) Uncertain  (d) Still same trees

If trees are fewer now than before what accounts for this, and how will this situation affect your shea business?.....

**FINANCING AND SUPPORTING SERVICES**

38. Have you received any form of assistance from any organization/Government agencies/ Banks? Yes/No

39. If Yes to Q38 above, mention the name of the organization and the form of assistance below:

Name of Organization	Form of Assistance	Disbursement & Repayment Approach

40. Did the support help to improve your business? Yes/No

41. How do you finance your shea farming? 1. Financial institutions  2. Membership Association  3. Relatives  4. personal savings  5. Others specify.....

42. What is/are the funding arrangement(s)?.....

43. Are you satisfied with the availability and cost of credit for your farm operation? Yes/No

44. Have you received or attended any capacity building training on shea nut /butter processing? Yes /No,

45. If Yes, how many of them.....

**Shea Organization Membership**

46. Are you a member of a shea association or cooperative? Yes / No

47. If yes, name of association.....

48. If No, Why?.....

49. How much in annual dues do you pay? GH¢.....

50. How are the leaders of the association selected? .....

51. Has membership helped you to:

- (a) Improve your production of shea nut/butter? Yes/No
- (b) Improve the quality of your shea butter/ nuts? Yes/No
- (c) Improve the price you receive for shea nuts/ butter? Yes/No
- (d) Reduce cost of your production of shea nut/butter? Yes/No
- (e) Eliminate transport costs? Yes/No
- (f) Improve the quality of your processed nuts? Yes/No
- (g) Improve the price you receive for your processed nuts/butter? Yes/No
- (h) Improve access to loans? Yes/No

**Uses of Shea nut/butter Income**

52. How much do you earn from the sale of shea nuts /butter every month on the average? .....

53. Rank how you spend the income gotten from the sale of sheanut/butter?

Food  Education  shelter  Weddings, funerals  Health   
Others(specify).....

54. Has the Shea industry help to improve your livelihood? Yes/No

If Yes explain.....

